By / Par CERIC

MEMORIAL UNIVERSITY

CANADIAN JOURNAL OF CAREER DEVELOPMENT

REVUE CANADIENNE DE DÉVELOPPEMENT DE CARRIÈRE

26

VOL 25/ NO 2



Access this Journal online / Accédez à cette revue en ligne – **cjcd-rcdc.ceric.ca**

Canadian Journal of Career Development
Revue canadienne de développement de carrière

The Canadian Journal of Career Development was established by its late founding editor, Dr. Robert Shea, in 1999, with the inaugural issue being published in 2002. The objective of this peer-reviewed and open-access journal is to present articles on areas of career research and practice that are of interest to career development researchers and practitioners in Canada and internationally. The Journal is multi-sectoral, and includes a range of methodological, theoretical, and best practices articles.

The Journal is published at Memorial University of Newfoundland, with the support of CERIC through a grant provided by The Counselling Foundation of Canada. The opinions expressed are those of the authors alone and do not necessarily reflect the views of the Canadian Journal of Career Development, Memorial University of Newfoundland, or CERIC officers, directors, or employees.

The Canadian Journal of Career Development is published twice annually, in January and September. It can be accessed at: www.cjcd-rcdc.ceric.ca. Information regarding the submission categories and guidelines can be found at https://cjcd-rcdc.ceric.ca/index.php/cjcd/about/submissions. All correspondence regarding advertisements and requests for permission to reprint should be directed to Jennifer Browne at the address below.

La Revue canadienne de développement de carrière a été créée par son rédacteur en chef fondateur, le Dr Robert Shea, en 1999, et le premier numéro a été publié en 2002. L'objectif de cette revue à comité de lecture et à accès libre est de présenter des articles sur les domaines de la recherche et de la pratique en développement de carrière qui intéressent les chercheurs et les praticiens en développement de carrière au Canada et à l'étranger. La revue est multisectorielle et comprend un éventail d'articles méthodologiques, théoriques et sur les meilleures pratiques.

La revue est publiée à l'Université Memorial de Terre-Neuve, avec le soutien du CERIC grâce à une subvention de la Counselling Foundation of Canada. Les opinions exprimées sont celles des auteurs et ne reflètent pas nécessairement celles de la Revue canadienne de développement de carrière, de l'Université Memorial de Terre-Neuve ou des dirigeants, administrateurs ou employés du CERIC.

La Revue canadienne de développement de carrière est publiée deux fois par an, en janvier et en septembre. Elle est accessible à l'adresse suivante : www.cjcd-rcdc.ceric.ca. Des informations concernant les catégories de soumission et les lignes directrices sont disponibles à l'adresse suivante : https://cjcd-rcdc.ceric.ca/index.php/cjcd/about/submissions. Toute correspondance concernant les annonces et les demandes d'autorisation de réimpression doit être adressée à Jennifer Browne à l'adresse ci-dessous.

Canadian Journal of Career Development
Revue canadienne de développement de carrière

Jennifer Browne
Editor/ Rédactrice en chef
Director/ Directeur, Student Life/ Vie étudiante
Memorial University of Newfoundland/ Université Memorial de Terre-Neuve
St. John's, NL

Phone/tél : 709.864.8312
Fax/téléc : 709.864.8960
Email/courriel : jbrowne@mun.ca

Diana Boyd
Associate Editor/Rédactrice en chef adjointe
Student Life/ Vie étudiante
Memorial University of Newfoundland/ Université Memorial de Terre-Neuve
St. John's, NL

Phone/tél : 709.864.6236
Email/courriel : diana.boyd@mun.ca

© 2001-2026 Canadian Journal of Career Development/Revue canadienne de développement de carrière. All rights reserved/Tous droits réservés.
ISSN 1499-1845 (Print)/ISSN 1499-1853 (Online) Printed in Canada/Imprimé au Canada

By / Par CERIC MEMORIAL UNIVERSITY

CANADIAN JOURNAL OF CAREER DEVELOPMENT | REVUE CANADIENNE DE DÉVELOPPEMENT DE CARRIÈRE

4 **FROM THE EDITOR'S DESK / DU BUREAU DE LA RÉDACTRICE EN CHEF**
Dr. Jennifer Browne Editor/ Rédactrice en chef

ARTICLES

7 Quand l'IA rencontre l'orientation scolaire et professionnelle au Québec : transformations du travail et nouveaux défis professionnels
Melanie Trottier et Aimy Andraos

39 Career-Relationship Intersections of Women in STEM Post-Secondary Programs and Their Romantic Partners
Lindsay S. Warner, José F. Domene & Kristina Waldmann

60 From Field to Future: Translating Extracurricular Activities into Transferable Skills for Career Success
Luca Sirianni & Hana EI Kaissi

69 Aspirations et attentes scolaires et professionnelles de jeunes Québécois et Québécoises : portrait et liens avec les perceptions de discrimination selon le statut migratoire
Valentina Rengifo et Sabruna Dorceus

109 Les perceptions de discrimination au travail chez les personnes travailleuses québécoises
Yannic Gagnon et Sabruna Dorceus

136 The Impact of Generative AI and BI on Generation Z Career Motivation and Construction Industry Transitions
F. Henry Abanda

164 What Drives Career Engagement? The Predictive Role of Socioemotional Skills and Career Adaptability
Amanda Espagolla Santos, Lucy Leal Melo-Silva & José Egídio Barbosa Oliveira

176 Characteristics of Sources of Career Decision-Making Self-Efficacy Based on the Personality Traits
Kousuke Maeba

190 The Relationship Between the Career Decision State and Ambiguity Tolerance: Implications for Career Decision-Making Readiness
V. Casey Dozier, Stephen J. Leierer, Qiong Li & Robert C. Reardon

199 AI-Inferred Personality Profiles of Occupations: Implications for Career Counselling and AI Literacy
Jeanine Williamson & Steven D. Milewski

218 An Examination of Career Planning Processes Among Students in the Faculty of Sport Sciences
Piyami Çakto & İlyas Görgüt

PRACTITIONERS & COMMUNITY PRACTICES

234 Navigating Career Development for Autistic Individuals with Lower to Moderate Support Needs: Integrating Evidence and Practice
Shana Harrison & Deepak Mathew

FROM THE EDITOR'S DESK | DU BUREAU DE LA RÉDACTRICE EN CHEF

Dr. Jennifer Browne Editor/ Rédactrice en chef

As we welcome the start of a new academic year, there is a palpable sense of optimism about the opportunities and possibilities that lie ahead. The beginning of a new school year brings renewed energy, fresh perspectives, and a chance to reflect on both where we have been and where we are going. For the *Canadian Journal of Career Development* (CJCD), this season is especially meaningful as we look ahead to an important milestone: our 25th anniversary in 2027.

To mark this significant occasion, I am delighted to share that Associate Editor, Diana Boyd, and I will be facilitating a special panel discussion at Cannexus 2027. The session will bring together past contributors to reflect on the CJCD's scholarly impact over the past quarter century. Together, we will revisit some of the Journal's most influential articles, discuss key contributions to the field, explore emerging priorities, and consider future directions for research and practice. It will be an opportunity to celebrate the CJCD's enduring role in advancing career development scholarship and professional practice while recognizing the many individuals whose contributions have helped shape the Journal's success.

We also have much to celebrate in the present. In April, the CJCD was awarded funding for a three-year period through the Social Sciences and Humanities Research Council's (SSHRC) Aid to Scholarly Journals program. This important investment recognizes the Journal's contributions to scholarly knowledge dissemination and its impact within the career development community. The funding has already supported the development of a new and improved website, expanded editorial support to meet the needs of a growing journal, and several innovative initiatives that will strengthen our capacity, accessibility, and reach in the years ahead. We are deeply grateful for this recognition and support, which will help us continue contributing to the scholarship and practice of career development in Canada and around the world.

Spring 2026 also marked another major milestone with the first meeting of the CJCD Editorial Advisory Board. This distinguished group of scholars and long-time supporters are committed to help guide the Journal as we look toward the next 25 years. I am sincerely grateful to our inaugural board members: Dr. Roberta Borgen, Dr. Louis Cournoyer, Dr. Lorraine Godden, Dr. Candy Ho, and Dr. Michelle Pidgeon. Their expertise, insight, and commitment will be invaluable as we continue to grow and evolve. We also look forward to expanding representation on the board and welcoming additional members in the coming months.

While much is happening behind the scenes, the CJCD's foremost commitment remains unchanged: to share impactful research and best practices that advance the field of career development. This issue features 12 articles from

Alors que nous accueillons le début d'une nouvelle année universitaire, un sentiment d'optimisme palpable règne quant aux occasions et aux possibilités qui s'offrent à nous. Le début d'une nouvelle année scolaire apporte un regain d'énergie, de nouvelles perspectives et l'occasion de réfléchir à la fois au chemin parcouru et à celui qui nous attend. Pour la *Revue canadienne du développement de carrière* (RCDC), cette période revêt une importance particulière alors que nous nous préparons à franchir une étape importante : notre 25e anniversaire en 2027.

Pour marquer cette occasion importante, je suis ravie d'annoncer que la rédactrice adjointe, Diana Boyd, et moi-même animerons une table ronde spéciale lors de Cannexus 2027. Cette séance réunira d'anciens contributeurs afin de faire le point sur l'impact scientifique de la RCDC au cours du dernier quart de siècle. Ensemble, nous passerons en revue certains des articles les plus influents de la revue, discuterons des contributions clés à ce domaine, explorerons les priorités émergentes et examinerons les orientations futures de la recherche et de la pratique. Ce sera l'occasion de célébrer le rôle durable que joue la RCDC dans l'avancement de la recherche sur le développement de carrière et de la pratique professionnelle, tout en rendant hommage aux nombreuses personnes dont les contributions ont contribué au succès de la revue.

Nous avons également beaucoup à célébrer aujourd'hui. En avril, la RCDC s'est vu octroyer un financement pour une période de trois ans dans le cadre du programme d'aide aux revues savantes du Conseil de recherches en sciences humaines (CRSH). Cet investissement important reconnaît les contributions de la revue à la diffusion des connaissances savantes ainsi que son impact au sein de la communauté du développement de carrière. Ce financement a déjà permis de soutenir la mise en place d'un nouveau site Web amélioré, d'élargir le soutien éditorial pour répondre aux besoins d'une revue en pleine croissance, ainsi que plusieurs initiatives novatrices qui renforceront notre capacité, notre accessibilité et notre portée dans les années à venir. Nous sommes profondément honorés de cette reconnaissance et de ce soutien, qui nous aideront à continuer de contribuer à la recherche et à la pratique du développement de carrière au Canada et partout dans le monde.

Le printemps 2026 a également marqué une autre étape importante avec la première réunion du comité consultatif de rédaction de la RCDC. Ce groupe distingué de chercheuses et chercheurs ainsi que de personnes qui soutiennent la revue depuis longtemps s'est engagé à aider à orienter la revue alors que nous nous tournons vers les 25 prochaines années. Je suis sincèrement reconnaissante envers les membres fondateurs de notre comité : la Dre Roberta Borgen, le Dr Louis Cournoyer, la Dre Lorraine Godden, la Dre Candy Ho et la Dre Michelle Pidgeon.

FROM THE EDITOR'S DESK | DU BUREAU DE LA RÉDACTRICE EN CHEF

Dr. Jennifer Browne Editor/ Rédactrice en chef

researchers and practitioners across Canada and around the world, including three French articles. Together, these contributions explore topics such as artificial intelligence and emerging technologies, equity and inclusion, career decision-making, and supporting individuals across diverse educational and workplace contexts. The issue also examines the social and relational dimensions of career development, reminding us that careers are shaped not only by individual choices but also by the communities, systems, and relationships that surround us. Collectively, the articles in this issue reflect the dynamic and evolving nature of career development. They challenge us to thoughtfully examine technological innovation while remaining committed to equity, inclusion, and evidence-based practice. In doing so, they advance the field in ways that support meaningful and sustainable careers for individuals across diverse contexts.

As always, I am deeply grateful for the leadership and support of Diana Boyd, as well as the authors, reviewers, and readers who contribute so much to the CJCD. Quite simply, we could not do this work without you.

As many of you embrace the busy fall season, I encourage you to take time for self-care and to appreciate the beauty that surrounds you. For me, that means watching the leaves transform from green to brilliant shades of red, yellow, and orange, cherishing every moment of my son's final year of high school, and feeling grateful for a career that continues to challenge, inspire, and bring me joy every day.

Wishing you all a productive, successful, and joyful fall.



Dr. Jennifer Browne
Chief Editor

Leur expertise, leur perspicacité et leur engagement seront inestimables à mesure que nous continuerons de grandir et d'évoluer. Nous avons également hâte d'élargir la représentation au sein du conseil et d'accueillir de nouveaux membres au cours des prochains mois.

Bien que de nombreux événements se déroulent en coulisses, l'engagement premier de la RCDC demeure inchangé : partager des recherches percutantes et des pratiques exemplaires qui font progresser le domaine du développement de carrière. Ce numéro présente 12 articles rédigés par des chercheur·euse·s et des praticien·ne·s de partout au Canada et dans le monde, dont trois articles en français. Ensemble, ces contributions explorent des thèmes tels que l'intelligence artificielle et les technologies émergentes, l'équité et l'inclusion, la prise de décision en matière de carrière, ainsi que le soutien aux personnes dans divers contextes éducatifs et professionnels. Ce numéro examine également les dimensions sociales et relationnelles du développement de carrière, nous rappelant que les carrières ne sont pas seulement façonnées par des choix individuels, mais aussi par les communautés, les systèmes et les relations qui nous entourent. Collectivement, les articles de ce numéro reflètent la nature dynamique et évolutive du développement de carrière. Ils nous invitent à examiner de manière réfléchie l'innovation technologique tout en restant attachés à l'équité, à l'inclusion et aux pratiques fondées sur des données probantes. Ce faisant, ils font progresser le domaine de manière à favoriser des carrières enrichissantes et durables pour les individus dans des contextes variés.

Comme toujours, je suis profondément reconnaissante envers Diana Boyd pour son leadership et son soutien, ainsi qu'envers les auteur·rices, les réviseurs et réviseuses et les lecteurs qui contribuent tant à la RCDC. Tout simplement, nous ne pourrions pas accomplir ce travail sans vous.

Alors que bon nombre d'entre vous s'apprêtent à vivre une saison d'automne bien remplie, je vous encourage à prendre le temps de prendre soin de vous et d'apprécier la beauté qui vous entoure. Pour moi, cela signifie observer les feuilles passer du vert à de magnifiques nuances de rouge, de jaune et d'orange, chérir chaque instant de la dernière année d'école secondaire de mon fils, et éprouver de la gratitude pour une carrière qui continue de me mettre au défi, de m'inspirer et de m'apporter de la joie chaque jour. Je vous souhaite à tous un automne productif, couronné de succès et joyeux.



Dr. Jennifer Browne
Rédactrice en chef

CERIC Advancing Career Development in Canada | Promouvoir le développement de carrière au Canada

Etta St. John Wileman Award

for Outstanding Achievement in Career Development



Prix Etta St. John Wileman

pour les réalisations remarquables en développement de carrière

This award is designed to recognize and celebrate individuals who have made an outstanding impact in enhancing the field of career development, regardless of role or position within an organization.

It is given in the name of Etta St. John Wileman, a champion and crusader for career, work and workplace development in Canada in the early 20th century.

Consider nominating someone who is a mentor, educator, advisor, advocate and role model. CERIC encourages nominations of members of equity groups.

For full information on nominations and selection, visit **ceric.ca/wileman_award**.

Ce prix vise à souligner et à célébrer la contribution de personnes ayant remarquablement fait progresser le domaine du développement de carrière, peu importe leur rôle ou leur fonction au sein d'une organisation.

Ce prix honore la mémoire d'Etta St. John Wileman, pionnière et fervente militante en faveur du développement de carrière et de l'amélioration des conditions de travail au Canada au début du XXe siècle.

Envisagez de proposer la candidature d'une personne qui agit comme mentor, formateur, conseiller, défenseur de la cause et modèle à suivre. Le CERIC encourage les candidatures de membres de groupes en quête d'équité.

Pour plus d'information sur les mises en candidature et la sélection, visitez **ceric.ca/prix_wileman**.

Join us in recognizing the full spectrum of professionals making a meaningful difference in career development across Canada.

Rejoignez-nous pour reconnaître l'ensemble des professionnels qui contribuent de façon notable au développement de carrière au Canada.

SUBMIT YOUR NOMINATION BY OCTOBER 5, 2026

ceric.ca/wileman_award

SOUMETTEZ UNE MISE EN CANDIDATURE AU PLUS TARD LE 5 OCTOBRE 2026

ceric.ca/prix_wileman

Quand l'IA rencontre l'orientation scolaire et professionnelle au Québec : transformations du travail et nouveaux défis professionnels

Melanie Trottier. *Université du Québec à Montréal*
Aimy Andraos. *Ordre des conseillers et conseillères d'orientation du Québec*

Résumé

La profession de conseiller(-ère) en orientation (c.o.) fait face à une transformation rapide liée à l'essor de l'IA dans un contexte déjà marqué par de multiples défis, tels que les enjeux d'équité, la pénurie de main-d'œuvre et l'évolution du marché du travail. Malgré l'accélération des transformations numériques, peu de recherches ont documenté la manière dont les professionnel(les)s vivent l'intégration de l'IA dans leur pratique. Cette étude descriptive s'intéresse à la façon dont l'IA transforme le travail des c.o. en documentant son implantation, ses usages et ses effets sur l'organisation du travail. Un sondage en ligne a été mené auprès de 314 membres de l'Ordre des conseillers et conseillères d'orientation du Québec. Les résultats montrent une adoption déjà amorcée de l'IA, surtout pour des tâches de traitement de texte, de visuel ou d'audio (43,9 %), tandis que les applications remplaçant des tâches ou soutenant la prise de décision demeurent peu utilisées (9,8 %). L'IA est associée à une augmentation de l'autonomie et du confort, mais entraîne une complexification du travail, une crainte de déshumanisation du métier et des préoccupations éthiques. L'IA semble transformer graduellement mais profondément la pratique des c.o., générant autant d'opportunités que de risques, et mettant en lumière des inégalités entre secteurs et clientèles.

Mots-clés : Conseillers et conseillères d'orientation, intelligence artificielle (IA), transformation du travail, enjeux professionnels, sens du travail, déshumanisation, inégalités numériques

Le champ du conseil en orientation fait face à des défis croissants liés aux enjeux d'équité, de diversité et d'inclusion vécus par la clientèle (Lawson et al., 2023), ainsi qu'aux transformations technologiques du marché du travail, qui peuvent accentuer les risques d'exclusion liés à une faible littératie numérique (Jetha et al., 2023). Parallèlement, plusieurs acteurs documentent aussi la transformation de la profession, notamment par l'essor de la télé orientation (OCCOQ, 2020), la pénurie de main-d'œuvre (Duval, 2023) et le manque de ressources dans plusieurs secteurs, particulièrement en milieu scolaire (OPSQ, 2023). Ces changements s'accompagnent également d'enjeux de santé chez les professionnel(le)s, dont l'épuisement professionnel (Cook et al., 2021; Thompson et al., 2014).

Dans ce contexte déjà marqué par de multiples pressions, l'arrivée de l'intelligence artificielle (IA) dans la pratique professionnelle a le potentiel d'amplifier les enjeux existants. Il importe alors de porter un regard attentif sur le vécu des professionnel(le)s du champ de l'orientation face à l'IA. En effet, la disponibilité de nouveaux outils issus des mégadonnées et de l'IA a le potentiel de transformer la façon d'accompagner les personnes dans la planification de carrière (Nordin et Mathew, 2024). Les fournisseurs de ces technologies mettent de l'avant leur capacité à soutenir le développement de carrière (Jaspin et al., 2024) mais demeurent silencieux quant aux effets potentiels de ces outils sur l'exercice même des professions du champ de l'orientation. Peu de recherches se sont intéressées à la manière dont ces professionnel(le)s vivent l'intégration de l'IA dans leur pratique et il devient nécessaire de documenter empiriquement l'intégration de l'IA dans ce champ d'activité afin de mieux comprendre comment ces technologies transforment le travail des professionnel(le)s en orientation et d'alimenter la réflexion sur l'évolution de la profession.

La présente étude vise donc à décrire la manière dont l'IA transforme le travail d'orientation scolaire et professionnelle. Plus précisément, elle cherche à décrire l'implantation actuelle de l'IA dans la pratique des conseiller(-ère)s d'orientation (c.o.) ainsi que ses effets sur l'organisation du travail et les enjeux professionnels vécus par ces travailleur(-euse)s.

Ce faisant, cette étude contribue à documenter l'intégration de l'IA dans le champ de l'orientation, un domaine où les travaux empiriques portant sur l'expérience des professionnel(le)s à l'égard de leur travail demeurent limités. En s'appuyant sur des données recueillies auprès des c.o. au Québec, l'étude permet également de mieux comprendre la manière dont ces transformations se manifestent dans le contexte québécois. L'étude vise en outre à enrichir la littérature consacrée à la profession en examinant comment l'IA reconfigure l'organisation du travail en orientation, ainsi que la façon dont ces changements sont susceptibles

d'accentuer ou, au contraire, d'atténuer certains enjeux déjà présents dans la pratique. Enfin, elle contribue plus largement à la compréhension des transformations du travail induites par l'IA dans le champ de l'orientation scolaire et professionnelle. En effet, pour les professionnel(le)s de l'orientation, l'IA constitue un enjeu à double portée : elle a le potentiel de transformer à la fois leur propre activité professionnelle et le marché du travail dans lequel évoluent les personnes qu'ils accompagnent.

Cadre théorique

Une catégorisation pour comprendre l'utilisation de l'IA par les conseiller(-ère)s d'orientation et ses effets sur le travail

L'IA est généralement définie comme une catégorie de technologies permettant à un ordinateur d'accomplir des tâches qui requièrent habituellement des processus cognitifs humains, notamment la prise de décision adaptative (traduction libre de Tambe, Cappelli et Yakubovich, 2019). L'IA recouvre un éventail de principes technologiques, allant des systèmes fondés sur des règles aux approches apprenantes, comme l'apprentissage machine et l'apprentissage profond, jusqu'aux modèles d'IA générative (Obvia, 2025). Ces technologies se déclinent ensuite en diverses formes d'application dans le travail, telles que les agents conversationnels, les systèmes d'aide à la décision, l'automatisation intelligente et la robotique, qui traduisent l'IA en capacité d'action, d'interaction et de recommandation. L'hétérogénéité des technologies regroupées soulève la question de la manière d'en analyser les effets dans une perspective centrée sur les travailleur(-euse)s. Une avenue pour y parvenir consiste à déplacer l'attention des caractéristiques techniques des systèmes d'IA vers les finalités de leurs usages en contexte de travail. Dans cette perspective, l'analyse porte moins sur ce que l'IA permet techniquement de faire que sur la manière dont les travailleur(-euse)s interagissent avec ces technologies et les mobilisent dans l'exercice de leurs activités professionnelles. C'est notamment l'approche proposée par Trottier et al. (2024) qui s'intéressent aux différentes formes d'interaction entre les travailleur(-euse)s et les applications d'IA. Ceux-ci ont proposé une catégorisation des applications issues de l'IA en fonction de la façon dont elles sont utilisées par les travailleur(-euse)s. Compte tenu de la relation complexe qui unit les conseiller(-ère)s d'orientation à leur travail, il apparaît pertinent de mobiliser cette catégorisation pour examiner l'IA à partir des tâches qu'elle soutient et des usages qui en sont faits dans les pratiques professionnelles quotidiennes.

Dans la présente étude, les catégories issues de Trottier et al. (2024) sont regroupées en trois grandes finalités d'usage qui sont décrites ici et illustrées par des exemples issus de divers secteurs d'activité. La première catégorie renvoie aux applications d'IA qui sont utilisées pour le traitement de contenus textuels, visuels ou audios. Elles permettent notamment de traduire des documents, de rédiger des rapports ou des courriels, d'effectuer des recherches dans la jurisprudence ou les codes du bâtiment, de détecter des défauts de fabrication ou encore de soutenir certains calculs architecturaux. Les agents conversationnels (ex. Chat GPT, Claude) sont souvent employés dans cette catégorie mais plusieurs autres formes d'applications y figurent également, que ce soit des applications d'analyse documentaires assistées par l'IA ou de reconnaissance de la parole permettant la transcription. La deuxième catégorie regroupe les applications d'IA qui sont utilisées pour soutenir les interactions et les processus de communication. Il peut s'agir, notamment, de systèmes automatisés de prise de rendez-vous, de services de téléconsultation, de robots conversationnels mobilisés pour l'accueil ou l'intégration des clients.es, d'outils intelligents de formation, ou encore de plateformes facilitant le travail collaboratif en temps réel sur des documents ou des données. On y retrouve par exemple des applications employées pour le travail à distance (ex. Zoom, Teams) qui comportent des fonctionnalités issues de l'IA, telle que le sous-titrage en temps réel, la réduction du bruit, l'amélioration de l'image et de l'audio ou la détection des locuteurs. Enfin, la troisième catégorie rassemble les applications d'IA qui sont utilisées pour appuyer la prise de décision ou se substituer à certaines tâches plus centrales du travail. Ces applications peuvent, par exemple, analyser des radiographies, générer des plans de traitement médical ou des dessins architecturaux, soutenir certaines activités agricoles, formuler des recommandations de gestion ou encore simuler des situations professionnelles. À titre d'exemple, la réalité virtuelle dans le champ de l'orientation peut être utile pour expérimenter des contextes d'emplois. Ainsi, une personne peut vivre une expérience de

travail en interagissant avec un agent virtuel dans le cadre d'un scénario (ex. situation de vente) qui se modifie en réaction aux comportements de l'utilisateur(-trice). En distinguant ces trois finalités, cette catégorisation permet ainsi de mieux saisir la diversité des usages de l'IA au travail, depuis le soutien à des tâches informationnelles jusqu'à des transformations plus profondes des activités professionnelles et des processus décisionnels. Elle constitue, dans la présente étude, un point de départ pour examiner de quelle manière les activités de travail des c.o. sont affectées, ou non, par l'IA.

Cette catégorisation s'inscrit dans les travaux portant plus largement sur les transformations contemporaines du travail sous l'effet de l'intelligence artificielle. Plusieurs auteurs distinguent notamment les usages visant l'augmentation du travail humain de ceux relevant davantage d'une logique d'automatisation ou de substitution des tâches (Jarrahi, 2018; Raisch et Krakowski, 2021). Des travaux soulignent également les enjeux éthiques associés à l'usage de l'IA dans ces contextes, notamment en matière de confidentialité, de biais algorithmiques, de transparence des recommandations et de responsabilité professionnelle (Floridi et Cowls, 2022). Dans le cas des professions relationnelles, comme le conseil en orientation, ces transformations soulèvent des enjeux particuliers, puisque le travail repose largement sur l'interaction humaine, le jugement professionnel et la relation d'aide. L'IA peut alors agir à la fois comme outil de soutien à l'intervention (p. ex. accès à l'information, synthèse de contenus, soutien administratif) et comme source de tensions liées à la standardisation des pratiques, au risque de déshumanisation ou encore à la redéfinition du rôle professionnel (Dignum, 2019). Il importe alors de s'intéresser aux transformations du travail des c.o. par l'IA, l'étude s'appuie également sur le modèle de Humphrey et al. (2007), qui propose une conception intégrative du travail englobant à la fois les caractéristiques des tâches et du poste, ainsi que celles de l'environnement social et organisationnel dans lequel le travail s'inscrit. Selon ce modèle, le travail ne se réduit pas à ce que fait la personne, mais comprend également les relations qu'elle entretient, l'interdépendance que ses tâches nécessite avec d'autres et le contexte dans lequel son activité est réalisée. Ce modèle distingue notamment des caractéristiques motivationnelles (ex. autonomie, rétroaction provenant du travail), sociales (ex. interdépendance, collaboration avec les collègues) et contextuelles (ex. conditions de travail, charge de travail), lesquelles sont susceptibles d'influencer divers attitudes et comportements au travail, tels que la satisfaction, la performance ou encore le bien-être. Analyser le travail à partir de ces caractéristiques permet d'examiner comment l'intégration de l'IA dans la pratique de l'orientation transforme certaines caractéristiques du travail des c.o. et, par conséquent, la manière dont ils réalisent leurs activités professionnelles. Ce modèle est donc mobilisé dans la présente étude afin de décrire la façon dont le travail des c.o. est évolue dans un contexte transformé par l'IA.

Méthodologie

Devis de recherche, participants.es et procédure

Cette étude mobilise un devis descriptif afin de décrire l'expérience des conseiller(-ère)s d'orientation avec l'utilisation d'applications issues de l'IA. La collecte de données a été réalisée auprès de c.o. au Québec, membres de l'Ordre des conseillers et conseillères d'orientation du Québec (OCCOQ). Cet ordre professionnel à titre réservé a pour mandat d'assurer la protection du public en régissant l'exercice de la profession. Il regroupe 2 626 membres au sein de 5 secteurs d'activités : éducation, employabilité, organisationnel, réadaptation et santé mentale et pratique privée (Rapport annuel 2024-2025). Une collecte de données quantitatives et qualitatives par sondage en ligne envoyé à l'ensemble des membres via une communication courriel de l'OCCOQ a été réalisée en 2024. [1]

Considérant le caractère émergent et encore peu documenté des usages de l'IA dans le domaine de l'orientation, un sondage a été privilégié. Ce choix méthodologique visait à obtenir un portrait global des usages, perceptions et enjeux associés à l'IA chez les conseiller(-ère)s d'orientation, tout en permettant de documenter la diversité des réalités vécues selon les contextes de pratique. Au total, 314 c.o. de toutes

1 L'étude a obtenu l'approbation éthique de l'Université du Québec à Montréal (#2024-6811). Les participant(e)s ont fourni un consentement éclairé incluant l'utilisation de verbatims anonymisés à des fins de recherche. Une attention particulière a été portée à la confidentialité lors de la présentation des extraits, notamment en limitant certaines informations pouvant accroître le risque d'identification des répondant(e)s.

les régions du Québec ont répondu au sondage (79,4 % femmes, 18,1 % hommes, 2,5 % préférant ne pas répondre[2]), ce qui représente un taux de réponse de 11.96 %. Les données ont fait l'objet d'un traitement des valeurs manquantes selon une approche de conservation des cas disponibles. L'ensemble des réponses a été conservé, à l'exception des participant(e)s (n = 17) n'ayant complété que les questions sociodémographiques initiales (c.-à.-d., les variables « secteur » et « ancienneté »), lesquels ont été exclus des analyses en raison de l'absence de données sur les variables d'intérêt. Les autres observations (n = 297) ont été conservées, et le nombre de cas valides varie selon les analyses. Le tableau 1 présente les caractéristiques sociodémographiques de l'échantillon.

Tableau 1

Caractéristiques sociodémographiques des participants.es

	n = 314 (%)	n = 2 626 (%)
Genre		
Femme	79,4	83,0
Homme	18,1	17,0
Autre	0,0	n.d.
Préfère ne pas répondre	2,5	-
Âge		
Moins de 25	0,0	0,0
25-34	11,4	19,5
35-44	34,3	27,0
45-54	34,7	30,0
55 et plus	19,5	23,5
Nombre d'heures travaillées hebdomadairement		
Moins de 21	5,5	n.d.
22-35	51,3	n.d.
Plus de 35	43,3	n.d.
Revenu annuel ($)		
Moins de 20 000	0,9	n.d.
20 000-39 999	2,2	n.d.
40 000-59 000	14,8	n.d.
60 000-79 000	26,1	n.d.
80 000-99 999	46,5	n.d.
100 000-119 999	8,3	n.d.
120 000 et plus	1,3	n.d.
Ancienneté dans la profession (années)		
Moins de 2	4,8	n.d.
2-5	10,5	n.d.
6-10	17,2	n.d.
11-15	18,5	n.d.
16 et plus	49,0	n.d.

Questionnaire

Le questionnaire administré via Lime Survey comporte 40 questions (échelle de type Likert en cinq points), 7 questions sociodémographiques ainsi que des questions ouvertes recueillant les commentaires des participants.es pour chaque variable. Plus spécifiquement, les variables suivantes ont été mesurées dans le sondage :

Utilisation d'applications issues de l'IA.[3] Basé sur la catégorisation de Trottier et al. (2024), 3 items ont été développés pour mesurer de façon formative l'utilisation d'applications issues de l'IA (1 item par type d'application[4]). À cette fin, chaque catégorie a été définie de manière à permettre aux répondant(e) s d'identifier clairement le type d'applications visé, puis d'indiquer leur niveau d'utilisation de celles-ci. Des exemples issus de la pratique dans le champ de l'orientation ont été fournis pour faciliter la compréhension. Par exemple, pour les applications issues de l'IA soutenant les interactions, l'item était formulé ainsi : *« Certaines applications de l'IA permettent d'interagir avec des clients.es ou des collègues. Par exemple, un agent conversationnel (chatbot) pour réaliser une évaluation de départ avec un.e client.e ou étudiant.e (…). Dans le cadre de mon travail, j'utilise ce genre d'application… (de*

2 Cette proportion est similaire de celle de l'OCCOQ qui rapporte que 83% de ses membres sont des femmes et 17% sont des hommes (Rapport annuel 2024-2025).

3 Ces items étant de nature formative, ils ne visent pas à capter un construit latent unidimensionnel; en conséquence, le calcul d'un coefficient alpha de Cronbach n'est pas produit.

4 1 item mesure l'utilisation des applications soutenant le traitement de texte, de visuel ou d'audio, 1 autre les applications soutenant les interactions et le dernier item mesure l'utilisation des applications soutenant la prise de décision ou remplaçant les tâches centrales.

	n = 314 (%)	*n* = 2 626 (%)
Secteur d'activité		
Éducation	54,8	52,0
Employabilité	16,7	12,0
Organisationnel	9,0	10,5
Réadaptation et santé mentale	5,4	4,5
Pratique privée	14,1	14,5
Autres	0,0	6,5
Lieu de résidence		
Bas-Saint-Laurent-Gaspésie	5,6	3,5
Saguenay-Lac-Saint-Jean	3,0	3,6
Québec	19,7	27,2
Mauricie-Bois-Francs	7,7	6,3
Estrie	12,8	10,2
Laval-Laurentides-Lanaudière	8,5	11,5
Montréal	20,9	19,0
Montérégie	15	14,3
Outaouais	2,6	2,2
Abitibi-Témiscamingue	1,3	0,8
Baie-James	0,9	0,3
Côte-Nord	2,1	1,2

« jamais » à « toujours »). » Un participant(e) répondant «jamais» est alors considéré être un non-utilisateur(-trice). La question qui lui était posée était alors: « Si c'était disponible, j'utiliserais ce type d'application ».

Utilisabilité des applications d'IA (alpha ,84; ,91; ,83). 9 questions adaptées de Venkatesh et al. (2011) et de Naicker et Van Der Merwe (2018) ont mesuré l'utilisabilité perçue des d'applications d'IA (3 items par type d'application). Ainsi, l'item original *« Je crois que la technologie mobile est utile »* a été reformulé de la façon suivante : *« Certaines applications de l'IA permettent d'interagir avec des clients.es ou des collègues (…). Ce type d'application est utile (de « totalement en désaccord » à « totalement en accord ») »*. Pour les participants.es ayant rapporté ne pas utiliser d'application issue de l'IA, l'item était plutôt: *« Ce type d'application semble facile d'utilisation »*.

Transformation de l'organisation du travail. 8 items ont été adaptés du *Work Design Questionnaire* de Morgeson et Humphrey (2006) afin de mesurer la façon dont les applications d'IA influencent les caractéristiques de l'organisation du travail. Plus spécifiquement, les caractéristiques suivantes ont été mesurées en raison de leur pertinence dans le cadre de travailleurs(euse)s professionnel(le)s utilisant des applications issues de l'IA : autonomie, charge de travail, variété des tâches, sens et complexité du travail, interdépendance des tâches, confort du travail et collaboration avec les collègues. À titre d'exemple, l'item original du questionnaire portant sur la variété des tâches originalement formulé ainsi : *« Mon travail implique une grande variété de tâches » a été adapté pour devenir : « Selon vous, comment ces applications issues de l'IA modifient-elles votre travail ? Mes tâches sont … (de « beaucoup moins variées » à « beaucoup plus variées »). »*

Préoccupations en lien avec l'IA.[3] 7 items adaptés de *l'Information Technology Suspicion Scale* de Lyons et al. (2011) et de Trottier et al. (2024) ont contribué à la mesure formative des préoccupations des c.o. en lien avec l'IA. Les dimensions suivantes ont été mesurées : confidentialité, confiance, formation, jugement professionnel, remplacement des tâches répétitives et aimées, remplacement de l'emploi. Par exemple, l'item « Je suis confiant dans le système » a été adapté pour devenir : *« Lorsque vous pensez aux différentes applications de l'IA que vous utilisez, vous vous dites que ces applications sont dignes de confiance (de « totalement en désaccord » à «totalement en accord».) »*. Ces mêmes questions ont été posées aux participants.es n'utilisant pas d'IA.

Préparation à l'adoption des applications issues de l'IA (α = ,86). 5 items ont été adaptés de Venkatesh et al. (2011), Franke et al. (2019) et Taherdoost (2018) pour mesurer le niveau de préparation à adopter l'IA. Ainsi, l'item « Apprendre à utiliser le e-service est facile pour moi » a été adapté et est devenu : « Il me sera facile d'utiliser les applications de l'IA ». 1 item supplémentaire a été formulé pour mesurer les ressources disponibles dans le milieu : *« Mon milieu a les ressources nécessaires pour introduire les applications de l'IA »*.

Variables de contrôle. Les variables sociodémographiques suivantes ont été mesurées afin de décrire l'échantillon et d'en contrôler statistiquement les effets: genre, âge, nombre d'heures travaillées, revenu annuel, ancienneté dans le métier, secteur activité et lieu de résidence. Suivant les recommandations de Becker (2005), seules les variables ayant une corrélation significative avec les variables dépendantes à l'étude ont été introduites dans les analyses de régression.

Analyse des données

Les données collectées ont été analysées à l'aide du logiciel SPSS 29.0 et ont fait l'objet d'analyses descriptives (fréquences, moyennes et écarts-types) et inférentielles (corrélations et analyses de régressions multiples). Le tableau 2 présente quant à lui les corrélations entre les variables à l'étude.[5] Les données qualitatives (797 commentaires partagés par 179 c.o.) ont fait l'objet d'une analyse thématique suivant l'approche de Paillé et Mucchielli (2016) dans NVivo 15.0. Les commentaires ont été codés de façon déductive en regard des thèmes à l'étude (ex. utilité de l'IA, effets sur le travail) ainsi que de façon inductive en laissant émerger de nouveaux thèmes au fil de l'analyse (ex. préoccupations relatives aux effets de l'IA sur les client(e)s). Les extraits ont été sélectionnés en fonction de leur capacité à illustrer, nuancer ou contredire les résultats quantitatifs, ainsi qu'à faire émerger de nouveaux thèmes qui n'avaient pas été identifiés préalablement. Le tableau 3 présente les thèmes et sous-thèmes résultant de l'analyse.

Résultats

Transformation du travail des c.o. par l'IA

Les résultats détaillés ci-bas montrent que les c.o. ont déjà intégré des applications issues de l'IA dans leur pratique. Les prochaines sections présentent l'utilisation qu'ils en font ainsi que leur utilité perçue. [6] [7]

Applications soutenant le travail par le traitement de texte, de visuel ou d'audio

En ce qui a trait aux applications qui permettent de traiter du texte ou de reconnaître la voix ou les visages, 43,9 % des participants.es rapportent en utiliser dans leur travail avec une fréquence d'utilisation variable (Tableau 4).

Tableau 4

Distribution des fréquences des réponses au sondage – Utilisation d'applications d'IA soutenant le traitement de texte, de visuel ou d'audio

	%
Jamais	56,1
Rarement	19,3
Parfois	17,6
Souvent	5,7
Toujours	1,4

Les participants.es qui ont partagé se servir de ce type d'application (souvent Chat GPT) ont dit s'en servir principalement pour des activités telles que la révision et la traduction de texte, la rédaction de CV ou encore pour générer des idées : « Pour ma part, je l'utilise aussi parfois pour la rédaction de CV, mais également pour avoir des idées de sujet d'intervention avec ma clientèle en demandant d'avoir des tableaux synthèses. » Femme, entre 25 et 34 ans, employabilité (répondante 281). « J'utilise l'IA pour trouver des mises en situation d'entrevue plausibles et concrètes selon des domaines spécifiques d'études. » Femme, entre 45 et 54 ans, employabilité (répondante 284). « J'utilise la reconnaissance vocale pour mes notes évolutives. » Homme, entre 45 et 54 ans, éducation (répondant 285).

5 Les diagnostics de colinéarité réalisés pour examiner le lien entre l'utilisation d'applications issues de l'IA et leur utilité perçue indiquent des index de condition variant entre 8,87 et 11,82, ce qui demeure sous les seuils critiques généralement retenus (<30).

6 Pour l'ensemble des variables à l'étude, des analyses de différences de moyennes ont été réalisées à l'égard des caractéristiques sociodémographiques des participants.es. Par souci d'espace, seuls les résultats significatifs sont rapportés.

7 Conformément à l'engagement éthique pris envers les participants.es de l'étude, des résultats descriptifs préliminaires ont été diffusés aux c.o. dans le cadre d'une communication de l'OCCOQ (Trottier, 2025).

Tableau 2

Moyennes (M), écarts-types (ÉT) et corrélations des variables à l'étude

	M	ÉT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. Utilisation A[1]	1,77	1,02	-																
2. Utilisation projetée A	3,07	1,01	-	-															
3. Utilisation B[2]	2,19	1,42	,23**	,16	-														
4.Utilisation projetée B	2,79	1,12	,12	,49**	-	-													
5. Utilisation C[3]	1,32	0,74	,29**	,10	,28**	,02	-												
6. Utilisation projetée C	3,49	0,99	,14	,42**	,03	,47**	-	-											
7. Utilité A	3,79	0,75	,58**	-	,21**	,27*	,22**	,47**	-										
8. Utilité projetée A	3,28	0,68	-	,65**	,04	,49**	,21*	,50**	-	-									
9. Utilité B	3,90	0,85	,17*	,28	,70**	-	,12	,34**	,48**	,16	-								
10. Utilité projetée B	2,96	0,87	,14	,37**	-	,81**	,07	,56**	,32*	,56**	-	-							
11. Utilité C	3,82	0,67	,21*	,19	,07	-,29	,32**	-	,41**	,52*	,30**	-,16	-						
12. Utilité projetée C	3,42	0,75	,10	,51**	,01	,50*	-	,83**	,49**	,63**	,43**	,59**	-	-					
13. Autonomie	3,44	0,75	,39**	-	,14	-	,17*	-	,42**	-	,32**	-	,36**	-	-				
14. Autonomie non-util.[4]	2,73	0,79	-	,50**	-	,34**	-	,37*	-	,55**	-	,28*	-	,54**	-	-			
15. Charge	3,23	0,65	-,30**	-	-,05	-	-,10	-	-,34**	-	-,20*	-	-,24*	-	-,14	-	-		
16. Charge non-util.	3,10	0,74	-	-,23	-	-,34**	-	-,26*	-	-,20	-	-,25*	-	-,27*	-	-,23*	-	-	
17. Variété	2,99	0,83	,18*	-	,05	-	,16*	-	,13	-	,22*	-	,08	-	,39**	-	-,06	-	-
18. Var. non-util.	2,72	0,61	-	,19	-	,26*	-	,18	-	,12	-	,18	-	,14	-	,43**	-	-,13	-
19. Sens	3,29	0,82	,34**	-	,05	-	,18*	-	,35**	-	,30**	-	,26*	-	,46**	-	-,22**	-	,50**
20. Sens non-util.	2,99	0,79	-	,25	-	,37**	-	,41**	-	,31*	-	,31*	-	,41**	-	,66**	-	-,11	-
21. Complexité	2,94	0,85	-,33**	-	-,08	-	-,21**	-	-,43**	-	-,26**	-	-,25*	-	-,23**	-	,44**	-	,02
22. Compl. non-util.	2,79	0,83	-	-,14	-	-,21	-	-,25*	-	-,27*	-	-,33**	-	-,33**	-	-,06	-	,33**	-
23. Interdépendance	3,18	0,90	-,35**	-	-,05	-	,02	-	-,28**	-	-,20*	-	-,30**	-	-,36**	-	,26**	-	-,33**
24. Interd. non-util.	2,78	0,90	-	-,09	-	-,08	-	-,13	-	-,01	-	-,13	-	-,01	-	-,07	-	,29**	-
25. Confort	3,04	0,99	,44**	-	,17*	-	,15	-	,45**	-	,45**	-	,46**	-	,48**	-	-,36**	-	,33**
26. Confort non-util.	2,88	0,78	-	,29*	-	,29*	-	,23	-	,35**	-	,30*	-	,33**	-	,55**	-	-,15	-
27. Collaboration	2,80	0,90	,09	-	,25**	-	,13	-	,19*	-	,10	-	,04	-	,25**	-	-,07	-	,26**
28. Collab. non-util.	2,72	0,77	-	,20	-	,12	-	,09	-	,23	-	,08	-	,23	-	,52**	-	,00	-
29. Genre	-[5]	-	-,03	,08	,10	,01	,10	,05	,00	,03	,13	-,08	,09	,00	,02	-,03	-,20*	,08	,17*
30. Âge	-	-	-,01	-,04	-,10	-,07	-,02	-,09	-,16*	-,11	-,16	-,10	-,12	-,15	-,15	,04	,11	,27*	,07
31. Hres travaillées	-	-	,16*	-,06	,06	,12	,11	,10	,07	-,09	,05	,07	,00	,03	-,01	,06	-,08	-,11	,07
32. Revenu annuel	-	-	,07	-,11	-,04	,06	,07	,10	,09	,02	,06	,07	,01	,09	-,12	,13	-,09	,00	,04
33. Ancienneté	-	-	,01	-,18	,02	,17	,05	-,03	-,05	-,20*	,05	,12	-,07	-,05	-,07	-,13	,13	,12	,09
34. Secteur d'activité	-	-	,11	,00	,16**	-,10	,02	-,07	,11	-,07	,21**	-,01	,18	-,04	,14	-,09	-,08	,34**	,06
35. Lieu de résidence			-,03	,07	-,05	,07	,00	,06	,02	,12	,02	,11	-,04	,06	,09	,17	-,07	-,02	,02

Suite…	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.
1. Utilisation A[1]																		
2. Utilisation projetée A																		
3. Utilisation B[2]																		
4.Utilisation projetée B																		
5. Utilisation C[3]																		
6. Utilisation projetée C																		
7. Utilité A																		
8. Utilité projetée A																		
9. Utilité B																		
10. Utilité projetée B																		
11. Utilité C																		
12. Utilité projetée C																		
13. Autonomie																		
14. Autonomie non-util.[4]																		
15. Charge																		
16. Charge non-util.																		
17. Variété																		
18. Var. non-util.	-																	
19. Sens	-	-																
20. Sens non-util.	,47**	-	-															
21. Complexité	-	-,11	-	-														
22. Compl. non-util.	,10	-	,09	-	-													
23. Interdépendance	-	-,26**	-	,12	-	-												
24. Interd. non-util.	,09	-	-,02	-	,41**	-	-											
25. Confort	-	,48**	-	-,34**	-	-,44**	-	-										
26. Confort non-util.	,30**	-	,53**	-	-,12	-	-,20	-	-									
27. Collaboration	-	,40**	-	-,09	-	-,14	-	,19*	-	-								
28. Collab. non-util.	,34**	-	,49**	-	,19	-	,33**	-	,44**	-	-							
29. Genre	,07	,05	-,06	-,10	,03	-,15	,14	,22**	-,12	,02	,06	-						
30. Âge	,12	-,07	,20	,23**	,05	,02	-,01	-,15	,12	-,05	,04	-,06	-					
31. Hres travaillées	,00	,17*	,11	-,02	,11	-,05	-,12	,05	,10	,08	-,08	,00	-,05	-				
32. Revenu annuel	,01	,07	,27*	,07	-,07	,01	-,15	-,06	,05	,04	,07	,06	,23**	,43**	-			
33. Ancienneté	,08	-,05	,18	,16*	,03	,03	,08	-,11	-,06	-,06	-,03	,04	,64**	,08	,36**	-		
34. Secteur d'activité	-,07	,07	-,17	-,19*	,04	-,08	,01	,29**	-,04	,06	-,10	-,01	,00	-,20**	-,21**	-,08	-	
35. Lieu de résidence	-,09	,07	-,01	,09	-,07	-,01	-,14	,00	,26*	-,15	,09	-,09	-,04	-,11	,03	-,10	,00	-

Note. **$p < ,01$; *$p < ,05$. [1] A : applications soutenant le traitement de texte, de visuel ou d'audio. [2] B : applications soutenant les interactions. [3] C : applications remplaçant des tâches ou soutenant la prise de décision. [4] Non-util. : non utilisateur.trice de l'IA. [5]Les variables sociodémographiques étant de nature ordinale, des moyennes ne peuvent pas être produites. Les fréquences relatives à ces variables sont présentées dans la description de l'échantillon (Tableau 1).

Tableau 3

Thèmes et sous-thèmes issus de l'analyse thématique

Thèmes	Sous-thèmes
Utilisation d'applications IA	Types d'applications utilisées pour soutenir le traitement de contenus textuels, audios ou visuels
	Types d'applications utilisées pour soutenir les interactions
	Types d'applications utilisées pour soutenir la prise de décision ou remplacer les tâches centrales
	Exemples de tâches soutenues par des applications soutenant le traitement de contenus textuels, audios ou visuels
	Exemples de tâches soutenues par des applications soutenant les interactions
	Exemples d'applications soutenant la prise de décision ou remplaçant les tâches centrales
	Fréquence d'utilisation d'applications issues de l'IA
Utilisabilité des applications IA	Utilité perçue
	Facilité d'utilisation perçue
	Amélioration perçue de l'efficacité dans le travail
	Diminution perçue de l'efficacité dans le travail
Effets sur l'organisation du travail	Autonomie (augmentation/diminution)
	Charge de travail : quantité (augmentation/diminution)
	Charge de travail : cadence (augmentation/diminution)
	Charge de travail : nouvelles tâches
	Variété des tâches (augmentation/diminution)
	Sens du travail (augmentation/diminution)
	Complexité du travail (augmentation/diminution)
	Interdépendance du travail (avec collègues) (augmentation/diminution)
	Confort/inconfort du travail
	Collaboration avec les collègues (augmentation/diminution-isolement)
	Sentiment d'efficacité
Préoccupations en lien avec IA	Enjeu de confidentialité des données
	Enjeu de confiance/fiabilité
	Crainte/espoir du remplacement de tâches répétitives
	Crainte du remplacement de tâches appréciées
	Difficulté/menace à l'utilisation du jugement professionnel
	Crainte du remplacement de son emploi
	Crainte de déshumanisation du travail
	Crainte du remplacement d'autres emplois sur le marché du travail
	Préoccupations en lien avec la clientèle
	Questionnement quant au droit d'utiliser l'IA
Préparation à l'IA	Manque de compétences pour utiliser des applications de l'IA
	Besoin de formation pour comprendre l'IA
	Confort/inconfort face à l'utilisation de nouvelles applications
	Présence/absence de ressources du milieu pour soutenir l'introduction de l'IA

Des différences quant à la fréquence d'utilisation sont observées selon le secteur d'activité : les participants.es du secteur de l'éducation utilisent significativement moins d'applications issues de l'IA que les c.o. des secteurs d'employabilité ($t(57,27) = -3,12$, $p < ,01$; d de Cohen de -,62, IC à 95 % [-0,95;-0,28]) et organisationnel ($t(29,01) = -3,71$, $p < ,01$; d de Cohen de -1,01, IC à 95 % [-1,43;-0,58]). Les participants.es du secteur organisationnel en utilisent davantage que les c.o. des secteurs de réadaptation et santé mentale ($t(41) = 2,80$, $p < ,01$; d de Cohen de ,87, IC à 95 % [0,23 ; 1,51]) et de pratique privée ($t(67) = 2,45$, $p < ,05$; d de Cohen de ,61, IC à 95 % [0,11 ; 1,11]). À cet effet, le commentaire suivant souligne que les c.o. dont l'employeur est le gouvernement n'envisagent pas l'arrivée de l'IA à court terme : « Je travaille au gouvernement, donc j'anticipe que ce type d'application ne sera pas disponible avant plusieurs années. » Femme, entre 25 et 34 ans, organisationnel (répondante 300).

Des différences significatives sont également observées quant au revenu. Les c.o. ayant un revenu entre 80 000$ et 99 999$ rapportent utiliser significativement moins ce type d'IA que les c.o. ayant un revenu entre 100 000$ et 119 999$ ($t(20,96) = -2,98$, $p < ,01$; d de Cohen de -,98, IC à 95 % [-1,48;-0,47]) ainsi que les c.o. ayant un revenu de 120 000$ et plus ($t(108) = -3,82$, $p < ,01$; d de Cohen de -2,24, IC à 95 % [-3,42;-1,05]). Ces résultats doivent être nuancés et compris en lien avec le secteur d'activité; les salaires dans le secteur de l'éducation sont par exemple significativement moins élevés que dans le secteur organisationnel ($t(28.31) = -2,84$, $p < ,01$; d de Cohen de ,82, IC à 95 % [0,38 ; 1,25]).

Pour les c.o. qui ont indiqué ne pas utiliser ce type d'application, seuls 36 % indiquent qu'ils l'utiliseraient si c'était disponible. Mais parmi celles-ci et ceux-ci, plusieurs évoquent le fait qu'ils ne connaissent pas ces applications et donc ne sont pas certains.es de leur utilité : « Je ne connais pas ces outils. Je pourrais peut-être en utiliser, mais je ne suis pas certaine. » Femme, entre 35 et 44 ans, employabilité (répondante 294). « Je n'y connais rien de plus que ce qu'on lit dans les médias, alors je ne peux évaluer l'utilité ou la pertinence de ces outils. » Homme, 55 ans ou plus, éducation (répondant 157).

Enfin, lorsque l'on demande aux c.o. si ce type d'application qu'ils utilisent est utile, ils répondent positivement et perçoivent une utilité assez grande avec une moyenne de 3,79 ($ÉT = 0,75$). Ce résultat est cohérent avec les nombreux exemples d'utilisation évoqués plus haut par des participants.es. Les c.o. qui n'utilisent pas ce type d'application rapportent quant à eux une utilité anticipée significativement inférieure avec une moyenne de 3,28 ($ÉT = 0,68$; $t(289) = 5,73$, $p < ,01$; d de Cohen de ,71, IC à 95 % [0,46; 0,96]).

Outre cette perception plutôt positive de l'utilité des applications soutenant le traitement de texte, de visuel ou d'audio, d'autres en soulignent les limites : « Les résumés automatiques des rencontres avec les patients pourraient être utiles, mais la technologie demeure encore inadéquate. L'IA n'est pas en mesure de déterminer qui dit quoi. » Pratique privée (genre et âge non partagés, répondant.e 267).

Applications issues de l'IA soutenant les interactions

En ce qui a trait aux applications qui permettent de soutenir les interactions, près de la moitié des participants.es (48 %) rapportent en utiliser dans leur travail. Il est à remarquer que pour les c.o. qui les utilisent, la fréquence d'utilisation est supérieure aux applications précédentes avec 25,1 % qui les utilisent *souvent ou toujours* (Tableau 5).

Les applications utilisées par les c.o. sont principalement de 2 types. Tout d'abord il y a celles permettant la consultation à distance :

> « C'est surtout l'utilisation de Teams pour la téléconsultation qui est utilisée pour les quelques rencontres virtuelles que nous avons. C'est particulièrement utile lorsque nous ne sommes pas physiquement dans les centres avec nos élèves ou pour rejoindre la clientèle qui n'a pas de moyen de transport pour venir nous rencontrer à nos bureaux.» Femme, entre 45 et 54 ans, éducation (répondante 309).

Ensuite, il y a les applications permettant la prise de rendez-vous automatisée ou le soutien dans des tâches plus administratives : « J'utilise un logiciel de prise de rendez-vous qui se synchronise avec mon calendrier Outlook et permet aux élèves de prendre rendez-vous de manière autonome. Cela facilite

Tableau 5

Distribution des fréquences des réponses au sondage – Utilisation des applications d'IA soutenant les interactions

	%
Jamais	52,0
Rarement	9,7
Parfois	13,3
Souvent	17,2
Toujours	7,9

grandement mon travail (ça m'enlève une tâche administrative) et favorise leur autonomie.» Femme, entre 35 et 44 ans, éducation (répondante 10).

Il importe de rapporter que plusieurs c.o. ont indiqué ne pas être confortables avec l'utilisation de robots conversationnels pour interagir avec la clientèle, l'extrait suivant est représentatif de plusieurs témoignages à cet égard: « Je n'aime pas particulièrement l'idée de déléguer des tâches-conseils à des chatbot.» Femme, entre 35 et 44 ans, Réadaptation et santé mentale (répondante 69).

Enfin, certains soulèvent des enjeux en lien avec les outils de télécommunication pour leur clientèle : « Facile d'utilisation pour les professionnel(le)s, mais ce ne sont pas toutes les personnes clientes qui sont nécessairement à l'aise avec la technologie ou qui en sont équipées à leur domicile.» Femme, 55 ans ou plus, organisationnel (répondante 270).

Pour les c.o. qui ont indiqué ne pas utiliser ce type d'application, seuls 27,7 % indiquent qu'ils l'utiliseraient si c'était disponible. D'ailleurs, les commentaires suivants explicitent cette réticence exprimée par plusieurs à l'égard de ce type d'application soutenant les interactions :

> « Je travaille auprès de personnes qui présentent une déficience intellectuelle, un trouble du spectre de l'autisme ou une déficience physique. Au regard de la complexité des profils, je verrais mal ce genre d'application être utilisé pour interagir avec la clientèle. Ceci étant dit, ne connaissant rien à ces applications, je serais peut-être étonnée de connaitre les possibilités si j'en savais plus.» Femme, entre 35 et 44 ans, réadaptation et santé mentale (répondante 295).

Il y a toutefois également des c.o. disposés à explorer davantage ce type d'application, comme en témoigne la personne suivante :

> « Je travaille en téléconsultation à 100 % avec Teams. Je serais curieuse et enchantée d'avoir accès à une plateforme spécialisée en orientation et facilitant le partage de document et la compilation de données, possiblement, même la rédaction d'une ébauche de rapport. Si l'apport de l'IA est utilisé comme piste de réflexion, de point de départ à l'ouverture d'avenues non explorées ou à une exploration divergente, bref, comme un outil supplémentaire d'évaluation, comme par exemple, les outils psychométriques, je pourrais être intéressée à en apprendre plus et à les expérimenter, le cas échéant.» Femme, entre 45 et 54 ans, pratique privée (répondante 311).

Enfin, lorsque l'on demande aux c.o. si ce type d'application qu'ils utilisent est utile, ils répondent positivement et perçoivent une forte utilité avec une moyenne de 4,08 (*ÉT* = ,76). Le travail à distance que permettent ces applications est sans doute lié à cette utilité perçue comme en témoigne la conseillère suivante : « J'adore travailler à distance et ces outils nous donnent une très grande flexibilité et évitent les déplacements qui prennent beaucoup de temps! Je peux équilibrer ma routine plus facilement.» Femme, entre 35 et 44 ans, organisationnel (répondante 275).

Chez les non-utilisateurs.rices d'IA, cette moyenne est plus faible (M = 2,96, $ÉT$ = 0,87), ce qui est significativement plus faible que les utilisateurs.rices ($t(242) = 10,76$, $p < ,01$; d de Cohen de 1,38, IC à 95 % [1,10; 1,66]). Les réticences évoquées plus haut sont potentiellement liées à cette perception.

Applications d'IA remplaçant des tâches ou soutenant la prise de décision

En ce qui a trait aux applications qui permettent de remplacer les tâches, très peu de c.o. (9,8 %) rapportent en utiliser dans leur travail. De plus, parmi les utilisateurs.trices, la fréquence d'utilisation est

Tableau 6

Distribution des fréquences des réponses au sondage – Utilisation des applications d'IA remplaçant des tâches ou soutenant la prise de décision

	%
Jamais	80,2
Rarement	11,0
Parfois	6,2
Souvent	1,8
Toujours	0,7

relativement faible (Tableau 6).

Les c.o. ont partagé se servir de ce type d'application d'IA pour une diversité de finalités. L'expérimentation de métiers au moyen de la réalité virtuelle a été mentionnée par plusieurs participant(e)s, bien qu'il ne s'agisse pas à proprement parler d'une application relevant de l'IA. En revanche, aucun participant(e) n'a indiqué recourir à la réalité virtuelle pour soutenir le développement des compétences de ses clients.

D'autres exemples ont été partagés par des c.o. où l'IA leur permet de prendre en charge des tâches que l'on pourrait décrire comme étant plus centrales à la profession : « [J'utilise] Chat GPT pour créer des questionnaires d'entrevues diversifiés et pour créer des plans de formation que je dois produire. » Femme, entre 35 et 44 ans, employabilité (répondante 224). « J'utilise Chat GPT pour monter des conférences ou des blogues sur des thématiques.» Femme, entre 35 et 44 ans, employabilité (répondante 232).

Et lorsque l'on questionne les conseiller(ère)s qui utilisent ce type d'application sur leur utilité/efficacité, ils répondent positivement et perçoivent une grande utilité avec une moyenne de 3,82 (*É.T.* = ,67). Les c.o. qui n'utilisent pas d'IA rapportent quant à eux une perception d'utilité significativement plus faible avec une moyenne de 3,42 (*ÉT* = 0,75; $t(262) = 4,27$, $p < ,01$; *d* de Cohen de ,55, IC à 95 % [0,29; 0,80]).

Quels effets de l'IA sur l'organisation du travail des c.o. ?

Autonomie

Les résultats indiquent que plus les c.o. utilisent des applications soutenant le traitement de texte, de visuel ou d'audio, plus leur autonomie est élevée, ($\beta = ,39$, $p < ,01$) et il en va de même avec l'utilisation des applications soutenant les interactions ($\beta = ,16$, $p < ,05$). La fréquence d'utilisation des applications remplaçant les tâches, simulant des situations ou soutenant les décisions n'est quant à elle pas associée à une plus grande autonomie ($\beta = ,08$, $p = ,28$) (voir le tableau 7).

Tableau 7

Analyse de régression: autonomie en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	2,53	,17	—	15,10	< ,001
Utilisation – traitement (texte. visuel. audio)	,27	,05	,39	5,56	< ,001
Utilisation – interactions	,09	,04	,16	2,28	,02
Utilisation – prise décision, remplacement tâches	,07	,06	,08	1,09	,28

Variable dépendante : autonomie
Note. $R^2 = ,19$, R^2 ajusté = ,17, $F(3, 172) = 13,24$, $p < .001$.

L'autonomie dans le travail avec l'IA est jugée plus grande pour les c.o. qui utilisent l'IA (*M* = 3,44, *ÉT* = 0,75) alors que les c.o. qui n'utilisent pas d'IA anticipent que cette autonomie sera diminuée (*M* = 2,94, *ÉT* = 0,85) et cette différence est significative ($t(256) = 4,80$, $p < ,01$; *d* de Cohen de ,64, IC à 95 % [0,37; 0,91]).

Peu de commentaires abordent spécifiquement les impacts de l'IA sur l'autonomie, outre ce commentaire d'une conseillère évoquant la perte d'autonomie potentielle dans le choix des outils de travail :

> « Si, dans mon milieu, tout le monde se met à utiliser l'IA, comment est-ce que je pourrai suivre en conservant mes outils de travail « non-IA »? Dans cette optique, est-ce que nous serons vraiment libres de faire nos choix, selon nos valeurs face à l'IA? » Femme, entre 45 et 54 ans, éducation (répondante 315).

Charge de travail

Les analyses révèlent que plus les c.o. utilisent les applications soutenant le traitement de texte, de visuel ou d'audio, moins leur charge de travail est grande (β = -,29, p < ,01). Aucune relation significative n'est observée pour les applications soutenant les interactions et remplaçant les tâches ou soutenant la prise de décision (respectivement β = -,04, p= ,64; β = -,03, p = ,69). Aucune différence significative n'est observée quant à la perception de charge de travail en lien avec l'IA entre les c.o. utilisant l'IA et ceux n'utilisant pas l'IA (t(256) = -0,56, p = ,58) (voir le tableau 8).

Tableau 8

Analyse de régression: charge de travail en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	3,90	,29	—	13,55	< ,001
Utilisation – traitement (texte. visuel. audio)	-,21	,06	-,29	-3,84	< ,001
Utilisation – interactions	-,02	,04	-,04	-0,47	,64
Utilisation – prise de décision, remplacement tâches	-,03	,07	-,03	-0,40	,69
Genre	-,34	,13	-,20	-2,68	< ,01

Variable dépendante : charge de travail
Note. R^2 = ,13, R^2 ajusté = ,11, $F(4, 157) = 5,76$. p < ,001.

Dans les commentaires, plusieurs conseiller(-ère)s témoignent d'une transformation de la charge de travail, l'IA remplaçant des tâches au profit de nouvelles qui apparaissent : « La charge, selon moi, va se « déplacer ». Les tâches routinières qui ne sont pas toujours à valeur ajoutée vont pouvoir être optimisées et cela nous permettra de passer plus de temps avec « l'humain ». » Femme, entre 35 et 44 ans, éducation (répondante 220).

D'autres commentaires évoquent plus directement la notion d'efficacité, indication d'une potentielle cadence augmentée : « Cela nous aide à être plus rapides et plus efficaces. » Femme, entre 35 et 44 ans, employabilité (répondante 165). « Ça engendre une optimisation des processus et des suivis de la clientèle » Femme, entre 35 et 44 ans, organisationnel (répondante 296).

Enfin, plusieurs évoquent une charge de travail augmentée en raison du temps que prend l'appropriation ou la formation pour utiliser les applications d'IA :

> « C'est beaucoup de formation continue pour augmenter mes connaissances dans les outils actuels utilisant l'IA. Ensuite, beaucoup de lecture pour identifier les outils susceptibles de m'être utiles dans mes tâches. Enfin, beaucoup de temps à préserver pour apprendre à utiliser correctement ces outils dans ma pratique et à en suivre les impacts. » Femme, 55 ans ou plus, réadaptation et santé mentale (répondante 297).

Parmi les c.o. qui n'utilisent pas d'IA, certains y voient toutefois une promesse de réduction de la charge de travail sans référence particulière à ce que cela comporte potentiellement comme nouvelles tâches: « Pour

ce qui est de la prise de note ou de la transcription, cela pourrait faciliter et réduire ma surcharge de travail. » Femme, entre 35 et 44 ans, éducation (répondante 21).

Variété des tâches

Les résultats montrent que plus les c.o. utilisent des applications soutenant le traitement de texte, de visuel ou d'audio, plus la variété des tâches effectuées est grande (β = ,16, p < ,05). Aucune relation significative n'est observée pour les applications soutenant les interactions et remplaçant les tâches ou soutenant la prise de décision (respectivement β = ,04, p = ,61; β = ,13, p = ,12). Aucune différence n'est observée quant à la perception de la variété des tâches en lien avec l'IA entre les c.o. utilisant l'IA et les c.o. n'utilisant pas l'IA (t(256) = 0,45, p = ,65) (voir le tableau 9).

Tableau 9

Analyse de régression: variété des tâches en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	2,43	,24	—	10,07	< ,001
Utilisation – traitement (texte. visuel. audio)	,09	,05	,16	2,04	,04
Utilisation – interactions	,02	,04	,04	0,51	,61
Utilisation – prise de décision, remplacement tâches	,09	,06	,13	1,59	,12
Genre	,22	,11	,16	2,05	,04

Variable dépendante : variété des tâches
Note. R^2 = ,08, R^2 ajusté = ,06, F(4, 157) = 3,44. p < ,01.

Comme évoqué plus haut en lien avec la charge de travail, de nouvelles tâches semblent voir le jour avec l'utilisation de l'IA comme en témoignent les participants.es suivants : « Certaines tâches cléricales, techniques, ennuyantes ou gérant un trop grand nombre d'informations sont remplacées par des tâches exploration, de discussion et de brainstorming avec l'IA. » Femme, entre 45 et 54 ans, organisationnel (répondante 277). « Il faut éduquer à la validité des réponses, donner du sens aux réponses, corriger les réponses obtenues, s'attendre à être surpris par les réponses et par les questions des étudiants. » Femme, entre 45 et 54 ans, éducation (répondante 266).

Sens du travail

Les analyses indiquent que plus les c.o. utilisent des applications traitant de texte, de visuel ou d'audio, plus le sens du travail est grand pour eux (β = ,33, p < ,01). Aucune relation significative n'est observée pour les applications soutenant les interactions et remplaçant les tâches ou soutenant la prise de décision (respectivement β = ,07, p = ,38; β = ,11, p = ,16) (voir le tableau 10).

Le sens du travail avec l'IA est jugé légèrement plus grand pour les conseiller(-ère)s qui utilisent une forme ou une autre d'IA (M = 3,10, *ÉT* = ,74). Les c.o. qui n'utilisent pas d'IA ont au contraire une perception que le sens du travail sera réduit avec l'utilisation de l'IA (M = 2,78, *ÉT* = ,90) et cette différence est significative (t(133.21) = 2,82, p < ,01; d de Cohen de ,41, IC à 95 % [0,14; 0,67]).

Le commentaire suivant d'une conseillère utilisant de l'IA témoigne d'une crainte de perte de sens de son travail :

> « Pour le moment, l'utilisation que j'en fais est faible, donc les impacts sont peu ou pas présents. Par contre, je crains une perte de sens si on s'en remet à cela pour des aspects plus interpersonnels et humains.

Tableau 10

Analyse de régression: sens du travail en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	1,95	,29	—	6,83	< ,001
Utilisation – traitement (texte. visuel. audio)	,23	,04	,33	4,42	< ,001
Utilisation – interactions	,04	,07	,07	0,88	,39
Utilisation – prise de décision, remplacement tâches	,09	,06	,11	1,43	,16
Nb heures travaillées	,18	,10	,14	1,87	,06

Variable dépendante : sens du travail
Note. R^2 = ,17, R^2 ajusté = ,14, $F(4, 157) = 7{,}80$. $p < ,001$.

> Je crains aussi que cela ne coupe sur des tâches intéressantes qui demandent plus de créativité. » Femme, entre 25 et 34 ans, employabilité (répondante 271).
>
> « [C'est] inquiétant. [L'IA] entraîne une perte de sens. » Femme, entre 45 et 54 ans, éducation (répondante 41).

Et cette crainte est partagée par des conseiller(-ère)s qui n'utilisent pas l'IA : « Il y a le risque de dépersonnaliser une analyse sans tenir compte de l'ensemble des éléments contribuant à l'unicité de chacun de nos clients.es. » Femme, entre 45 et 54 ans, pratique privée (répondante 311). « Cela déshumanise le contact avec la clientèle. » Pratique privée (genre et âge non partagés, répondant.e 307).

Complexité du travail

Les résultats montrent que plus les c.o. utilisent des applications soutenant le traitement de texte, de visuel ou d'audio et des applications remplaçant les tâches ou soutenant la prise de décision, moins la complexité de leur travail leur semble grande (respectivement $\beta = -,27$, $p < ,01$; $\beta = -,16$, $p < ,05$). La fréquence d'utilisation des applications soutenant les interactions n'est pas significativement associée à la complexité du travail ($\beta = -,05$, $p = ,53$) (voir le tableau 11).

Aucune différence significative n'est observée quant à la perception de complexité du travail en lien avec l'IA entre les c.o. utilisant l'IA et les c.o. n'utilisant pas l'IA ($t(256) = -0{,}36$, $p = ,72$).

Des commentaires vont toutefois plutôt dans le sens d'une complexification du travail, car le temps dégagé est consacré à des tâches plus complexes, telles que la relation d'aide ou le développement de projet : « L'IA me donne le temps de me consacrer à mes clients en counseling et coaching, passer moins de temps à des aspects où ma compétence c.o. n'est pas nécessairement requise » Femme, entre 35 et 44 ans, organisationnel (répondante 253).

Aussi, certains commentaires montrent que des tâches spécifiques s'avèrent plus complexes avec certaines clientèles :

> « Le travail devient plus complexe auprès de certains élèves qui se fient sans utiliser de sens critique à ce que rapportent des robots conversationnels, sans contextualiser ou tenir compte des caractéristiques propres à la personne. Il est parfois facile pour eux de mettre quelques critères dans Chat GPT, d'indiquer leurs intérêts, certaines aspirations professionnelles ou salariales vagues et d'obtenir une suggestion de carrière. Le tout se fait en ignorant la mise en garde de consulter un professionnel de l'orientation. » Homme, entre 45 et 54 ans, éducation (répondant 154).

Tableau 11

Analyse de régression: complexité du travail en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	2,99	,32	—	9,24	< ,001
Utilisation – traitement (texte. visuel. audio)	-,21	,06	-,27	-3,67	< ,001
Utilisation – interactions	-,03	,04	-,05	-0,63	,53
Utilisation – prise de décision, remplacement tâches	-,15	,07	-,16	-2,17	,03
Âge	,19	,08	,21	2,30	,02
Ancienneté	,05	,06	,07	0,75	,45
Secteur d'activité	-,05	,05	-,08	-1,01	,31

Variable dépendante : complexité du travail
Note. R^2 = ,19, R^2 ajusté = ,16, $F(6, 152) = 5{,}92$. $p < ,001$.

> « Aussi [il faut] du temps pour accueillir les « naufragés » ayant utilisé l'IA pour faire leur choix et qui demeurent dans une impasse. » Femme, 55 ans ou plus, réadaptation et santé mentale (répondante 297).

> « Certains clients cherchent des réponses sur mesure, surtout ceux croyant maîtriser ces technologies (ce qui n'est pas le cas d'après mes constats suite à leurs documents produits par l'IA). Ceux-ci cherchaient un appariement les empêchant de faire les efforts de réflexion nécessaire, ou même d'écrire, de chercher, de s'impliquer. Bref, leur CV a complexifié ma tâche, mais surtout, leurs attentes et les solutions alternatives proposées leurs étaient insuffisantes. » Femme, entre 35 et 44 ans, pratique privée (répondante 286).

Interdépendance des tâches

Les analyses montrent que plus les c.o. utilisent des applications soutenant le traitement de texte, de visuel ou d'audio, moins leur travail est interdépendant de celui des autres (β = - 38, $p < ,01$). Aucune relation significative n'est observée pour les applications soutenant les interactions et remplaçant les tâches ou soutenant la prise de décision (respectivement β = -,10, p = ,18; β = ,09, p = ,20) (voir le tableau 12).

Aucune différence significative n'est observée quant à la perception d'interdépendance des tâches en lien avec l'IA entre les c.o. utilisant l'IA et les c.o. n'utilisant pas l'IA ($t(254) = -1{,}72$, p = ,09).

Tableau 12

Analyse de régression: interdépendance du travail en fonction de l'utilisation d'applications d'IA

Variable	B	ET	β	t	p
(Constante)	3.19	.14	—	22.59	< .001
Utilisation – traitement (texte. visuel. audio)	-.21	.04	-.38	-5.14	<.001
Utilisation – interactions	-.04	.03	-.10	-1.36	.18
Utilisation – prise de décision, remplacement tâches	.07	.05	.09	1.29	.20

Variable dépendante : interdépendance du travail
Note. R^2 = .14, R^2 ajusté = .12, $F(3, 170) = 9.02$. $p < .001$.

Aucun commentaire n'aborde précisément l'interdépendance des tâches avec celles des collègues, mais des exemples évoqués par les c.o. pour souligner que plusieurs tâches cléricales et administratives seront éventuellement prises en charge par l'IA témoignent d'un éventuel moins grand besoin de faire appel aux services des collègues qui effectuent ces tâches (ex. conseiller(-ère)s en information scolaire ou personnel administratif) : « Beaucoup [de tâches] qui touchent la tenue de dossier, la gestion des rendez-vous, la gestion de l'information scolaire sont remplacées par l'IA. » Femme, entre 35 et 44 ans, éducation (répondante 112).

Confort

Les résultats montrent que plus les c.o. utilisent des applications soutenant le traitement de texte, de visuel ou d'audio, plus ils sentent que leur travail est confortable (β = ,41, p < ,01). Aucune relation significative n'est observée pour les applications soutenant les interactions et remplaçant les tâches ou soutenant la prise de décision (respectivement β = ,13, p = ,06; β = ,04, p = ,61) (voir le tableau 13).

Tableau 13

Analyse de régression: confort du travail en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	1,42	,29	—	4,91	< ,001
Utilisation – traitement (texte. visuel. audio)	,31	,05	,41	5,81	< ,001
Utilisation – interactions	,08	,04	,13	1,87	,06
Utilisation – prise de décision, remplacement tâches	,03	,07	,04	,52	,61
Genre	,40	,13	,21	3,05	,003
Secteur d'activité	,09	,04	,15	2,10	,04

Variable dépendante : confort du travail
Note. R^2 = ,28, R^2 ajusté = ,26, $F(5, 153)$ = 12,14. p < ,001.

Le confort dans lequel on effectue notre travail avec l'IA est jugé légèrement plus grand pour les c.o. qui utilisent l'IA (M = 3,29, $ÉT$ = 0,82) alors que les c.o. qui n'utilisent pas d'IA anticipent que ce confort sera plus faible (M = 2,80, $ÉT$ = 0,90). Cette différence est significative ($t(253)$ = 4,27, p < ,01; d de Cohen de ,57, IC à 95 % [0,31; 0,84]).

Plusieurs évoquent le fait que l'IA remplace des tâches qu'ils apprécient moins dans leur travail, laissant croire que ce puisse être la source d'un plus grand confort du travail :

> « C'est stimulant et cela m'apporte donc beaucoup! Et l'IA m'aide dans les tâches que j'aime le moins, donc très positif, même si ce n'est qu'un petit nombre de tâches que je me sens correct de faire avec l'IA pour le moment. » Femme, 55 ans ou plus, secteur non identifié (répondante 132).

Certains évoquent plutôt l'inconfort physique associé à un temps augmenté devant les écrans :

> « [Le travail est] plus efficace avez Zoom, par exemple. Cela permet aussi plus de flexibilité pour les clients. Par contre, les plateformes de réunion en ligne amènent plus de travail devant les écrans d'ordi, plus difficile pour la vue, la posture, diminue la précision du non-verbal dans l'interaction, donc dans certaines situations plus émotives c'est moins idéal. » Femme, entre 45 et 54 ans, pratique privée (répondante 206).

Collaboration avec les collègues

Les analyses n'indiquent aucune relation significative entre la fréquence d'utilisation de l'IA, peu

importe le type, et la collaboration avec leurs collègues (respectivement β = ,07, *p* = ,38; β = ,01, *p* = ,92; β = ,12, *p* = ,13) (voir le tableau 14).

Tableau 14

Analyse de régression: collaboration en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	2,72	,19	—	14,08	< ,001
Utilisation – traitement (texte. visuel. audio)	,05	,06	,07	0,88	,38
Utilisation – interactions	,004	,04	,01	0,10	,92
Utilisation – prise de décision, remplacement tâches	,11	,07	,12	1,52	,13

Variable dépendante : collaboration du travail
Note. R^2 = ,02, R^2 ajusté = ,004, $F(3, 171) = 1,26$. p = ,29.

La collaboration avec les collègues est jugée peu affectée par les c.o. utilisant l'IA (*M* = 2,99, *ÉT* = 0,79) alors que les c.o. qui n'utilisent pas d'IA anticipent que la collaboration avec les collègues sera plus faible avec l'IA (*M* = 2,71, *ÉT* = 0,77). Cette différence est significative mais a une taille d'effet faible ($t(255) = 2,61$, $p < ,05$; *d* de Cohen de ,35, IC à 95 % [0,09; 0,61]).

Cette conseillère exprime que l'utilisation d'applications permettant les interactions avec ses collègues favorise une plus grande collaboration :

> « Je ne travaille pas avec l'IA du tout dans mon travail, mais je collabore continuellement en virtuel sur TEAMS et j'adore ça. Je n'ai jamais autant bien collaboré avec des collègues. Ironiquement, je me suis sentie plus seule en milieu scolaire que derrière mon écran avec plein de collègues dispos presque instantanément. » Femme, entre 35 et 44 ans, réadaptation et santé mentale (répondante 69).

D'autres, au contraire, évoquent un isolement plus grand avec leur utilisation de l'IA tel que l'affirme sans détour la répondante suivante: « Je vis plus d'isolement avec le travail via des plateformes. » Femme, entre 45 et 55 ans, éducation (répondante 280).

Les préoccupations des c.o.

Confidentialité et confiance

Les résultats montrent que les c.o. jugent que les applications d'IA compromettent la confidentialité des données (M = 3,49, *ÉT* = 0,93) et l'extrait suivant est représentatif de plusieurs commentaires partagés à cet égard :

> « J'ai quelques inquiétudes quant à la fiabilité de l'information, la confidentialité et l'utilisation à long terme de ces applications. Un de mes collègues utilise GPT pour ses notes évolutives (il n'est pas conseiller d'orientation). De mon côté je demeure méfiante et je me questionne sur le niveau de confidentialité. » Femme, entre 35 et 44 ans, pratique privée (répondante 314).

Toutefois, plus les c.o. utilisent des applications soutenant le traitement de texte, de visuel ou d'audio, moins ils perçoivent d'enjeux de confidentialité (β = -,16, *p* < ,05). Aucune relation significative n'est observée entre la fréquence d'utilisation des applications soutenant les interactions et remplaçant les tâches ou

soutenant la prise de décision et cet enjeu (respectivement β = ,02, *p* = ,76; β = -,01, *p* = ,85) (voir le tableau 15).

Tableau 15

Analyse de régression: enjeu de confidentialité en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	3,73	,15	—	25,03	< ,001
Utilisation – traitement (texte. visuel. audio)	-,14	,06	-,16	-2,39	,02
Utilisation – interactions	,01	,04	,02	0,31	,76
Utilisation – prise de décision, remplacement tâches	-,02	,08	-,01	-0,19	,85

Variable dépendante : enjeu de confidentialité
Note. R^2 = ,03, R^2 ajusté = ,01, $F(3, 246) = 2,14$. *p* = ,10.

Les c.o. jugent aussi que les applications d'IA sont relativement peu dignes de confiance (*M* = 2,70, *ÉT* = 0,87). Cette perception est toutefois associée à l'utilisation d'applications soutenant le traitement de texte, de visuel ou d'audio et soutenant les interactions; plus les c.o. utilisent ces applications, plus ils les jugent dignes de confiance (respectivement β = ,23, *p* < ,01 et β = ,15, *p* < ,05). Aucune relation significative n'est observée entre la fréquence d'utilisation des applications remplaçant les tâches ou soutenant la prise de décision et cet enjeu (β = ,12, *p* = ,06) (voir le tableau 16).

Tableau 16

Analyse de régression: enjeu de confiance en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	1,97	,13	—	14,96	< ,001
Utilisation – traitement (texte. visuel. audio)	,20	,05	,23	3,71	< ,001
Utilisation – interactions	,09	,04	,15	2,31	,02
Utilisation – prise de décision, remplacement tâches	,14	,07	,12	1,91	,06

Variable dépendante : enjeu de confiance
Note. R^2 = ,13, R^2 ajusté = ,12, $F(3, 245) = 12,28$. *p* <,001.

Jugement professionnel

Les analyses indiquent que les c.o. jugent que les applications d'IA compromettent relativement peu l'application de leur jugement professionnel (*M* = 2,63, *ÉT* = 0,13) et cette perception est significativement associée à l'utilisation d'applications soutenant le traitement de texte, de visuel ou d'audio. Plus les c.o. utilisent ces applications, moins ils perçoivent que leur jugement professionnel est menacé (β = -,24, p < ,01). Aucune relation significative n'est observée entre la fréquence d'utilisation d'applications soutenant les interactions et remplaçant les tâches ou soutenant la prise de décision et cet enjeu (respectivement β = ,06, *p* = ,34; β = -,02, *p* = ,75) (voir le tableau 17).

Relativement peu de commentaires traitent directement de l'enjeu du jugement professionnel, si ce n'est que pour l'identifier comme étant une tâche qui ne saurait être remplacée par l'IA. Les c.o. semblent plutôt confiants que l'IA ne menace pas ce jugement tel que l'illustre le commentaire suivant : « Le counseling,

l'écoute, le jugement professionnel ne pourront jamais être remplacés par de l'IA. » Homme, entre 25 et 34 ans, pratique privée (répondant 302).

Tableau 17

Analyse de régression: enjeu de jugement professionnel en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	3,74	,37	—	10,26	< ,001
Utilisation – traitement (texte. visuel. audio)	-,30	,08	-,24	-3,57	< ,001
Utilisation – interactions	,06	,06	,06	0,95	,34
Utilisation – prise de décision, remplacement tâches	-,04	,12	-,02	-0,31	,75
Nb heures travaillées	-,28	,14	-,13	-1,98	,05

Variable dépendante : enjeu de jugement professionnel
Note. R^2 = ,08, R^2 ajusté = ,07, $F(4, 232) = 5{,}24$. p <,001.

Remplacement des tâches

Les c.o. sont fortement convaincus que les applications d'IA remplaceront leurs tâches répétitives (M = 3,94, $ÉT$ = 0,84) mais pas les tâches qu'ils aiment faire (M = 2,80, $ÉT$ = 0,88). Cette perception est significativement associée à l'utilisation d'applications soutenant le traitement de texte, de visuel ou d'audio. Plus les c.o. utilisent ces applications, plus ils perçoivent que l'IA remplacera les tâches répétitives (β = ,21, p < ,01) et moins ils perçoivent que l'IA remplacera les tâches qu'ils aiment faire (β = -,25, p < ,01). Aucune relation significative n'est observée entre la fréquence d'utilisation des applications soutenant les interactions et remplaçant les tâches ou soutenant la prise de décision et le remplacement des tâches répétitives (respectivement β = ,11, p = ,09; β = ,09, p = ,18) ou le remplacement des tâches aimées (respectivement β = -,11, p = ,10; β = -,09, p = ,17) (voir le tableau 18 et 19).

Parmi les tâches que les c.o. espèrent ou croient qui seront prises en charge par l'IA, les tâches dites cléricales ou administratives (ex. entrée de données, prise de rendez-vous, courriel) ont été très fréquemment évoquées (28 commentaires). D'autres tâches, telles que la rédaction de notes évolutives, la correction de CV, la rédaction de lettre de motivation ou de présentation, ont aussi été très souvent évoquées par les participants.es (24 commentaires).

Tableau 18

Analyse de régression: enjeu du remplacement des tâches que l'on aime faire en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	3,89	,28	—	14,16	< ,001
Utilisation – traitement (texte. visuel. audio)	-,21	,06	-,25	-3,77	< ,001
Utilisation – interactions	-,07	,04	-,11	-1,67	,10
Utilisation – prise de décision, remplacement tâches	-,11	,08	-,09	-1,34	,17
Revenu annuel	-,10	,05	-,12	-1,91	,06

Variable dépendante : enjeu du remplacement des tâches que l'on aime faire
Note. R^2 = ,13, R^2 ajusté = ,11, $F(4, 223) = 5{,}45$. p <,001.

Tableau 19

Analyse de régression: enjeu du remplacement des tâches répétitives en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	3,91	,25	—	15,47	< ,001
Utilisation – traitement (texte. visuel. audio)	,17	,05	,21	3,25	< ,001
Utilisation – interactions	,07	,04	,11	1,70	,09
Utilisation – prise de décision, remplacement tâches	,10	,08	,09	1,34	,18
Ancienneté	-,07	,06	-,11	-1,31	,19
Âge	-,07	,07	-,08	-,99	,33

Variable dépendante : enjeu du remplacement des tâches répétitives
Note. R^2 = ,12, R^2 ajusté = ,10, $F(5, 229) = 6{,}19$. p < ,001.

Remplacement de l'emploi

Dans l'ensemble les c.o. semblent assez confiants que les applications issues de l'IA ne remplaceront pas leur emploi (M = 1,89, *ÉT* = 1,01). Il n'y a pas de différence significative dans cette perception selon la fréquence d'utilisation de l'une ou l'autre application (respectivement β = -,11, p = ,10; β = ,03, p = ,70; β = ,08, p = ,25) (voir le tableau 20).

Tableau 20

Analyse de régression: enjeu du remplacement de l'emploi en fonction de l'utilisation d'applications d'IA

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	1,21	,31	—	3,94	< ,001
Utilisation – traitement (texte. visuel. audio)	-,11	,07	-,11	-1,64	,10
Utilisation – interactions	,02	,05	,03	0,39	,70
Utilisation – prise de décision, remplacement tâches	,11	,09	,08	1,16	,25
Âge	,19	,07	,18	2,70	,01
Âge	-,07	,07	-,08	-,99	,33

Variable dépendante : enjeu du remplacement de l'emploi
Note. R^2 = ,04, R^2 ajusté = ,03, $F(4, 230) = 2{,}67$. p < ,05.

Les commentaires selon lesquels des compétences centrales au métier de c.o. ne peuvent pas être remplacées par l'IA sont nombreux et presque tous articulés autour de l'idée que l'empathie, la relation d'aide et le jugement professionnel sont irremplaçables. Les commentaires suivants en sont des exemples :

> « Évaluer les besoins des étudiants en orientation, être empathique face à la situation d'un étudiant, soutenir, accompagner, aider l'étudiant à voir ses forces, à apprendre à se connaître… [ne sera pas remplacé]. Toutes les tâches reliées au counseling de carrière qui nécessitent des compétences relationnelles [ne seront pas remplacées]. » Femme, entre 25 et 34 ans, éducation (répondante 140).

« Le counseling, l'écoute, le jugement professionnel ne pourront jamais être remplacés par de l'IA. » Homme, entre 25 et 34 ans, pratique privée (répondant 159).

Plusieurs vont même plus loin en indiquant que ces compétences ne devraient jamais être remplacées par de l'IA : « Tout ce qui demande un jugement professionnel, donc un jugement humain… l'IA ne doit JAMAIS prendre de décision ou se prononcer sur ce qui doit être fait… juste nous fournir des matériaux pour aider notre décision. » Femme, 55 ou plus, secteur non identifié (répondante 132).

Il importe toutefois de relever le commentaire suivant qui, bien que peu partagé, présente au contraire l'idée du risque de l'IA pour la profession : « Le risque que les outils développés soient accessibles au grand public augmente inévitablement [la possibilité] de porter préjudice à la science de l'orientation, à notre rôle et au cheminement de la personne de la communauté les utilisant. » Femme, entre 45 et 54 ans, pratique privée (répondante 311).

Niveau de préparation et ressources

Pour les conseiller(-ère)s

Le niveau de préparation des c.o. à l'utilisation de l'IA est modéré (M = 3,29, $ÉT$ = 0,83) avec une majorité de participants.es (41,6 %) qui se situent au point neutre (*ni en accord, ni en désaccord*).

Il est pertinent de souligner que les c.o. utilisant l'IA rapportent un niveau de préparation significativement plus élevé ($t(238) = 4{,}29$, $p < {,}01$, d de Cohen de ,59, IC à 95 % [0,32; 0,87]). Il y a également une différence significative entre les femmes et les hommes, ces derniers rapportant être davantage préparés pour développer les compétences nécessaires à l'utilisation de l'IA ($t(230) = 2{,}66$, $p < {,}01$, d de Cohen de ,45, IC à 95 % [0,11; 0,78]). Des différences sont aussi observées quant au secteur d'activité; les c.o. du secteur de l'éducation étant moins préparés que les c.o. du secteur organisationnel ($t(153) = -3{,}96$, $p < {,}01$, d de Cohen de -,85, IC à 95 % [-1,28; -0,42]).

Des différences significatives sont également observées selon l'ancienneté. Les c.o. ayant 11 ans ou plus d'ancienneté indiquent être significativement moins préparés que les c.o. ayant entre 2 et 5 ans d'ancienneté ($t(66) = 3{,}21$, $p < {,}01$, d de Cohen de ,82, IC à 95 % [0,30; 1,33]; $t(128) = 3{,}10$, $p = {,}91$, d de Cohen de ,69, IC à 95 % [0,25; 1,14]). L'âge présente également des différences significatives; les c.o. ayant entre 25 et 34 ans rapportent être significativement plus préparés que les c.o. ayant entre 45 et 54 ans ou 55 ans et plus (respectivement $t(107) = 2{,}45$, $p < {,}05$, d de Cohen de ,54, IC à 95 % [0,10; 0,98]; $t(71) = 3{,}83$, $p < {,}01$, d de Cohen de ,93, IC à 95 % [0,43; 1,42]). Une analyse de régression complémentaire réalisée montre un lien significatif entre le niveau de préparation et l'âge ($\beta = -{,}19$, $p < {,}05$) mais pas avec l'ancienneté ($\beta = -{,}05$, $p = {,}58$), indiquant que l'âge semble davantage le facteur lié à cette perception de préparation face à l'IA (voir le tableau 21).

Tableau 21

Analyse de régression: niveau de préparation face à l'IA en fonction de l'âge et l'ancienneté

Variable	B	*É.T.*	β	*t*	*p*
(Constante)	4,08	,22	—	18,23	< ,001
Ancienneté	-,03	,06	-,05	-0,56	,58
Âge	-,17	,08	-,19	-2,45	,03

Variable dépendante : niveau de préparation face à l'IA
Note. $R^2 = {,}05$, R^2 ajusté = ,04, $F(2, 233) = 5{,}86$. $p < {,}05$.

Plusieurs commentaires montrent que des c.o. ne se sentent pas compétents avec le sujet de l'IA et se freinent même de répondre aux questions posées, comme l'illustre le commentaire suivant qui est représentatif

d'un grand nombre de participants.es :« Je ne maitrise pas suffisamment le sujet pour répondre à cette question. » Femme, entre 35 et 44 ans, éducation (répondante 290).

D'autres commentaires, nombreux, mettent en évidence le besoin des c.o. de mieux connaître les applications issues de l'IA et de savoir lesquelles sont fiables. On évoque très souvent (73 commentaires) le besoin de mieux connaître les applications existantes et en savoir davantage sur ses aspects éthiques. Certains de ces commentaires vont d'ailleurs dans le sens d'un besoin de savoir ce qu'il est permis d'utiliser selon leur ordre professionnel : « [Je souhaite] avoir une meilleure connaissance des applications, de leurs enjeux au niveau éthique et de confidentialité, développer mon aisance/familiarité avec l'utilisation de ces outils. » Femme, entre 45 et 54 ans, éducation (répondante 280). « [Je souhaite] obtenir de l'information sur les applications FIABLES ET ACCEPTÉES par mon ordre [professionnel] afin de respecter nos obligations professionnelles. » Femme, entre 35 et 44 ans, employabilité (répondante 3).

Enfin plusieurs commentaires évoquent le besoin de développer des connaissances quant aux transformations que vivent les autres secteurs d'activité de sorte de pouvoir bien jouer leur rôle-conseil auprès de leur clientèle : « [Je souhaite] avoir de l'information sur les changements qu'apportent l'IA dans le monde du travail. » Femme, entre 25 et 34 ans, employabilité (répondant 188).

Pour le milieu

Les c.o. rapportent globalement que leur milieu n'a pas toutes les ressources nécessaires pour introduire l'IA (M = 2,84, $ÉT$ = 1,11). La préparation du milieu diffère significativement selon le secteur d'activité; les c.o. du secteur organisationnel rapportent que leur milieu est davantage prêt que les c.o. des secteurs de la pratique privée ($t(55) = 2{,}4$, $p < {,}05$, d de Cohen de ,68, IC à 95 % [0,14; 1,21]) et de l'éducation ($t(153) = 1{,}97$, $p < {,}05$, d de Cohen de ,42, IC à 95 % [0,85; 0,00]). Les c.o. du secteur de l'employabilité rapportent leur milieu comme étant significativement plus prêt que celui de la pratique privée ($t(68) = 2{,}22$, $p < {,}05$, d de Cohen de ,54, IC à 95 % [0,05; 1,01]).

Ces résultats suggèrent que l'introduction des applications d'IA demeure conditionnée par les ressources organisationnelles disponibles, lesquelles varient selon les secteurs d'activité et pourraient constituer un facteur déterminant dans le rythme et les modalités d'adoption de ces technologies tel qu'il sera discuté dans les sections suivantes.

En résumé, le tableau suivant présente une synthèse des associations significatives observées en regard des caractéristiques de l'organisation du travail (voir le tableau 22).

Discussion

Une adoption de l'IA enclenchée chez les c.o.

Les résultats montrent que les c.o. ont déjà intégré plusieurs applications issues de l'IA dans leur pratique, et ce, dans une grande proportion. On constate que les applications soutenant le traitement de texte, de visuel et d'audio sont les plus répandues chez les c.o. Ces applications sont certainement plus accessibles et faciles à mettre en place compte tenu de leur coût relativement faible, ce qui permet leur introduction dans des secteurs d'activité où les moyens financiers sont limités (ex. secteur de l'éducation). Il s'agit également d'applications permettant de soutenir divers types de tâches (ex. rédaction, révision, traduction), plusieurs d'entre elles étant de nature administrative ou cléricale. Les résultats montrent également que les c.o. n'utilisant pas ce type d'application d'IA sont nombreux à ne pas connaître les applications existantes et leur utilité, d'où sans doute la faible ouverture à utiliser ce type d'IA si c'était disponible dans leur travail. Du point de vue de la pratique, cela veut dire que les c.o. ne sont pas égaux face aux gains qui peuvent être faits avec l'IA et des formations ciblées pour faire connaître ce qui existe pourraient être une mesure simple mais potentiellement efficace.

La présente étude montre aussi que les applications soutenant les interactions sont également très répandues et souvent utilisées pour la téléconsultation par les c.o. Ces résultats sont cohérents avec la littérature qui indique que son utilisation en counseling n'est pas nouvelle et qu'elle a d'ailleurs augmenté en

Tableau 22

Synthèse des associations significatives entre l'utilisation d'applications issues de l'IA, les caractéristiques de l'organisation du travail et les enjeux perçus

Type d'application issue de l'IA	Caractéristiques de l'organisation du travail et enjeux
Soutenant le traitement de texte, de visuel ou d'audio	Autonomie dans le travail (+) Charge de travail (-) Variété des tâches (+) Sens du travail (+) Complexité du travail (-) Interdépendance des tâches (-) Confort du travail (+) Confidentialité (-) Confiance (+) Jugement professionnel (-) Remplacement des tâches répétitives (+) Remplacement des tâches aimées (-)
Soutenant les interactions	Autonomie dans le travail (+) Confidentialité (-)
Soutenant la prise de décision ou remplaçant des tâches centrales	-

raison de la pandémie (Sheperis et al., 2025). Malgré cela, les c.o. ont été nombreux à évoquer l'importance du contact humain pour justifier la limitation nécessaire de ce type d'application. Cette importance du contact humain apparaît clairement dans les résultats comme un élément valorisé au sein de la profession et qu'il importe de préserver. Il faut donc de demeurer vigilant à ce chapitre et prendre acte de cette préoccupation des c.o. qui sont aux premières loges des impacts d'une réduction des contacts humains. Il faut aussi garder à l'esprit que plusieurs clientèles peuvent être exclues des communications soutenues par des applications de l'IA et que l'augmentation de leur utilisation risque d'exclure davantage des clientèles déjà marginalisées.

Enfin, les applications d'IA soutenant la prise de décision ou remplaçant des tâches sont quant à elle moins répandues dans la pratique des c.o., mais sont celles suscitant certainement le plus grand enthousiasme. De plus, les c.o. qui les utilisent le font avec une fréquence plus grande que toute autre application. Quant aux c.o. qui n'utilisent pas ces applications, ils indiquent dans une large proportion qu'ils les utiliseraient si c'était disponible, laissant croire qu'ils anticipent un grand potentiel pour l'amélioration de leur travail. Plusieurs des exemples partagés par les participants.es à l'égard de ce type d'application sont liés à l'utilisation de la réalité virtuelle pour faire expérimenter des contextes de travail aux étudiants.es ou aux clients.es. L'IA permet ainsi de réaliser des activités que les c.o. disent ne pas pouvoir faire autrement en raison de contraintes physiques ou géographiques. D'autres exemples évoqués, par exemple l'utilisation de l'IA pour le développement de plans de formation, laissent entrevoir l'arrivée, plus graduelle mais toute de même présente, d'applications remplaçant des tâches perçues comme étant plus centrales au métier.

Ces résultats relatifs à l'utilisation actuelle de l'IA par les c.o. contribuent à la littérature en offrant un portrait empirique de l'implantation de l'IA dans la profession, faisant ainsi écho à l'appel à documenter la réalité des travailleur(-euse)s (Savolainen et al., 2025). En somme, on y constate une implantation à trois vitesses, mettant en évidence la pertinence de s'intéresser à l'IA de façon nuancée, en distinguant l'IA selon la façon dont les travailleur(-euse)s l'utilisent dans leur travail. Ces résultats mettent également en évidence l'intérêt de mobiliser un modèle des caractéristiques de l'organisation du travail afin de structurer l'analyse des transformations observées au sein de la profession. À cet égard, l'étude contribue sur le plan théorique en articulant le modèle de Humphrey et al. (2007) avec la catégorisation des applications issues de l'IA proposée par Trottier et al. (2024).

Des effets positifs de l'IA et une vigilance à avoir

Les résultats indiquent des positionnements très variés par rapport aux effets de l'IA chez les c.o. D'une part, des associations positives entre l'utilisation de l'IA et certaines caractéristiques du travail sont observées, principalement dans le cas des applications soutenant le traitement de texte, de visuel ou d'audio. On y remarque une plus grande autonomie et variété des tâches, une moins grande charge de travail, un travail qui a davantage de sens, qui est moins complexe, moins interdépendant et plus confortable. Ces constats vont dans le sens des promesses de l'IA et, si les résultats laissent voir que des effets positifs peuvent exister, il faut néanmoins rester vigilant puisqu'ils sous-tendent également des effets à long terme qui sont quant à eux potentiellement néfastes. En effet, un regard plus attentif aux résultats et aux commentaires partagés montre que nous ne sommes pas face à une diminution ou une augmentation de la charge de travail, mais bien à sa transformation. En effet, les résultats tendent à montrer une disparition de tâches cognitivement simples (ex. administratives) au profit de tâches plus exigeantes (ex. counseling, coaching). Ces résultats méritent une attention dans de futures études puisqu'ils évoquent la possibilité d'une charge émotionnelle plus grande avec l'utilisation d'applications issues d'IA, celle-ci étant étroitement liée à des enjeux de santé déjà présents dans la profession et largement documentés (Cook et al., 2021). On identifie d'ailleurs la composante relationnelle comme étant particulièrement exigeante et responsable de l'épuisement émotionnel des c.o. (Thompson et al., 2014).

Les résultats relatifs à l'interdépendance du travail apparaissent aussi a priori positifs mais doivent être interprétés avec vigilance. En effet, l'utilisation de l'IA est associée à une réduction de l'interdépendance des tâches avec celles des collègues. Or une interdépendance est importante en contexte de travail, car elle est associée à une meilleure coordination, familiarité, communication et confiance envers les collègues (Stewart, 2006; Sias et al., 2020). Aussi, les résultats montrent l'apparition de nouvelles tâches qui ne sont toutefois pas synonymes d'enrichissement du travail. En effet, les résultats qualitatifs semblent davantage démontrer un élargissement des tâches où les c.o. réalisent un plus grand nombre d'activités qui ne sont pas nécessairement associées à davantage d'autonomie ou de plus grande satisfaction dans le travail (ex. valider des réponses issues de l'IA). Or, les démonstrations dans la littérature quant aux effets positifs d'un enrichissement sur la motivation, l'engagement et la satisfaction sont nombreuses (Parker, 2014) et il importe de valoriser un enrichissement des tâches par l'IA plutôt qu'un élargissement. Les résultats indiquent également l'émergence de situations de travail plus complexes, caractérisées par des cas où des clients.es ont recours à l'IA en amont de la consultation, obligeant les c.o. à déconstruire et à évaluer les contenus produits par ces outils. Ceci tend à montrer qu'il y a une transformation tangible du travail en orientation, qu'il importe de documenter et diffuser afin d'éviter que l'adaptation à cette nouvelle réalité ne repose que sur les épaules des c.o.

On constate aussi chez les c.o. qu'une utilisation plus grande de l'IA est associée à une préoccupation moins grande en ce qui a trait à la confidentialité et à la confiance en l'IA. Bien que l'absence de crainte puisse expliquer une prédisposition plus grande à utiliser l'IA, la récente recension de la littérature de Romeo et Conti (2026) tend à indiquer que ce puisse aussi être le contraire. En effet, il semble qu'une confiance puisse s'installer avec l'utilisation de l'IA, confiance qui émerge parce que les utilisateur(-trice)s se sentent plus compétents dans leur utilisation des applications mais aussi parce que l'utilisation génère des réactions positives qui donnent confiance (ex. sentiment positif associé au fait de faire une tâche avec moins d'effort cognitif). Cette confiance est d'ailleurs identifiée par les Romeo et Conti (2026) comme un mécanisme pouvant mener à une dépendance excessive envers l'IA. Les présents résultats sont ainsi peut-être le reflet d'une confiance des c.o. envers l'IA qui est augmentée avec leur utilisation, piste qui mériterait d'être étudiée avec plus d'attention. Il apparaît donc essentiel que la confiance accordée à ces outils issus de l'IA repose sur une compréhension éclairée de leurs limites et de leurs enjeux, plutôt que sur une confiance illusoire découlant d'une banalisation de leur usage. Certains vont plus loin à ce chapitre en proposant que l'humain doit demeurer celui qui génère d'abord une décision ou une recommandation et que l'IA soit une façon auxiliaire de valider cette décision (Agudo et al., 2024). Ce type de positionnement se doit d'être discuté au sein de la profession.

Enfin, les résultats montrent également que les c.o. utilisant une application de l'IA ont peu l'impression que l'IA menace l'application de leur jugement professionnel. On note aussi que, plus ils utilisent l'IA (soutenant le traitement de texte, de visuel ou d'audio), moins ils ont l'impression que l'IA remplacera des

tâches qu'ils aiment faire. Ce résultat est réconfortant puisqu'il tend à indiquer que les c.o. ne sentent pas que l'IA menace actuellement leur valeur ajoutée; ils ne craindraient d'ailleurs pas que leur emploi soit remplacé. Cet aspect doit tout de même demeurer un point de vigilance compte tenu du rythme de développement des technologies issues de l'IA et des projets-pilotes qui semblent déjà être en cours. À cet effet, notons que des études montrent que des interactions en ligne avec des applications issues de l'IA sont perçues comme étant plus empathiques et plus authentiques que les interactions en ligne avec des thérapeutes (Ayers et al., 2023; Yonatan-Leus et Brukner, 2025). Il importe donc de rester vigilant puisque le développement technologique pourrait surprendre ce secteur d'activité et une fausse confiance en ce constat d'une irremplaçabilité de certaines tâches pourrait nuire et empêcher une réelle prise de position face à l'IA au sein de la profession.

Enfin, ces résultats quant au lien entre l'IA et les caractéristiques du travail des c.o. enrichissent la littérature et répondent à l'appel à documenter la réalité des travailleur(-euse)s en mettant en lumière les enjeux associés au sens du travail (Bienefeld et Grote, 2025).

Utilisateur(-trice)s et non-utilisateur(-trice)s d'applications issues d'IA: des perceptions différentes au sein des c.o.

Il est intéressant de relever que les c.o. utilisant l'IA l'évaluent comme étant plus utile que le font les c.o. qui ne l'utilisent pas. Deux explications peuvent être proposées pour comprendre ce résultat : 1) l'utilité perçue croît avec l'utilisation de l'IA ou 2) l'utilité perçue rend plus enclin à utiliser l'IA. Le devis de la présente étude ne permet pas de conclure à l'ordre temporel entre ces variables, mais les commentaires et la littérature offrent un éclairage pertinent pour réfléchir à cette question. En effet, un grand nombre de c.o. n'utilisant pas l'IA ont indiqué ne pas être en mesure de dire si les outils de l'IA sont utiles, ne les connaissant pas suffisamment. Ceci suggère que le fait de ne pas utiliser l'IA empêche d'en percevoir l'utilité. Mais les résultats montrent aussi que les c.o. n'utilisant pas d'IA perçoivent que l'autonomie, le sens du travail ainsi que le confort au travail sont plus à risque avec l'utilisation de l'IA, laissent entrevoir une potentielle réticence à l'utiliser. Ces résultats peuvent être compris à la lumière de l'étude de Razzouki et al. (2025) qui revisitent le modèle TAM (Technology Adoption Model) et montrent une relation dynamique et réciproque entre l'utilité perçue et l'utilisation; l'utilité anticipée influence l'utilisation de l'IA qui à son tour, augmente la perception que l'utilisation de l'IA est efficace. Dans le cas des c.o., ces deux mécanismes sont sans doute en jeu et mériteraient d'être étudiés plus finement.

L'IA qui creuse des fossés

Chez les conseiller(-ère)s d'orientation

Les résultats montrent des réalités différentes chez les c.o. selon le secteur d'activité dans lequel ils œuvrent, et ces différences semblent associées aux ressources disponibles dans ces milieux. Par exemple, le secteur de l'éducation est identifié comme ayant moins de ressources et ses travailleur(-euse)s s'identifient comme étant moins préparés pour faire face à l'introduction de l'IA. De la même façon, le secteur communautaire, qui dessert les populations qui sont les plus éloignées du marché du travail, est un milieu faisant constamment face à des enjeux de ressources, et ce, malgré des demandes grandissantes (Statistiques Canada, 2024). Il est cohérent que l'implantation de l'IA n'y soit donc pas prioritaire. Enfin, le secteur de la pratique privée, qui peut sembler à priori un milieu disposant de ressources, est quant à lui caractérisé par la nécessité constante de faire de la publicité pour recruter des clients.es, l'instabilité des revenus liée à la nature à court terme des services et aux annulations de rendez-vous et la prise en charge personnelle des coûts d'exploitation (Fellman, 2006). Ainsi, s'ils souhaitent utiliser l'IA pour répondre aux attentes de leur clientèle, les c.o. de ce secteur doivent supporter les coûts associés.

Des différences entre les hommes et les femmes sont mises en évidence dans la présente étude. On relève d'abord une confiance en les compétences à développer qui diffère; les femmes affichent un niveau de préparation et une confiance en leurs compétences moins élevée que les hommes. Ces résultats sont cohérents avec la méta-analyse de Christensen (2023) qui montre que, bien que l'écart tende à se réduire avec le temps,

les femmes affichent une confiance en leurs habiletés à l'égard des technologies de l'information et de la communication généralement moins élevée que les hommes, et ce, plus particulièrement dans les contextes occidentaux. Devant l'accélération actuelle des développements technologiques, il importe que le secteur de l'orientation prenne acte de cette différence et développe les compétences des c.o. en portant une attention particulière aux femmes, qui d'ailleurs se retrouvent en plus grand nombre dans des secteurs ayant moins de ressources (ex. secteur communautaire).

Les résultats montrent également des différences selon l'âge; les c.o. plus âgés sont plus nombreux à se sentir moins préparés face à l'IA. Ces données posent l'hypothèse d'un positionnement face à l'avenir de la profession qui peut sembler plus pessimiste chez les personnes plus âgées, ce qui peut être précurseur d'un fossé grandissant entre les générations. En effet, l'étude de Gonzalez et McCalla (2025) montre que les étudiant(e)s en orientation ont une grande ouverture face à l'IA à la fois dans leur propre cheminement de formation mais également dans l'anticipation de leur travail futur. Ils y voient des bénéfices potentiels pour les soutenir dans la prise de décision, les plans de traitement et le diagnostic.

Les résultats de la présente étude amènent également une prise de conscience quant à un potentiel fossé qui se creuse entre les c.o. et les autres professionnel(le)s du secteur de l'orientation avec lesquels ils collaborent (ex. conseiller(-ère)s en organisation scolaire, adjoints.es administratifs.ves). Parmi les tâches que plusieurs c.o. rapportent désormais déléguées à l'IA figurent des activités habituellement prises en charge par les conseiller(-ère)s en information scolaire, telles que la saisie de données et la planification des horaires. L'IA pourrait donc impacter davantage ces employés.es de soutien, majoritairement des femmes, qui se retrouvent d'ailleurs souvent dans des situations précaires par leur statut à temps partiel et leurs horaires irréguliers (Sioui-Daoust et Déziel-Proulx, 2025).

La suite du déploiement de l'IA au sein de la profession risque potentiellement d'afficher des fossés de plus en plus grands compte tenu de ces facteurs de discrimination et les acteurs.rices impliqués dans le domaine de l'orientation doivent y être sensibilisés. Cela est d'autant plus vrai dans un contexte de pénurie de main-d'œuvre où des secteurs ayant moins de ressources peinent à conserver leurs effectifs.

Chez la clientèle

Les résultats ont également fait valoir des fractures au sein même des populations desservies par les c.o. Par exemple, les personnes n'ayant pas accès à la technologie et celles présentant des défis de communication sont autant de personnes pour qui l'IA peut devenir un obstacle supplémentaire et les éloigne davantage des services. Ces résultats s'inscrivent dans le prolongement des travaux empiriques mettant en évidence les enjeux concrets associés à l'usage de l'IA avec des populations dont l'accompagnement est déjà complexe. À titre d'exemple, l'étude de portée de Bölte et al. (2025) souligne les défis liés à l'orientation professionnelle des personnes neurodivergentes, tandis que Borghouts et al. (2021) mettent en lumière les barrières d'accès et d'utilisation associées aux technologies. De façon plus générale, ceci laisse poindre un travail potentiellement plus complexe dans les années à venir pour maintenir ou raccrocher cette population. Il importe donc de rendre visibles ces enjeux pour que les acteurs.rices défendant les droits de ces populations puissent s'appuyer sur des données pour revendiquer des services adaptés.

Le fait que des clients.es se tournent d'abord vers la technologie plutôt que vers un c.o. est également un résultat préoccupant de la présente étude. En effet, une proportion importante des personnes accompagnées par des c.o., estimée à environ 50 % selon Arifouline et al. (2024) présenterait un niveau élevé de détresse psychologique au moment d'entreprendre une démarche de décision de carrière. Or, cette réalité soulève des enjeux particuliers quant à la pertinence du recours à des outils d'IA dans de tels contextes. À cet égard, la capacité des applications d'IA à intervenir de manière adéquate face à ces situations de détresse demeure peu étayée empiriquement, ce qui comporte des risques si ces personnes privilégient le recours à ces outils plutôt qu'à un professionnel(le) formé pour appréhender l'ensemble des dimensions impliquées dans les processus de décision de carrière.

Une crainte de déshumanisation

Plusieurs résultats de la présente étude convergent vers l'expression d'une crainte de déshumanisation de la profession de c.o.. En effet, des c.o. ont partagé dans leurs commentaires le recours croissant à des agents conversationnels chez les personnes accompagnées et observé une diminution des interactions entre collègues dans la réalisation de leur travail, nommant explicitement une crainte de déshumanisation de leur profession. Dans le contexte du travail, la déshumanisation peut être comprise comme un processus par lequel les dimensions humaines et relationnelles associées aux individus ou à leur travail tendent à être perçues comme étant réduites ou moins reconnues, au profit d'une logique davantage instrumentale, standardisée ou technicisée (Haslam, 2006). Ainsi, les résultats suggèrent que les préoccupations exprimées face à l'IA traduisent aussi une inquiétude quant à la préservation des dimensions humaines et relationnelles qui donnent sens au travail des c.o. et soutiennent la qualité de l'accompagnement offert aux clientèles. Cette crainte apparaît en tension directe avec le sens du travail de c.o., ainsi qu'avec l'alignement entre l'usage de l'IA et les valeurs fondamentales du métier. Bien que les données empiriques portant sur les effets de l'IA sur la santé des travailleur(-euse)s demeurent encore émergentes, elles mettent déjà en évidence le rôle central du sens du travail et de cet alignement dans la préservation du bien-être (Valtonen et al., 2025). À cet égard, des travaux récents menés auprès de professionnel(le)s issus de divers secteurs indiquent un ébranlement de ce sens du travail, notamment en raison de l'absence de repères clairs quant aux modalités d'utilisation de l'IA et à l'exercice du jugement professionnel (Trottier, 2025). Les résultats de la présente étude s'inscrivent dans ce corpus en apportant un éclairage supplémentaire sur les mécanismes par lesquels le sens du travail est fragilisé chez les c.o.

Les résultats de cette étude soulignent plusieurs pistes de réflexion pour les acteurs du domaine de l'orientation. D'une part, ils suggèrent la pertinence, pour les instances professionnelles, telles que l'OCCOQ, de poursuivre les réflexions entourant les balises encadrant l'utilisation de l'IA dans la pratique des c.o., notamment en ce qui concerne la confidentialité, l'exercice du jugement professionnel et les limites acceptables de délégation à l'IA. Les résultats mettent également en évidence l'importance, pour les milieux de pratique, de reconnaître que l'intégration de l'IA ne repose pas uniquement sur l'accès aux outils technologiques, mais également sur les ressources, le temps et l'accompagnement nécessaires pour soutenir leur appropriation dans le travail réel. Du côté de la formation initiale et continue, les résultats suggèrent l'intérêt de renforcer les espaces de réflexion et de développement de compétences liés à l'IA, notamment à l'égard des enjeux éthiques, des biais algorithmiques, des transformations du travail et des effets potentiels sur la relation d'aide. Enfin, une attention particulière pourrait être portée aux inégalités mises en évidence dans les résultats afin d'éviter que l'intégration de l'IA contribue à accentuer certains écarts déjà présents entre les secteurs, les groupes de travailleur(-euse)s et les populations desservies.

Limites et études futures

Cette étude présente plusieurs limites qu'il importe de souligner. D'abord, la présente étude a adopté un devis descriptif étant donné que la littérature est émergente à l'endroit de l'utilisation de l'IA en organisation et plus spécifiquement dans le champ de l'orientation scolaire et professionnelle. Les résultats doivent être interprétés comme un portrait ponctuel permettant de dégager des tendances actuelles, sans toutefois permettre de conclure à des tendances durables. Un tel devis descriptif ne permet pas de conclure quant à la séquence temporelle entre l'IA et ses impacts sur le travail. Ce devis a néanmoins permis de brosser un portrait de l'adoption de l'IA ainsi que des caractéristiques du travail et enjeux qui y sont associés. Dans un contexte où les données empiriques à propos de l'adoption de l'IA sont quasi inexistantes dans la littérature, cette étape de description dans un secteur d'activité spécifique s'avère importante. Il faut aussi relever que la présente étude est basée sur des mesures auto-rapportées et peut avoir favorisé la désirabilité sociale (Podsakoff et al. 2012). Par ailleurs, un biais d'autosélection est possible, dans la mesure où les personnes ayant un intérêt marqué pour l'IA ou des expériences particulières à cet égard ont pu être plus enclines à participer à l'étude. Le recours exclusif à des mesures auto-rapportées recueillies auprès des mêmes répondant(e)s, au même moment, peut aussi accroître le risque de biais de méthode commune et potentiellement influencer

l'ampleur des associations observées entre les variables. Ces biais pourraient ainsi avoir conduit à une surestimation ou à une sous-estimation de l'adoption de l'IA et à une représentation partielle des perceptions au sein de la profession. Ces mesures ont toutefois permis de capter la façon dont les c.o. expérimentent l'IA et les nombreux commentaires partagés ont permis de compléter les résultats quantitatifs. Une étude future pourrait bénéficier d'entretiens individuels afin d'aller plus en profondeur dans la compréhension d'enjeux partagés par les c.o, notamment celui de la façon dont la nature collaborative du travail est affectée par l'IA. Enfin, une limite concerne la capacité des participant(e)s à identifier adéquatement les applications relevant réellement de l'IA dans leur travail. Bien que des définitions et exemples aient été fournis afin de soutenir cette identification dans le questionnaire, il demeure possible que certaines applications aient été interprétées de manière variable par les répondant(e)s, ce qui peut avoir influencé les résultats rapportés.

Sur le plan des analyses, aucune correction pour comparaisons multiples n'a été appliquée compte tenu du caractère exploratoire des analyses et de l'absence d'hypothèses a priori. Cette décision peut augmenter le risque d'erreurs de type I, c'est-à-dire la probabilité de conclure à tort à l'existence d'un effet (faux positif). Les résultats doivent donc être interprétés avec prudence. Une limite concerne la comparaison entre les utilisateur(-trice)s et les non-utilisateur(-trice)s de l'IA. Alors que les réponses des personnes utilisatrices reposent sur une expérience concrète d'usage, celles des non-utilisateur(-trice)s s'appuient plutôt sur une anticipation hypothétique de l'utilisation de ces outils. Cette différence dans la nature des référents mobilisés peut soulever un enjeu de comparabilité entre les groupes et invite ainsi à interpréter les différences observées avec prudence, dans une perspective davantage exploratoire que strictement comparative.

Aussi, compte tenu de l'aspect fortement dynamique du phénomène, il sera pertinent de conduire des études longitudinales où des c.o. sont suivis au cours d'une période afin de comprendre comment leur utilisation de l'IA et ses effets évoluent dans le temps. Enfin, une étude plus attentive des inégalités engendrées par l'IA et mises en évidence dans les résultats de la présente étude (ex. genre, populations, secteurs) doit être réalisée compte tenu des grands enjeux qu'elles portent pour des catégories de travailleurs.ses et de populations déjà discriminées ou marginalisées.

Les résultats de cette étude doivent être interprétés avec prudence quant à leur généralisation. L'échantillon est composé exclusivement de conseiller(ère)s d'orientation du Québec, ce qui limite la transférabilité des résultats à d'autres contextes professionnels, juridictionnels ou culturels. Les usages de l'IA ainsi que les enjeux associés peuvent varier selon les cadres réglementaires, les ressources organisationnelles et les réalités sectorielles propres à chaque contexte. Cela dit, la présente étude fournit des données importantes pour décrire la réalité du secteur d'activité de l'orientation au Québec et des études futures pourraient reproduire la même collecte de données dans d'autres provinces et territoires du Canada, répondant ainsi au besoin de documenter l'étendue des services dans le secteur du développement de carrière au Canada (Blanchard et Taylor, 2024).

Conclusion

L'étude met en évidence une adoption déjà bien présente de l'IA chez les c.o. ainsi qu'un portrait nuancé des impacts de l'IA sur le métier. Alors que l'IA fait craindre des effets néfastes, les résultats de la présente étude montrent une expérience constrastée avec des effets positifs et négatifs pour ses utilisateurs. rices. Néanmoins, des impacts moins visibles sont sous-jacents à cette utilisation, montrant une profession qui semble se transformer graduellement mais profondément. L'ensemble de ces résultats dépeint, au moment de la collecte des données, le portrait d'un marché du travail où des écarts technologiques s'accentuent, engendrant des différences dans le domaine de l'orientation mais également au sein du marché du travail de façon plus large, représentant ainsi un double enjeu pour les c.o. Il apparaît pertinent que les instances professionnelles, les milieux de pratique et les établissements de formation réfléchissent au développement de balises et d'activités de formation continue pouvant soutenir une utilisation critique, éthique et cohérente de l'IA avec les valeurs relationnelles de la profession. Il pourrait également être utile de porter une attention particulière aux inégalités d'accès aux compétences et aux outils liés à l'IA, notamment dans les secteurs disposant de moins de ressources et auprès des populations plus vulnérables.

Références

Agudo, U., Liberal, K. G., Arrese, M., et Matute, H. (2024). The impact of AI errors in a human-in-the-loop process. *Cognitive Research: Principles and Implications*, *9*(1), 1–16. https://doi.org/10.1186/s41235-023-00529-3

Arifoulline, N., Milot-Lapointe, F., et Le Corff, Y. (2024). The clinical effects of individual career counseling on clients' psychological distress. *The Career Development Quarterly*, *72*(3), 174–188. https://doi.org/10.1002/cdq.12350

Ayers, J.W., Poliak, A., Dredze, M., Leas, E.C., Zhu, Z., Kelley, J.B., Faix, D.J., Goodman, A.M., Longhurst, C.A., Hogarth, M., et Smith, D.M. (2023). Comparing physician and artificial intelligence chatbot responses to patient questions posted to a public social media forum. *JAMA Internal Medicine*, *183*(6), 589–596. https://doi.org/10.1001/jamainternmed.2023.1838

Becker, T. E. (2005). Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational Research Methods*, *8*(3), 274–289. https://doi.org/10.1177/1094428105278021

Bienefeld, N., et Grote, G. (2025). Artificial intelligence: how it changes the landscape for work design research and practice. In S.K. Parker, C. Knight, F.E. Klonek, & F. Zhang (Ed.s), *Transformative Work Design: Synthesis and New Directions*, (pp. 483–504). Oxford Academic. https://doi.org/10.1093/oso/9780197692554.003.0019

Blanchard, T., et Taylor, L. (2024). Hidden sector, hidden talent: Mapping Canada's career development sector evidence base. Challenge Factory. Rapport financé par CERIC. https://ceric.ca/publications/hidden-sector-hidden-talent-mapping-canadas-career-development-sector

Bölte, S., Carpini, J. A., Black, M. H., Toomingas, A., Jansson, F., Marschik, P. B., Girdler, S., et Jonsson, M. (2025). Career guidance and employment issues for neurodivergent individuals: a scoping review and stakeholder consultation. *Human Resource Management*, *64*(1), 201–227. https://doi.org/10.1002/hrm.22259

Borghouts, J., Eikey, E., Mark, G., De Leon, C., Schueller, S. M., Schneider, M., Staknick, N., Zheng, K., Mukamel, D., et Sorkin, D. H. (2021). Barriers to and facilitators of user engagement with digital mental health interventions: systematic review. *Journal of Medical Internet Research*, 23(3), e24387. https://doi.org/10.2196/24387

Christensen, M. A. (2023). Tracing the gender confidence gap in computing: a cross-national meta-analysis of gender differences in self-assessed technological ability. *Social Science Research*, 111, 102853. https://doi.org/10.1016/j.ssresearch.2023.102853

Cook, R. M., Fye, H. J., et Wind, S. A. (2021). An examination of the Counselor Burnout Inventory using item response theory in early career post-master's counselors. *Measurement and Evaluation in Counseling and Development*, *54*(4), 233–250. https://doi.org/10.1080/07481756.2020.1827439

Dignum, V. (2019). *Responsible artificial intelligence: How to develop and use AI in a responsible way* (Vol. 2156). Cham: Springer. https://link.springer.com/book/10.1007/978-3-030-30371-6

Duval, A. (2023). *La pénurie de conseillers d'orientation risque de s'aggraver au Québec*. Radio-Canada. https://ici.radio-canada.ca/nouvelle/2027138/penurie-conseillers-orientation-bourses-quebec-legault

Fellman, W. (2006, décembre). *Private practice: Issues, realities & ideas*. Career Convergence. https://www.ncda.org/aws/NCDA/pt/sd/news_article/5262/_PARENT/CC_layout_details/false

Floridi, L., et Cowls, J. (2022). A unified framework of five principles for AI in society. In S. Carta (Ed.), *Machine learning and the city: Applications in architecture and urban design* (pp. 535–545). John Wiley & Sons LTD. https://doi.org/10.1002/9781119815075.ch45

Franke, T., Attig, C., et Wessel, D. (2019). A personal resource for technology interaction: development and validation of the affinity for technology interaction (ATI) scale. *International Journal of Human - Computer Interaction*, *35*(6), 456–467. https://doi.org/10.1080/10447318.2018.1456150

Gonzalez Jr, L., et McCalla, D. (2025). Counselor-in-training perceptions of artificial intelligence: Implications for counselor education. *Journal of Counselor Preparation and Supervision*, 19(3), 9. https://doi.org/10.70013/qmr6nxlt

Haslam, N. (2006). Dehumanization: An integrative review. *Personality and Social Psychology Review*, 10(3), 252–264. https://doi.org/10.1207/s15327957pspr1003_4

Humphrey, S. E., Nahrgang, J. D., et Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: a meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology*, 92(5), 1332–1356. https://doi.org/10.1037/0021-9010.92.5.1332

Morgeson, F. P., et Humphrey, S. E. (2006). The work design questionnaire (WDQ): developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology*, 91(6), 1321–1339. https://doi.org/10.1037/0021-9010.91.6.1321

Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business Horizons*, 61(4), 577–586. https://doi.org/10.1016/j.bushor.2018.03.007

Jaspin, K., Kiruba, G. M., Nivedha, V., Priyadharshini, S., et Sivaraman, D. (2024, October). *AI Assisted Career Guidance and Resume Screening System* [Conference session]. In 2024 5th IEEE Global Conference for Advancement in Technology (GCAT) (pp. 1–7). IEEE. https://doi.org/10.1109/GCAT62922.2024.10923842

Jetha, A., Bonaccio, S., Shamaee, A., Banks, C. G., Bültmann, U., Smith, P. M., Tompa, E., Tucker, L.B., Norman, C., et Gignac, M. A. (2023). Divided in a digital economy: Understanding disability employment inequities stemming from the application of advanced workplace technologies. *SSM-Qualitative Research in Health*, *3*, 100293. https://doi.org/10.1016/j.ssmqr.2023.100293

Lawson, T. O., Henderson, T. L., Smith, A. C., et Peterssen, K. (2023). Diversity, equity, and inclusion in career counseling. In A.C. Smith, & K. Peterssen (Eds.), *An Innovative Approach to Career Counseling: Theory and Practical Application*, 65. https://doi.org/10.1891/9780826150738

Lyons, J. B., Stokes, C. K., Eschleman, K. J., Alarcon, G. M., et Barelka, A. J. (2011). Trustworthiness and IT suspicion: An evaluation of the nomological network. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 53(3), 219–229. https://doi.org/10.1177/0018720811406726

Naicker, V., & Van Der Merwe, D. B. (2018). Managers' perception of mobile technology adoption in the Life Insurance industry. *Information Technology & People*, 31(2), 507–526. https://doi.org/10.1108/ITP-09-2016-0212

Nordin, E. et Mathew, D. (2024). Successful career decision-making of young canadians in a digital economy. *Canadian Journal of Career Development*, *23*(2), 6–28. https://doi.org/10.53379/cjcd.2024.400

Obvia. (2025). Glossaire de l'Obvia. https://www.obvia.ca/ressources/glossaire/

Ordre des conseillers et conseillères d'orientation du Québec. (2020). *Guide de l'usage des technologies numériques en orientation*. https://www.orientation.qc.ca/files/GuideUsageTechno_OCCOQ_MAJ-_web.pdf

Ordre des conseillers et conseillères d'orientation du Québec. (2025). *Rapport annuel 2024–2025*. https://www.orientation.qc.ca/medias/iw/OCCOQ-Rappport-annuel-24-25.pdf

Ordre professionnel des sexologues du Québec. (2023, 22 février). D*es professionnelles et professionnels incontournables*! https://www.opsq.org/fr/actualite-details/des-professionnelles-et-professionnels-incontournables

Paillé, P., et A. Mucchielli. 2016. *L'analyse Qualitative en Sciences Humaines et Sociales*. 4th éd. Paris: Armand Colin. https://shs.cairn.info/l-analyse-qualitative-en-sciences-humaines--9782200249045?lang=fr

Parker, S. K. (2014). Beyond motivation: Job and work design for development, health, ambidexterity, and more. *Annual Review of Psychology*, *65*, 661–691. https://doi.org/10.1146/annurev-psych-010213-115208

Podsakoff, P.M., MacKenzie, S.B., et Podsakoff, N.P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *65*, 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Raisch, S., et Krakowski, S. (2021). Artificial intelligence and management: The automation–augmentation paradox. *Academy of Management Review*, *46*(1), 192–210. https://doi.org/10.5465/amr.2018.0072

Razzouki, M., Hammou, S. B., et Izenzal, M. (2025). The adoption and effective use of artificial intelligence in Moroccan higher education: the moderating role of trust. *Cogent Education*, *12*(1), 2553829. https://doi.org/10.1080/2331186X.2025.2553829

Romeo, G., et Conti, D. (2026). Exploring automation bias in human–AI collaboration: a review and implications for explainable AI. *AI & SOCIETY*, *41*(1), 259–278. https://doi.org/10.1007/s00146-025-02422-7

Savolainen, I., Ylinen, L. et Grönroos, R. (2025). AI transformation in working life: A systematic review of usage and attitudes towards AI among workers. *Digital Business*, *6*(1), 100162. https://doi.org/10.1016/j.digbus.2025.100162

Sheperis, C. J., Annan-Coultas, D. L., et Rush, C. C. (2025). Reimagining the Counseling Profession: Preparing Counselors for AI and Digital Health Integration. *Journal of Counselor Preparation and Supervision*, *19*(3), 2. https://research.library.kutztown.edu/jcps/vol19/iss3/2/

Sias, P. M., Tsetsi, E., Woo, N., et Smith, A. D. (2020). With a little help from my friends: Perceived task interdependence, coworker communication, and workplace friendship. *Communication Studies*, *71*(4), 528–549. https://doi.org/10.1080/10510974.2020.1749863

Sioui-Daoust, M., et Déziel-Proulx, M. (2025). Les employées de soutien scolaire: invisibles, essentielles… et oubliées par l'État. *Nouveaux Cahiers du socialisme*, *33*(winter), 46–53. https://www.cahiersdusocialisme.org/les-employees-de-soutien-scolaire-invisibles-essentielles-et-oubliees-par-letat/

Statistics Canada. (2024, March 20). *National insights into non-profit organizations, Canadian Survey on Business Conditions, 2023*. https://www150.statcan.gc.ca/n1/daily-quotidien/240320/dq240320a-eng.htm

Stewart, G. L. (2006). A meta-analytic review of relationships between team design features and team performance. *Journal of Management*, *32*(1), 29–55. https://doi.org/10.1177/0149206305277792

Taherdoost, H. (2018). Development of an adoption model to assess user acceptance of e-service technology: E-Service Technology Acceptance Model. B*ehaviour & Information Technology*, *37*(2), 173–197. https://doi.org/10.1080/0144929X.2018.1427793

Tambe, P., Cappelli, P., et Yakubovich, V. (2019). Artificial intelligence in human resources management: Challenges and a path forward. *California Management Review*, *61*(4), 15–42. https://doi.org/10.1177/0008125619867910

Thompson, I. A., Amatea, E. S., et Thompson, E. S. (2014). Personal and contextual predictors of mental health counselors' compassion fatigue and burnout. *Journal of Mental Health Counseling*, *36*(1), 58–77. https://doi.org/10.17744/mehc.36.1.p61m73373m4617r3

Trottier, M., Oiry, E., Martin, D., Gambs, S., et Thibault-Bellerose, A. (2024). Étendue et enjeux de l'intelligence artificielle dans les emplois professionnels: une perspective pluridisciplinaire. *Ad machina*, *8*, 177–199. https://doi.org/10.1522/radm.no8.1844

Trottier, M. (2025). *Les conseillères et conseillers d'orientation devant l'intelligence artificielle : utilisation et enjeux ?* Magazine l'Orientation de l'OCCOQ, 28–33. https://www.orientation.qc.ca/medias/iw/Magazine-OCCOQ-Printemps2025.pdf

Valtonen, A., Saunila, M., Ukko, J., Treves, L., et Ritala, P. (2025). AI and employee wellbeing in the workplace: An empirical study. *Journal of Business Research*, *199*, 115584. https://doi.org/10.1016/j.jbusres.2025.115584

Venkatesh, V., Thong, J. Y., Chan, F. K., Hu, P. J. H., et Brown, S. A. (2011). Extending the two-stage information systems continuance model: Incorporating UTAUT predictors and the role of context. *Information Systems Journal*, *21*(6), 527–555. https://doi.org/10.1111/j.1365-2575.2011.00373.x

Yonatan-Leus, R., et Brukner, H. (2025). Comparing perceived empathy and intervention strategies of an AI chatbot and human psychotherapists in online mental health support. *Counselling and Psychotherapy Research*, *25*(1), e12832. https://doi.org/10.1002/capr.12832

Career-Relationship Intersections of Women in STEM Post-Secondary Programs and Their Romantic Partners

Lindsay S. Warner, José F. Domene & Kristina Waldmann
University of Calgary

Abstract

This study explored how emerging adult women in STEM post-secondary programs jointly pursue their career plans with their romantic partners. The Action-Project Method (A-PM) was used to conduct an exploratory qualitative inquiry with six emerging adult couples, ages 20 to 28, from Western Canada, where there was a woman pursuing STEM-related university education. A-PM video-assisted interviews and consensus-based qualitative analysis within and across cases revealed the intersection of STEM career goals and other life goals commonly encountered during emerging adulthood, and career decision-making processes for the woman in STEM. Couples' STEM-related conversations were characterized by high levels of self-disclosure, comfort sharing their perspectives with each other, and, for several couples, warm and collaborative conversational tones. Furthermore, partners provided a variety of supports for the women to persist in their STEM career paths. Additional emergent themes included (a) experiencing various challenges with pursuing STEM career paths, (b) family of origin expectations in pursuing STEM, (c) the assumption that both members of the couple would be working in the long term, (d) attempting to achieve work-life balance, and (e) discussion of the purpose of work in a person's life.

Keywords: STEM, career development, romantic relationship, emerging adult, Action-Project Method

Acknowlegment: The study team would like to thank Dr. Anastasia Campbell for her significant contributions to shaping the research protocol.

Note: co-author José Domene was at the University of Calgary when this study was conducted but has subsequently relocated to Simon Fraser University.

There is an enduring gender gap in science, technology, engineering, and mathematics (STEM) education (Wall, 2019). Worldwide, women make up only 35% of individuals enrolled in STEM-related post-secondary education (UNESCO, 2017). Women's underrepresentation in STEM is problematic, in part, because STEM occupations are some of the most well-paid and rapidly growing employment opportunities (Wall, 2019). As women are discouraged or denied from lucrative career paths, the STEM field loses potential for diverse and novel perspectives. Understanding factors that influence the career development of these women is a critical step towards addressing this ongoing inequality.

There is an extensive body of literature exploring factors that both promote and hinder the retention of women in STEM at various life stages, including in the years before and during post-secondary. Some proposed explanations for lower retention in STEM include the existence of an unwelcoming climate and persistence of gender stereotypes; insufficient numbers of women to form a critical mass within educational and professional communities, leading to marginalization; reduced STEM-related achievement, choice, and self-efficacy; and family influences, such as work-family conflicts and the amount of family support and resources being provided (Buck et al., 2020; Dabney & Tai, 2013). Ultimately, the decision to persist in or exit a STEM career path is complex and has multiple contributing factors.

The complexity of making STEM-related career decisions is particularly salient for women in post-secondary education programs, who are often at a developmental stage where they are also actively involved in romantic relationships. In their review of the literature, Domene and Johnson (2021) conclude that the growing body of research evidence suggests career and relationship goals are deeply interconnected during emerging adulthood, which refers to the developmental stage in industrialized societies that occurs between the ages of 18 to 29 years old (Arnett, 2018). Shulman and Connolly (2013) proposed a "transitional" stage in romantic relationship development, during which emerging adults seek to coordinate career and life plans with a partner (p. 27). In alignment with this proposition, existing research has revealed emerging adult couples influence and support one another's career development, provide encouragement and motivation, model positive educational or occupational behaviours, make academic achievement a relationship standard, and even treat each member's educational and career goals as shared tasks (Domene et al., 2012; Manning et al., 2011; Mortimer et al., 2002).

Many emerging adults are pursuing goals related to love and work and establishing commitments in both of these areas may have advantages, such as greater life satisfaction and self-efficacy in managing work-family conflicts (Luyckx et al., 2014). On the other hand, partners may draw attention away from educational and career pursuits, and there is some evidence that anxious attachment to romantic partners might hinder career decision-making (Kvitkovičová et al., 2017; Manning et al., 2011). Career pursuits may also pose challenges for romantic relationships. In a study of newlyweds, some of whom were emerging adults, having a spouse with a higher workload predicted declines in marital satisfaction (Lavner & Clark, 2017). Despite these findings, few studies have explored the intersection of romantic relationships and career development for women in STEM. Building on the existing literature suggesting potential intersections between career development and romantic relationships during emerging adulthood, this study was designed to explore career-relationship intersections for emerging adult women pursuing careers in STEM.

Romantic Relationships and Women's Pursuit of STEM Careers

Existing research suggests romantic relationships may have both positive and negative impacts on the career development of women pursuing STEM post-secondary education and occupations. Shen (2024) found the likelihood of remaining in a STEM or STEM-related (i.e, healthcare) occupation was greater for women whose spouses also worked in these occupations. While the reasons for this finding were not explored, Shen identified the role of spousal support as an area for further investigation. There is some evidence suggesting women in STEM majors may enter romantic relationships with partners who have complementary expectations, values, and priorities in the realms of relationship, family, and career (Barth et al., 2016; Dunlap et al., 2019). At the same time, Park et al. (2011) found romantic goals may conflict with attitudes and behaviours related to STEM for women in university. Other studies have found marriage amongst women in STEM education to be associated with lower STEM persistence intentions and publication productivity, with some women experiencing pressure to downplay accomplishments and employment prospects to avoid spousal conflict (Fisher et al. 2020; Wang et al., 2017). Park et al. (2016) were interested in how preferences for traditional romantic partners, conceptualized as partners who are more intelligent than oneself, impact the pursuit of STEM. These authors found that when the goal of being romantically desirable was activated, women who preferred more intelligent romantic partners showed poorer math performance, lower identification with math, and lower interest in STEM careers. This study raised questions about the role of gender norms and expectations in the pursuit of STEM alongside romantic relationships.

Qualitative research and the accounts of women in STEM provides some insight into the career-relationship intersections of this population. Drawing on data from a larger investigation into chemistry and physics graduate students' transition into science careers, several women interviewed at a range of career stages indicated they had prioritized family life (i.e., romantic relationships, marriages, and children) when making educational or career decisions (Wyss & Tai, 2010). Compared to men, women more frequently reported work-family conflicts and seemed slightly more open to prioritizing relationships, including newer, less committed relationships. Dabney and Tai (2013) analyzed a subset of 11 interviews drawn from the same research initiative, involving women who were pursuing or had attained physics doctorates. The authors found that, although romantic partners may offer emotional support, "pick up slack," and even promote retention in STEM education, they can also be a hindering influence on career, such as by taking time away from work (p. 6). Conversely, in a study by Piatek-Jiminez (2015), women completing undergraduate mathematics majors reported they would not allow romantic relationships to interfere with the pursuit of their careers in the future. Ghose (2025) reflected on historical challenges for women in physics pursuing marriage and family, alongside her own challenges with the "two-body problem" in physics academia. Some women in STEM have highlighted the need for workplace policies and practices that better accommodate caregiving responsibilities (Stuart, 2019), and there is evidence that new mothers are more likely to leave STEM careers than new fathers (Cech & Blair-Loy, 2019). Despite these insights, many questions remain regarding the influence of romantic relationships on women's pursuit of STEM careers, including questions about the goals and processes that occur as women and their romantic partners pursue these careers together.

Contextual Action Theory

Contextual Action Theory (CAT) provides a useful framework for conducting research on career development goals and processes (Young & Domene, 2012). This theory assumes intentional, goal-directed, and socially constructed action, typically occurring between people rather than individually, as central to understanding career development and human behaviour in general (Domene, Valach, & Young, 2015; Young & Domene, 2019).

Within this framework, *action* is understood from three complementary perspectives: (a) observable, *manifest behaviour* (i.e., verbal, and nonverbal behaviour); (b) *internal processes* that guide the action (i.e., thoughts, emotions, and bodily sensations); and (c) the *meanings* that are socially constructed around an action. Action can also be organized by level of complexity. *Elements* are the observable, measurable components of action (e.g., words used in conversation, gestures, silence) which combine into *functional steps* (e.g., making a statement), representing sequential movement towards goals (e.g., to communicate an idea) and *intentional frameworks*. *Intentional frameworks* reflect the overall purpose of an interaction and overlap with specific goals. Importantly, actions are not limited to conversation. For example, the element of sitting down at one's desk may contribute to the functional step of studying and the goal/intentional framework of doing well on a test. Groups of related actions organized around shared goals are referred to as *projects*, which occur in the medium-term, while *careers* subsume several related projects over the long-term (e.g., a year or a lifetime). For example, a STEM career may include the action of attending class and the project of completing post-secondary education.

CAT emphasizes *joint action*, or the actions taken together by multiple people (e.g., couples) working together to achieve their goals (Young & Domene, 2019; Young et al., 2021; Young et al., 2005). CAT's relational emphasis is ideally suited to provide a broader understanding of the factors that both help and hinder career development for women in STEM who are in romantic relationships. Given its focus on joint action, CAT offers an optimal framework to explore how couples act together to achieve STEM career goals, and how romantic partners may support women in pursuit of those goals.

Present Study

Research on career-relationship intersections during emerging adulthood, for women in STEM is still at an exploratory stage, and the processes through which these women navigate career and relationships remains largely unknown. Understanding these processes may provide important information for addressing the gender gap that persists in many STEM occupations. For this reason, we conducted a qualitative exploration of the joint actions and projects of couples in pursuit of a STEM career. The study was guided by an overall research question, "How do women in STEM post-secondary programs jointly pursue their career plans with their romantic partners?" and two sub-questions:

1. What kinds of projects do these women engage in with their romantic partners around pursuing a STEM career?
2. What goal-directed actions are taken together by these women and their romantic partners to achieve their STEM career projects?

Method

The study was conducted using the Action-Project Method (A-PM). The A-PM is a qualitative method designed to explore intentional, goal-directed action between people within social and cultural contexts (Young et al., 2021; Young et al., 2005). The method is rooted in the theoretical assumptions of CAT. We used the A-PM to observe and understand couples' joint actions and projects, along with additional patterns of similarity (i.e., themes) that provided further insights into the process of pursuing a STEM career. The research team did not make a priori assumptions about the specific actions, projects, or themes that might be observed, but, rather, these were created from the data collection and analysis process and are assumed to be a co-construction between participants and the research team.

Participants

Following approval by the authors' institutional research ethics board (REB21-1275), participants were recruited via word of mouth and advertisements posted on a news and discussion-based social media platform and distributed by STEM-related departments, faculties, and student organizations within one university in Western Canada. Participants were recruited between September 2021 and January 2022. In A-PM studies, participants are selected based on whether they are from the population of interest and whether they have experienced the phenomenon being studied (Young et al., 2005). In published A-PM studies, sample sizes are highly variable and range from approximately 25 dyads (Young et al., 2021) to only one or two cases (e.g., Valach & Young, 2013; Young et al., 2000; Young et al., 2007). Consistent with the sample sizes used in previous master's theses and doctoral dissertations employing the A-PM, we set a target sample of 12 participants, divided into six couples (Graham, 2009; Klaassen, 2010; Lee, 2010; Polak, 2014; Silva, 2019).

Telephone screening interviews confirmed participant eligibility based on the following set of inclusion and exclusion criteria: (a) both members of the couple were between 18 and 29 years old; (b) both self-identified as being in a committed, romantic relationships spanning at least one year (including 2SLGBTQI+ relationships); (c) at least one member of the couple self-identified as a woman pursuing a STEM degree full-time; and (d) both members of the couple had conversational fluency in English.

Two exclusion criteria also informed the selection of participants. First, couples where either member was a parent were excluded because relationship and career dynamics were expected to be substantially different for families than for couples. Second, couples where the woman in STEM was pursuing a health career were excluded from the study because gender disparities in health professions are not the same as in other STEM fields (Chan et al., 2021; UNESCO, 2017). Furthermore, many definitions of STEM exclude the health professions (e.g., Wall, 2019). Note, however, that individuals in biology degrees who were considering STEM careers outside of the health sciences were not excluded. While these criteria served as a guide, final recruitment decisions were made based on the perceived fit of a participant dyad with the research questions.

The final sample included 12 participants (six couples), aged 20 to 28 years (M = 22.5; SD = 2.78). Seven participants identified as female (all the women in STEM and one romantic partner), while the remaining five participants identified as male. The women in STEM described themselves as being from the following ethnic/cultural backgrounds: European Canadian, Vietnamese, South Asian, Chinese Canadian, and Chinese Vietnamese. The romantic partners reported their ethnic/cultural backgrounds as European Canadian, Vietnamese, South Asian, and Mixed Ethnicity. The women in STEM included participants who were pursuing doctoral degrees in Computer Science (n = 1) and Biophysical Chemistry (n = 1), and participants enrolled in bachelor's degrees in Computer Science (n = 1), Bioinformatics (n = 1), and Biological Sciences (n = 2). Four of the partners were also students, pursuing a doctoral degree in Computer Science (n = 1) or undergraduate degrees in Computer Science (n = 1), Arts (n = 1), and Electrical Engineering (n = 1). The remaining two partners had previously completed at least some post-secondary education and were pursuing employment in K-12 education (n = 1) and power engineering (n = 1) at the time of their research involvement. All couples reported being in a committed, romantic relationship together (one married, one dating and cohabiting, and four dating but not cohabiting). Relationship length ranged from nearly two years to over eight years. Five couples reported primarily speaking to each other in English, while one couple indicated mainly speaking to each other in the language of their shared country of origin. After the first interview, each participant was provided a $25 CAD Amazon.ca gift card as an honorarium ($50 CAD per couple).

Research Team

The research team consisted of a university professor who identified as a Mexican-Chinese man, a graduate student who identified as a European Canadian woman, and a graduate student who identified as a European Canadian woman and completed her degree during the project. All three researchers were in long-term romantic relationships and were in, or were pursuing, careers in counselling psychology. One of the graduate students was also in the emerging adulthood stage of development at the time of data collection and analysis. As such, the research team was familiar with some of the issues raised by participants, which enriched

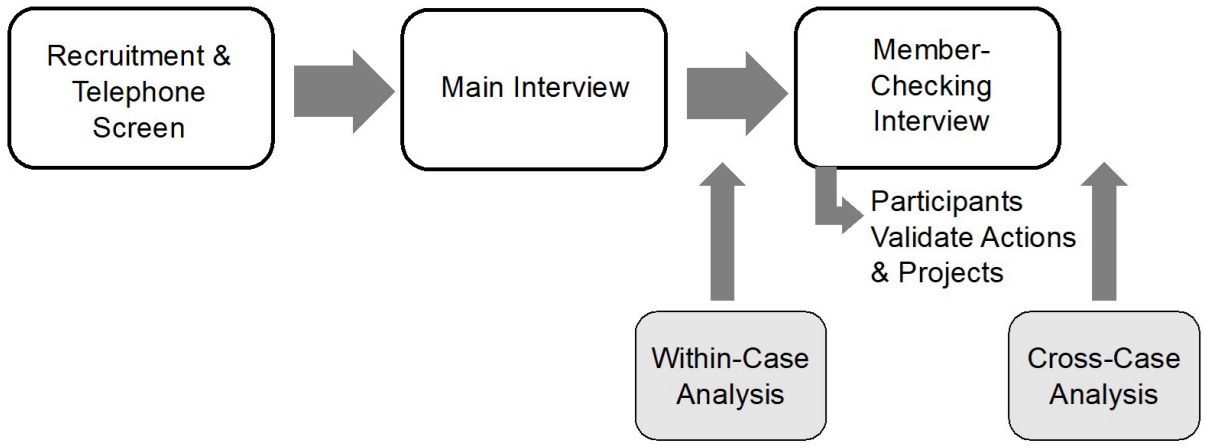
the discussion during the consensus-based analysis process. Throughout this process, the research team engaged in ongoing discussion of the potential influences of their worldviews and biases on the research, with the intention of ensuring their frames of reference did not overly influence the study results.

Data Collection and Analysis Procedures

The research procedures were based on Young and colleagues (2021) brief (i.e., non-longitudinal) version of the A-PM recommended for time-limited research (see Figure 1). To comply with institutional and provincial health authority restrictions related to the COVID-19 pandemic, our procedures incorporated online adaptations of the A-PM method recommended by Campbell and Domene (2024). The first author completed the interviews, while the entire research team conducted the within-case and cross-case analysis together.

Figure 1

Condensed Action-Project Method Process



Main Interview

All main interviews were conducted and recorded using a video conferencing platform, with both members of the couple in the same physical location. The first stage of the main interview, the *warm-up*, was designed to increase participant comfort while preparing the couple for the joint conversation. At this stage, participants were asked general questions about their careers and romantic relationships until they appeared comfortable and primed to move into the joint conversation. Potential questions included: "How did you two meet?"; "Can you tell me a bit about your relationship with each other?"; "Can you both tell me a bit about your future career or educational plans?"; "[Woman in STEM], What has your experience been like as a woman pursuing STEM?"; and "How has it been, balancing [Woman in STEM's] STEM career goals with your relationship together?" As part of the warm-up, the researcher helped couples to identify possible topics for the *joint conversation*, by asking them about the most relevant or urgent topics for them regarding the women in STEM's career path, in the context of their relationship (e.g., "If you had to pick one or two things that you feel would be the most relevant or urgent right now, for you two to focus on regarding [Woman in STEM's] career path in the context of your relationship together, what would they be?").

Next, the couple completed the *joint conversation* stage of their interview, a data collection process that involved a self-directed (i.e., recorded without any researchers present) discussion about pursuing a STEM career in the context of their romantic partnership. The joint conversation, ranging in length from 15 to 16.5 minutes across the sample, allowed the research team to observe couple's process of discussing this topic. For the final stage of the main interview, the *self-confrontation session*, each member of the couple individually reviewed the video-recorded joint conversation with the interviewer without their partner present.

The self-confrontation session provided additional information on participants' perspectives during the joint conversation (i.e., internal processes and goals/social meaning). The interviewer played the recording of the conversation back to the participant, pausing every two minutes to ask the participant about their thoughts and feelings during that segment of the joint conversation. At the end of the session, the participant was asked about their overall intentions or goals for the joint conversation, how typical the conversation was, in terms of the way the couple normally interacted, and whether they had any additional information they wanted to share about the conversation.

Within-Case Analysis

Shortly after each couple's main interview was completed, a within-case analysis was conducted for that couple, using the procedures described in Young et al. (2021) and Jensen et al. (2022). First, the warm-up and joint conversation sections of the main interview were transcribed with the assistance of the automatic transcription feature built into the video conference platform. Summary notes were used to capture the content of each participant's self-confrontation. Along with the demographic information that participants provided, these transcripts and notes formed the data set for the within-case analysis process.

As recommended by Young and colleagues (2005, 2021), the analysis began with two researchers using a consensus-based, inductive and deductive qualitative analysis strategy, identifying actions and joint actions, including elements, functional steps, and goals. The analysis involved considering the theoretical tenets of CAT, as well as close engagement with the data. Each two-minute segment of the joint conversation was coded for its elements (e.g., "agrees," "suggests a topic for discussion," "interrupts"), guided by a code list that has been used in previous A-PM studies conducted with couples. Functional steps and goals for each segment were identified by considering *how* and *why* participants were interacting in a cyclical manner, as described in Jensen et al. (2022). Finally, the intentional framework (i.e., overall goals) for the conversation were identified from the self-confrontation. Throughout the process, the researchers discussed possible interpretations until consensus was reached about which interpretation was most plausible. The results of this analysis were compiled into narrative summaries, one for each person and a joint narrative for the couple as a whole, which included a description of the couple's projects related to pursuing STEM career goals.

As a final step in the within-case analysis process, all three members of the research team independently reviewed the full data set and the narrative summaries prior to discussing the case together. These discussions followed the procedures described in Young et al. (2005) and were guided by the overarching goal of considering multiple possible interpretations about the data and reaching consensus between team members in terms of their understanding of what was occurring for each couple. The consensus-based discussion process focused on addressing the research questions and identifying any additional themes that the research team identified as meaningful within the case. Following the member-checking interviews, any corrections or additions to the narratives and project descriptions were considered in the cross-case analysis, described below.

Member-Checking Interview

After the within-case analysis was completed for a couple, the participants were invited to return for a *member-checking interview*. All but one of the member-checking interviews were conducted by videoconference, with the remaining interview being conducted by telephone. The member-checking interviews allowed participants to provide feedback on, or make changes to, the researchers' written narrative summaries of findings that emerged from the within-case analysis, as well as the joint projects identified for that couple. One couple chose not to participate in the member-checking interview; instead, the woman in STEM from this couple sent minor written revisions to her individual narrative via email. In the two instances where one member of the couple declined to participate in the member-checking interview, the member-checking focused only on findings related to the remaining participant's experience and the project descriptions. The joint narrative and individual narrative for the other member of the couple were not reviewed in these cases.

Cross-Case Analysis

Finally, the information provided by all couples was examined together in a *cross-case analysis*, conducted by the entire research team. Consistent with previous A-PM research, the cross-case analysis involved examining the data set for three randomly assigned cases at a time, prior to reviewing the entire data set together (Young et al., 2021). Next, the cross-case analysis followed the same consensus-based, inductive and deductive analysis strategy used in the within-case analysis, except that the focus was on identifying the broader patterns that were present across the different couples. Specifically, we discussed and reached agreement on patterns of similarity and difference among the cases.

Procedures for Methodological Integrity

The A-PM incorporates multiple strategies to promote methodological integrity and rigour (Young et al., 2021; Young et al., 2005). As recommended by Young and colleagues, a detailed audit trail was maintained, including records of potential (i.e., screened) and included participants, and all stages of data collection and analysis. The consensus-based analysis process, which included the three researchers discussing each other's perspectives and potential biases throughout the analysis, minimized the chances of any one person's biases and perspectives disproportionately shaping the findings (Young et al., 2021). Member-checking interviews were designed to align the analysis with participants' own perspectives and language, further reducing the chances of the research team's biases overly influencing the findings (Young et al., 2005). Furthermore, the A-PM incorporates multiple sources of information, which attend to all three perspectives on action proposed by CAT (i.e., manifest behaviour, internal processes, and goals/social meaning; Young et al., 2021). To elaborate, the data set included information from video recordings of the warm-up and joint conversation (i.e., manifest behaviour) and summary notes of the self-confrontations (i.e., internal processes and goals/social meaning).

Results

The within- and cross-case data analysis revealed numerous similarities, differences and unique patterns related to how emerging adult women in STEM post-secondary programs jointly pursued their career plans with their romantic partners. The couples constructed a variety of *projects* related to women pursuing a STEM career, which we organized into two categories, projects where the focus was on the intersection of STEM career goals and other life goals and projects focused on career decision-making. In pursuit of their projects, couples engaged in a variety of specific *actions*, including the use of warm and collaborative conversational tones, high levels of self-disclosure, and providing various supports for the women to persist in their STEM career paths. Aside from findings related to the research questions, the analysis process also identified five additional emergent themes that provided insight into the larger context in which couples' STEM career actions and projects were constructed, including challenges encountered in pursuing STEM careers, family of origin expectations, the assumption that both members of the couple would be working, pursuing work-life balance, and considering the purpose of work.

Sub-Question 1: Joint Projects

The cross-case analysis revealed several similarities across the projects (i.e., multiple related actions over a medium time period) that couples constructed related to women pursuing a STEM career. Specifically, projects reflected two overarching categories: (a) the intersection of STEM career goals and other life goals commonly encountered during emerging adulthood and (b) career decision-making for the woman in STEM.

The Intersection of STEM Career Goals and Other Life Goals

Five couples considered how the woman's STEM career goals might intersect with the couple's other life goals. That is, these couples were navigating the intersection of STEM career goals with other life goals commonly encountered during emerging adulthood. Specific life goals varied from couple to couple but, across the sample as a whole, included relationship progression, marriage, deciding where to live, and having children. Exemplifying this category of project, Marya described the couple's difficulties rectifying her lack of a concrete career goal with the couple's shared vision for their personal life:

> What's also challenging then is to pull that non-target into some of the life-family career paths of we want to live in a small kind of town in [province in Canada] and go skiing all the time and go hiking and do all these activities that we love, and I've never had those line up with my career trajectory yet.

This category of projects also included the possibility of relocating or resolving couple's future geographic locations. Fred and Aria, two PhD students, considered how to pursue their individual careers while staying together in the same place:

> Fred: You might get job in another city. I might get job in another city. There might be [jobs] in different countries as well, so, as you mentioned, we have to be [in] the same place. That's also obviously the same for my case. I also want to be [in] the same place, but [...] if I have to sacrifice some good things to keep us together, I will do that. So, sometimes I worry about your opinion, in that case, because from the very beginning you are a way better student than me. So, you have a better career compared to mine [...] Will you be able to do any sort of such sacrifices if needed?
>
> Aria: Yeah, definitely, because if it keeps us in the same place, then I'm okay to do this kind of sacrifice.

The ways that the couples could navigate this intersection were not always clear to them, and for two couples, this lack of clarity was a source of disagreement. T expressed openness to moving for Matthew's career, but Matthew preferred the decision to equally reflect each person's career opportunities. Since Matthew was more certain about his career goals, T perceived her own situation as more flexible and believed she may be able to clarify her career path by accompanying him as he pursued his post-degree career. For another couple where the partner (Andrew) was employed full-time, this intersection seemed complicated by the fact that, despite their similar ages, they appeared to be at different life stages from one another:

> Emily: I have heard a lot that you should study at different universities and not only stay at the same one, but I'm not sure how I feel about that [...] But, I don't know, if a really good opportunity presents itself somewhere else, I might consider that, and I don't know if I will take it or not, but that's an opportunity. And yeah. If I want a job or career that is fulfilling, then that might be a possibility.
>
> Andrew: Yeah, that's what concerns me because I'm out here looking for a house now, to buy. And then, I'm gonna buy a house, and then you're gonna go disappear somewhere for five years.

In an exception to this pattern, Charlotte and Elle's joint conversation included no discussion of how they might coordinate their career and relationship goals to integrate their individual lives. This divergent finding suggests that considering how to pursue career goals alongside relationship goals is not a priority for at least some women pursuing STEM careers.

Career Decision-Making for the Woman in STEM

Notably, most of the women in STEM were in (n = 2) or were considering (n = 3) graduate school, which may reflect the fact that many STEM career paths require advanced degrees (UNESCO, 2017). Their

status as students, some of whom were also considering future studies, may have influenced their involvement in the second category of project that emerged from the data analysis. Specifically, four couples were engaged in projects related to career decision-making for the women in STEM. For example, T expressed uncertainty about selecting a career:

> I like sitting in a class learning about stuff and I like going to the labs and being given a problem and then solving that, whatever. But no job comes to mind when I think about like, 'oh, a job, where I can sit in a lecture [and] learn about,' you know? [...] I like my major, but I don't know how I'm gonna apply that someday.

Notably, across the six couples, the women in STEM were at different stages in their career decision-making processes. Career decision-making processes that were identified in the cross-case analysis included: (a) the woman being passionate about her STEM education, but unsure of what she wanted to do for a career (as in the above quotation); (b) the woman primarily considering STEM careers but not entirely ruling out other career possibilities including becoming a full-time parent; (c) considering different specific occupations and education levels within a single STEM field; and (d) weighing the relative merits of continuing to pursue a career direction the woman had been on for several years versus switching to a new career path.

The exceptions to this general pattern were two couples where the woman in STEM already had a specific post-graduation career in mind and, in one case, a job offer in place. In the latter case, the couple had a project focused on transitioning into the workforce, because the woman had a specific job lined up after she graduated. However, this participant still seemed open to changing career directions later on in life. In the other exceptional case, the woman had at least generally decided on a specific STEM career field. Nonetheless, in contrast to the majority of the sample, these two participants seemed to have completed their career decision-making processes, at least for the time being.

Sub-Question 2: Goal-Directed Actions

Patterns of action, as conceptualized within CAT, that were similar across the couples included (a) using warm and collaborative conversational tones, (b) exhibiting high levels of self-disclosure/participant comfort with sharing their perspectives, and (c) partners providing a variety of supports for the women to persist in their STEM career paths. Additionally, several patterns of actions varied across couples. Specifically, variation was observed in terms of their engagement in planning versus going with the flow and participants' level of optimism for the future. These patterns of action revealed how couples discussed, and ultimately worked together, towards the woman in STEM's career plans and goals.

Warm and Collaborative Conversational Tone

For four couples, the joint conversations were characterized by a tone that was warm and collaborative. These couples appeared connected and in-tune with each other, acting as a team in pursuit of their goals. Aria, reflecting on the evolution of her relationship, shared her shift from a previously competitive orientation towards acting collaboratively with her husband:

> During my study, or during my goal, I didn't want to consider about what is my relationship with you, or anything else, because I always wanted to be the top one. So that's why sometimes I took a decision, a little bit more like self-centred decisions maybe. But right now, I think we are on the same path. We have the same kind of thinking. So, in our career as well, and in our relationship as well, we came into this stage that we think about each other's career too.

Although a warm and collaborative tone was most prevalent, it was not universal. For two of the couples, their joint conversation was more debate-like. This debate-like quality is exemplified by T and Matthew's discussion

of whether their relationship, and specifically the partner's education, influenced the woman in STEM's decision to take a coding course:

> T: I don't think me being exposed to you doing things like that, like coding and stuff all the time would make me—like if I see you do something like a hobby or something a lot and I try it, I don't think the fact that you like it would make me like it too.
> Matthew: I beg to disagree. Before I came to university, I never played volleyball once in my life, and I was a swimmer, and you liked volleyball. And I came here, and I started liking volleyball because you liked volleyball, and now I'm on a volleyball team.

High Levels of Self-Disclosure

The joint conversations of all six couples featured high levels of self-disclosure. Participants in this study appeared comfortable sharing their individual perspectives with one another. This theme was present even when perspectives differed between the two members of a couple. Exemplifying that comfort, Charlotte (a woman in STEM) explained, "It's just very natural, very comfortable to talk about it, 'cus I know she won't judge me for anything."

The Provision of Support

Across couples, partners provided a variety of supports for the women to persist in their STEM career paths. The specific nature of the support varied across couples, but included providing emotional support (e.g., words of encouragement, validation, and encouraging attention to mental well-being), verbal support (e.g., suggestions/advice and reminders), and practical support (e.g., household labour). In addition, some partners supported the woman in STEM by modelling/setting a positive example and making career decisions that benefit both members of the couple. For example, Frank shared how he provided practical support to Marya during her PhD candidacy preparation:

> So, yeah, just supporting in whatever way that means. Like, when you're doing your candidacy, it was trying to be here to make all the meals and just do that sort of housework, or that sort of thing, while you were super focused on getting prepped for your candidacy [...] Just little things like that that make a difference, I think.

Emily, who did not live with her partner, still made an explicit connection between household labour and support for her STEM career during the couple's joint conversation: "I know that I'd appreciate it if, during the times when things are much more busy, if you can help me remember things and help me focus on things and, I don't know, possibly pick up extra slack." Charlotte shared an example of emotional support from her same-sex partner: "I know she re-assures me, a lot, and kinda tries to drill that idea of like, my academic performance does not equate to my self-worth."

For two couples, support included figuring out an appropriate amount of support that did not overwhelm the woman in STEM's independence. In his self-confrontation, Adam explained:

> I guess one thing that I struggle with a bit is what extent I push her to do things that I think that would be good for her, and trying to find the balance of encouraging and not just trying to tell her how to live her life [...] It's just hard for me to do, so I just want to get better at that, just because she has her own spirit. Yeah, she likes to do exactly what she wants.

Furthermore, for two couples, this support was reciprocal. For these couples, there were indications that the woman in STEM also provided support for her partner's career pursuits. As Adam described:

> It kind of goes both ways, where I try to help her out and she tries to support me. Just 'cus there's a number of things I probably wouldn't have done, but did, because you know, she was in my corner.

Although the research team did not identify reciprocal support in the within-case analysis for the other couples, this may have been a function of the research question, which was focused on the woman in STEM. That is, participants were aware that the study was about supporting the career of the woman in STEM, so they may not have focused on the ways that the woman in STEM supported her partner's career during the data collection.

Patterns of Action that Varied Across the Couples

Couples varied from each other in terms of their desire to plan for their future and their optimism for that future, which may be reflective of broader variations in terms of how emerging adult couples interact with each other. There was significant variation in terms of engagement in planning versus going with the flow in pursuing couple's goals for the future. For two couples, the partner preferred to "go with the flow," while the woman in STEM preferred to have a concrete plan. For two couples, this pattern was reversed. In a fifth couple, both members seemed to engage in planning ahead, while no clear pattern was observed for the final couple in terms of this action. Couples also varied in their level of optimism for the future, or their sense that things would ultimately "work out." For four couples, optimism was expressed by only one member of the couple (three partners and one woman in STEM). For the other two couples, optimism was expressed by both members. For example, Frank expressed optimism that the couple could balance personal goals with Marya's STEM career goals:

> I think we both need to think outside the box [...] You're like oh, we can't have it both ways sort of thing, but I don't know if that's necessarily true. I think maybe it won't be the easiest path to try to merge both those but why not?

Additional Emergent Themes

Going beyond the identified patterns in participants' projects and actions, the cross-case analysis process identified five additional themes that were relevant to the overarching research question. These themes were: (a) challenges with pursuing STEM career paths, (b) family of origin expectations in pursuing STEM, (c) the assumption that both members of the couple will be working in the long term, (d) pursuing work-life balance, and (e) discussion of the purpose of work in a person's life.

Challenges with Pursuing STEM Career Paths

In four couples, the woman in STEM identified and described various challenges associated with pursuing a STEM career path that were not connected to their romantic relationship. These challenges included peer-to-peer competition and comparison, academic rigour, fear of failure, female underrepresentation, and experiences of gender discrimination. Forms of gender discrimination described by the two participants who experienced this phenomenon included sexual harassment, sexist comments, being looked down upon, and having others minimizing their knowledge and expertise. Both of these women were also engaged in efforts to increase gender inclusivity in STEM. Furthermore, both women described their perceptions that, although there are still problems, the climate of STEM for has improved over time for women:

> Marya: In terms of being a female actually in STEM I really do a lot of equity diversity and inclusion work because, I just think it's important. But we're almost there in terms of equality in the science field, particularly mine. But definitely there's been times, where I've been you know discriminated against, or looked down upon, or thought to be not as good as a chemist, due to being a female.

In contrast, Monica described but did not appear to be concerned about underrepresentation of women in her field and engaged in peer-to-peer comparison. Aria, a computer science PhD student, had not noticed gender-related discrimination or differences in the number of students in her courses and stated that the top students in her classes tended to be women.

Family of Origin Expectations in Pursuing STEM

Three couples discussed family of origin expectations in pursuing the woman's STEM careers. Those expectations varied but included encouragement to prioritize marriage and family-oriented goals, what future life options to pursue (within or outside of STEM), and school performance. For the woman in STEM in all three of these couples, family expectations seemed to carry significant weight. In her discussion about whether or not to pursue a career in pharmacy, Charlotte expressed this pressure:

> And then also with [my mom] just telling all of our family members and family friends that I'm going into it, it just feels like I have an even bigger expectation to go into it [...] It's just if I don't go into it, I feel like I'm just gonna break my mom's heart. 'Cus that's all she wants for me, and I guess both of my parents, they just came here, sacrificed everything just so I can get a good education, where it's like, I feel like I have to.

The Assumption that Both Members of the Couple Will be Working in the Long-Term

For five of the six couples, the research team identified an underlying assumption that both members of the couple would be working in the long-term. Consider, for example, Charlotte and Elle's discussion of shifting career paths over the lifespan:

> Elle: Yeah. I feel like people change up their lives all the time, and it doesn't mean that you can't restart your life at 30. It doesn't mean that you can't restart your life at 40. Like, it's a little late, but better late than never.
>
> Charlotte: Yeah no, I get that. But yeah, I have the rest of my life to kind of do what I want. It's just I don't wanna start over and just start at zero again, and kind of work my way up. It just seems like even more work.
>
> Elle: I think at the end of the day, [...] it's always going to be more work. I don't think that you're starting at zero. I think you're going back into something with a different experience and a different mindset because by the time you figure it out, you're not going to be the same person that you are now, right?

One possible exception to this pattern was Marya, who mentioned full-time parenting as an option she was considering for her future. Nonetheless, she was also exploring various STEM career paths and becoming a full-time parent did not appear to be a priority for her:

> There's also a part of my brain that says, and it's a lot of my upbringing, that well I could also just be a mom and just, not do science. And so, it's well maybe, you could move out to a small town and live there and do all your things and not work in science and to me that just blows my mind, because I haven't had a single day where I haven't thought about advanced science.

This finding needs to be interpreted in light of another aspect of the sample: only two couples were considering how to fit children into their future work and lives. These were also the oldest two couples in the sample. The possibility of having children and, by extension, the impact of becoming parents on career plans, may become more salient for couples in their mid to late 20s than in their early 20s.

Pursuing Work-Life Balance

Three couples and one additional partner disclosed information related to negotiating work-life balance in the context of pursuing a STEM career. These participants were considering how to balance their career development with other facets of their lives (e.g., their relationships, mental health, or other interests/hobbies). In his self-confrontation, Adam shared his desire for Monica to focus more on developing interests beyond her STEM career:

> I really appreciate just being able to like, if on the weekend I want to do something, it's really no big deal. I can just go ahead and do it. But for her, she probably has to worry about this meeting, that meeting, all sorts of different things, and it's just like… we're still so young. […] I just guess that I want her to have things that she's interested in outside of school, and work, and everything else that's always gonna be there.

Notably, this work-life balance seemed to be aspirational, an ongoing negotiation rather than something the couples had attained. Exemplifying this negotiation, Marya shared the following during the warm-up:

> Things like that of managing anxiety have been huge for me […] making sure I'm eating, sleeping, working out, and having those, I guess, self-care and those personal pieces built into my everyday because […] when things get too busy at work or in school, what starts going is sleeping. What starts going is like, oh I just will skip this meal, or I won't work out today. And that's where I have flexibility to make those decisions, and so it's really focusing on those pieces for me to ensure that those are all components of my day.

Discussion of the Purpose of Work in a Person's Life

All six couples' joint conversations included some discussion of the broader purpose of work in a person's life. For three couples, this discussion took the form of expressing disagreement, while the other three couples were in agreement. In terms of the couples who expressed disagreement, in two cases the woman in STEM prioritized practical/pragmatic considerations for her future career (e.g., earning potential, financial and time investment) while the partner prioritized happiness, enjoyment, and/or the pursuit of non-work interests. The third couple (Emily and Andrew) showed the opposite pattern, with the partner prioritizing pragmatic considerations while the woman in STEM prioritized self-fulfillment. For example, during their discussion of whether fulfillment can come from a job, they stated:

> Andrew: I think my general experience in this world is that jobs are not fun. Any job you have, no matter how fun it is in [week] one, week 100 you'll be sad.
> […]
>
> Emily: I would like to not, have a career that I dislike. […] I refuse to have and maintain a career that bores me because, doing things makes me feel fulfilled, and I am not going to give that up. I need something that makes me feel fulfilled and like I've accomplished something.

On the other hand, two couples were in agreement with each other about their desire to prioritize fulfillment in a career and were exploring or pursuing an occupation that the woman in STEM would "love" or feel "passionate" about. In contrast, members of the final couple both seemed more concerned with pragmatic aspects of career than with self-fulfillment (e.g., reconciling their individual careers with their desire to live in the same geographic location).

Discussion

In this study, we used the A-PM to explore how women in STEM post-secondary programs jointly pursue their career plans with their romantic partners, extending existing knowledge about interconnections

between careers and romantic relationships during emerging adulthood. We identified two kinds of commonly occurring projects and numerous goal-directed actions taken by the six couples to pursue the woman's STEM career. Several additional emergent themes contributed to a more comprehensive understanding of the women's career and relationship processes. This research shed light on the ways in which women in STEM and their romantic partners navigate possibilities and goals in the realms of love and work. Furthermore, this study extended the existing literature on the interconnection between career and relationship during emerging adulthood, and amongst women in STEM.

Joint Actions and Projects

The first category of projects we identified involved the intersection of STEM career goals with a range of other life goals commonly encountered in emerging adulthood, such as relationship progression, marriage, having children, and deciding where to live (Arnett, 2014; Domene et al., 2015; Kvasková et al., 2022). Domene et al.'s (2012) A-PM study of emerging adult couples transitioning from post-secondary into the workforce similarly revealed a category of projects related to "balancing multiple priorities," and an overlapping category of projects about "deciding where to live" (p. 20). Our findings also align with literature suggesting family and relationship considerations may influence career decision-making for some women in STEM (Wyss & Tai, 2010). Furthermore, recent research with emerging adults converges with our observation that some participants experienced tension between their careers and other life goals (Young et al. 2022; Youmans et al., 2022). Regardless of their specific stage of career development, emerging adult couples seem to consider how their careers and lives outside of work intersect.

The second category of projects involved career-decision making for the woman in STEM, including identifying careers or the next step in the woman's career path. Across the sample, couples varied significantly in their stage of career decision-making. These findings are not surprising, considering emerging adulthood tends to be a period of both career exploration and individual variation (Arnett, 2018, 2000). Projects related to career decision-making and career development have also been identified in other A-PM studies with emerging adults (Domene et al., 2012; Khalifa et al., 2018; Young et al., 2022; Young et al., 2015; Young et al., 2011). Our study extends the previous research to the population of women in STEM and their romantic partners. The fact that many of the joint projects were focused on career decision-making suggests that exploring and considering multiple career paths may be a common experience. This finding also aligns with research on emerging adulthood, which has demonstrated that this developmental period is characterized by extended career decision-making and delays in entering the workforce, at least for individuals in developed nations (Arnett, 2014; Domene et al., 2015). Overall, the projects identified in this study are highly aligned with research on emerging adulthood more generally.

Partners in this study provided a wide variety of supports for the women to persist in their STEM careers paths. Other research has similarly identified romantic partners as a potential source of career support for women in STEM in particular (Dabney & Tai, 2013; Wyss & Tai, 2010) and for emerging adults in general (Domene et al., 2012; Manning et al., 2011; Mortimer et al., 2002). In both Domene et al. (2012) and the present study, support emerged in couples' interactional patterns during the joint conversations, and in our study, four couples' joint conversations were characterized as warm and collaborative. Unique to our study, the research team observed that couples' joint conversations featured high levels of self-disclosure and comfort sharing their perspectives. Regardless of the degree of alignment (or lack thereof) in the perspectives of individual members of the couple, these couples showed striking openness with one another. These findings should be considered within the context of the study topic, which may have attracted partners who were supportive of the woman in STEM's career.

Additional Emergent Themes

The finding that women experienced challenges with pursuing STEM that were not related to their romantic relationships supports the continued presence of numerous barriers for women in STEM education that have been identified in previous research, such as underrepresentation (Frank, 2019; UNESCO, 2017;

Wall, 2019), perceived lack of belonging (Lewis et al., 2017), sexual harassment and gender-related bias (Leaper & Starr, 2019), and sexism enacted with both well-meaning and hostile intentions (Kuchynka et al., 2018). As two participants explicitly stated, it appears that, although the climate of STEM education programs may be improving for women, there is still much work to be done.

Arnett (2018) suggests that while emerging adulthood is a time in which individuals make decisions independent of their families of origin, the influence of those families remains with them. Consistent with Arnett's conceptualization, half of the women in the present study described how family of origin expectations (mainly from parents) influenced their pursuit of STEM careers. Existing research suggests parents can influence post-secondary students' STEM career development in many ways (Craig et al., 2018; Puccia et al., 2021). For example, in some cultures, parents may hold strong opinions about what career their adult children should pursue, including attitudes and beliefs about STEM (Ikkatai et al., 2019). When considered alongside this previous research, the present study findings confirm the importance of attending to the family context of career for women in STEM.

Couples in this study seemed to be operating from the implicit assumption that both of them would be working in the long-term. This observation aligns with the increasing prevalence of dual career couples in Western societies (e.g., Arnett, 2018). This finding should be interpreted in light of the fact that the two older couples in this sample were thinking about children, while the four younger couples were not. Also, couples where either partner was a parent were excluded from the study. Therefore, having children may simply not have been a relevant concern at this stage in the lives of many of the participants. One additional explanation for participants' expectations that both partners would be working long-term may be that we recruited women who were actively pursuing STEM and, therefore, had career goals in mind. Furthermore, five out of the six participating couples identified as heterosexual. In the context of traditional yet persisting gender roles in North America, if the woman is pursuing a career, it is likely both members of the couple will be.

Similar to the project relating to balancing career and other life goals, three couples and one partner were considering how to balance their career development with other facets of their lives (i.e., work-life balance). Dabney and Tai's (2013) study with female physicists similarly identified a desire for work-life balance, as well as the aspirational nature of this balance— something "just outside of [participants'] reach" (p. 4). In Dabney and Tai's study, pursuing a life outside of school was accompanied by a sense of guilt—something that was not observed amongst our sample. Perhaps this difference is reflective of the shifting discourse around work in North America that has accompanied the COVID-19 pandemic, increasing the importance of work-life balance as a consideration for many workers (Como et al., 2021).

Beyond balancing work and life, couples discussed the overarching purpose of work in a person's life. Typically, participants fell into one of two camps: (a) those who emphasized the practical/pragmatic aspects of work (e.g., considering earning potential, financial and time investment) and (b) those who emphasized the importance of obtaining fulfillment, happiness, or pursuing passions through their work. These camps mirror two categories of messaging emerging adults may receive: to either "get a real job" or "follow your passion" (Domene et al., 2017, p. 407). The latter camp also overlaps with the notion of career as calling, or "work that a person perceives as his purpose in life" (Hall & Chandler, 2005, p. 160). Although participants provided some clues into the reasons behind their differing values around career, additional research with a different focus is required to fully understand the reasons behind the prioritization of passion versus practicality or vice versa, both in the specific context of pursuing STEM careers and also more generally.

Limitations

Among the limitations of this study, we employed a condensed (i.e., non-longitudinal) version of the A-PM and were, therefore, not able to observe how couples' actions in pursuit of their projects evolved over time (Young et al., 2021). Another limitation is that the data may have been influenced by social desirability bias, considering there was no deception involved, and participants were aware of the purpose of the study at the outset. For example, some of the participants may have been motivated to represent "women in STEM" well, and to encourage other women to persist in STEM through their narratives. Similarly, partners may have been motivated to appear supportive of the women's career paths for the researchers. The method's reliance on

co-constructing meaning with participants may have limited participants' willingness to report or demonstrate actions that could be perceived as undermining their partner. However, participants reported that the content of the conversations was typical for them, despite some differences in their interactional style related to the research context (e.g., more focused, more formal, awareness of having an "audience"). Additionally, many of the themes that emerged in this study are consistent with existing research about STEM retention and career development in emerging adulthood more generally, which suggests that social desirability did not exert a greater influence in this study than in other similar studies.

Furthermore, since four out of twelve participants did not return for the member-checking interviews, we could not confirm that they agreed with our interpretation of their data. Due to scheduling restrictions on the part of the participants and research team, the time period between the main interviews and the member-checking interviews was longer than is recommended by Young and colleagues (2021). This extended duration may have made it more difficult for participants to remember details of the first interview.

In addition, the sample included two individuals who were enrolled in science degrees (biology, chemistry) at the time of their research involvement, but who revealed that they were considering a health profession (pharmacy, medicine) among the future career options that they were contemplating. Therefore, another limitation of the study is that the screening process to exclude women pursuing health careers did not work as intended, possibly because some of the participants were at relatively early stages of career decision-making. In retrospect, it may have been more effective to have used self-reported intention to pursue a STEM career outside of medicine/health as the inclusion criterion, rather than the nature of their education program. Lastly, as an exploratory, qualitative research method, the A-PM is not designed to produce generalizable results. Nonetheless, transferability of the findings needs to be evaluated in light of the characteristics of the emerging adults who participated in the study.

Future Directions for Research

Couples in this study reported having a partner who supported the woman in STEM's career or educational plans. Therefore, it is recommended that future research be conducted with a broader range of couples to capture the influence of partners and relational dynamics that may be less supportive (e.g., career-hindering influences) as well as traditional versus non-traditional gender roles. Future research might also explore the pursuit of STEM careers amongst couples where either partner is a parent and compare couples who have decided on having or not having children, or who are undecided. Researchers should also explore the role of STEM workplace culture compared to relationship dynamics (e.g., partner support) in work-family conflicts. This research is especially important considering evidence that parenthood may influence STEM retention (Cech & Blair-Loy, 2019). Considering the finding that families of origin continue to exert an influence that emerged for at least some of the women in this study, a future A-PM study could focus on the projects that occur between emerging adult women in STEM and members of their family of origin, such as their parents. Furthermore, although participants identified as coming from a variety of ethnic/cultural backgrounds, research that focuses on the experiences of women from specific cultural groups that are under-represented in STEM education would be beneficial. Buck et al. (2020) has highlighted the need to consider intersectionality (Combahee River Collective, 2014; Crenshaw, 1989, 1991) when researching gender disparities in STEM. Buck et al. (2020) also identified a lack of research on underrepresented genders in STEM beyond women, which should be addressed in future research. In addition, replication of the study with the longitudinal version of the A-PM might provide a fuller picture of the ways in which the projects and actions identified in the present study evolve over time. Quantitative, longitudinal research could be conducted to determine whether any of the actions or projects identified are predictive of STEM retention outcomes (e.g., degree completion, obtaining a STEM occupation). While an in-depth investigation of women's underrepresentation in STEM was outside the scope of the current study, this is an important area for ongoing research.

Implications for Career Counselling Practice

This study yielded several important considerations for professionals supporting the career development of emerging adult women in STEM post-secondary programs. An important finding that emerged from this study is that, while some women in STEM education programs may have a specific career goal in mind, others may be at an exploratory stage even if they are graduate students. Career practitioners working with this population should assess clients' stage of career development and select interventions that are in alignment with the client's career stage. Amundson (2018) provides excellent suggestions for career interventions appropriate for clients at varying stages of career development.

Couples in this study were also considering the purpose of work in a person's life—that is, what they value in a career. This finding underscores the critical importance of career development conversations during emerging adulthood. A major task in career counselling with women in STEM education may be facilitating deepened understanding of their career values. It may also be beneficial to normalize the idea that career values may not be static (Kirkpatrick Johnson, 2001), and that different members of a couple may have different priorities for their future work. In the realm of couples counselling, it may be important to make explicit each individual romantic partner's career values and to identify any discrepancies or conflicts that are present across the couple. If such conflicts exist, it may be beneficial to implement relationship counselling interventions designed to resolve general differences in values and priorities, even if these interventions are not specifically designed as career interventions (Domene & Johnson, 2021; Domene et al., 2015).

Careers do not exist in a vacuum. Our study lends support to researchers who have highlighted the inseparability of career and other domains of life (e.g., Domene & Johnson, 2021; Hudson Breen & Lawrence, 2021). Although the participating couples were very much engaged in career development efforts, they were also focused on other facets and goals for their future lives together. In assisting emerging adult women in STEM to clarify their career path, it may be important to encourage reflection on the kind of life they would like to lead outside of work, and how a given career path does or does not cohere with that desire. This reflection is particularly important considering the number of years of education required by many STEM careers, and existing research indicating that students in STEM post-secondary programs and adult women in the STEM workforce express concerns about managing their work-life balance in a STEM career (Beddoes & Pawley, 2014; Brue, 2019; Tan-Wilson & Stamp, 2015). In many cases, the role of the counsellor may be to assist the client in developing creative solutions to real or anticipated work-life conflicts (Amundson 2018; Hudson Breen & Lawrence, 2021).

For the couples in this study, pursuing a STEM career was a joint process. Career goals were constructed within relationships. These goals involved not just the woman in STEM but also their romantic partner and sometimes their family of origin relationships. Domene, Landine, and Stewart (2015) recommend career counsellors should assess both the relationships that may be influential in young people's career development and the impact of those influences on their career decision-making. The findings of the current study suggest that this practice is just as important for women in STEM programs as for other individuals at this stage of life. There may be a need to reconcile personal values and desires with family expectations. Our findings also suggest romantic relationships may be an important resource to harness, offering tangible support and collaborative/team effort during the woman's pursuit of their STEM career path. Furthermore, for some couples, what presents as a career problem may be better suited to couple or family counselling than career counselling (Domene & Johnson, 2021).

Conclusion

In conclusion, this study revealed some of the important ways that emerging adult women in STEM degree programs pursue their career goals together with their romantic partners, as well as the nature of their actions and projects. For emerging adult couples in the current labour market and social context, career development may include consideration of the purpose of work in a person's life. All couples in our study were negotiating the role of work in their lives, and for some this negotiation was connected to trying to maintain work-life balance as a value. Furthermore, most participants placed importance on figuring out how

to pursue STEM career goals alongside their other life goals. However, STEM fields are not always conductive to achieving this balance (e.g., Dabney & Tai, 2013). Therefore, we recommend for post-secondary educators and student services personnel, including career counsellors, to explore additional ways to increase work-life balance for their students.

References

Amundson, N. E. (2018). *Active engagement: The being and doing of career counselling* (Anniversary ed.). Doubleknot.

Arnett, J. J. (2014). *Emerging adulthood: The winding road from the late teens through the twenties* (2nd ed.). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199929382.001.0001

Arnett, J. J. (2018). Conceptual foundations of emerging adulthood. In J. L. Murray & J. J. Arnett (Eds.), *Emerging adulthood and higher education: A new student development paradigm* (pp. 11–24). Routledge. https://doi.org/10.4324/9781315623405

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Barth, J. M., Dunlap, S., & Chappetta, K. (2016). The influence of romantic partners on women in STEM majors. *Sex Roles: A Journal of Research*, *75*(3–4), 110–125. https://doi.org/10.1007/s11199-016-0596-z

Beddoes, K., & Pawley, A. L. (2014). "Different people have different priorities": Work–family balance, gender, and the discourse of choice. *Studies in Higher Education*, *39*(9), 1573–1585. https://doi.org/10.1080/03075079.2013.801432

Brue, K. L. (2019). Work-life balance for women in STEM leadership. *Journal of Leadership Education*, *18*(2), 32–52. https://doi.org/10.12806/V18/I2/R3

Buck, G. A., Francis, D. C., & Wilkins-Yel, K. G. (2020). Research on gender equity in STEM education. In C. C. Johnson, M. J. Mohr-Schroeder, T. J. Moore, & L. D. English (Eds.), *Handbook of research on STEM education* (pp. 289–299). Routledge. https://doi.org/10.4324/9780429021381

Campbell, A. K., & Domene, J. F. (2024). Zooming into qualitative research: Online adaptation of the action-project method research design. *Qualitative Research in Psychology*, *21*(3), 307–327. https://doi.org/10.1080/14780887.2024.2347581

Cech, E. A., & Blair-Loy, M. (2019). The changing career trajectories of new parents in STEM. *Proceedings of the National Academy of Sciences*, *116*(10), 4182–4187. https://doi.org/10.1073/pnas.1810862116

Chan, P. C. W., Handler, T., & Frenette, M. (2021). Gender differences in STEM enrolment and graduation: What are the roles of academic performance and preparation? *Economic and Social Reports*, *1*(11). https://doi.org/10.25318/36280001202101100004-eng

Combahee River Collective (2014). A Black feminist statement. *WSQ: Women's Studies Quarterly*, *42*(3–4), 271–280. https://doi.org/10.1353/wsq.2014.0052 (Original work published 1977)

Como, R., Hambley, L., & Domene, J. F. (2021). An exploration of work-life wellness and remote work during and beyond COVID-19. *Canadian Journal of Career Development*, *20*(1), 46–56. https://doi.org/10.82396/cjcd.v20i1.3163

Craig, C. J., Verma, R., Stokes, D., Evans, P., & Abrol, B. (2018). The influence of parents on undergraduate and graduate students' entering the STEM disciplines and STEM careers. *International Journal of Science Education*, *40*(6), 621–643. https://doi.org/10.1080/09500693.2018.1431853

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics. *University of Chicago Legal Forum, 1989*(1), 139–167. https://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, *43*(6), 1241–1299. https://doi.org/10.2307/1229039

Dabney, K. P., & Tai, R. H. (2013). Female physicist doctoral experiences. *Physical Review—Physics Education Research*, *9*(1), Article 010115. https://doi.org/10.1103/PhysRevSTPER.9.010115

Domene, J. F., Arim, R. G., & Law, D. M. (2017). Change in depression symptoms through emerging adulthood: Disentangling the roles of different employment characteristics. *Emerging Adulthood*, *5*(6), 406–416.

https://doi.org/10.1177/2167696817700262
Domene, J. F., & Johnson, S. M. (2021). Romantic relationships and the transition to work: Intersections, practice recommendations, and an illustrative case. In E. A. Marshall & J. E. Symonds (Eds.), *Young adult development at the school-to-work transition: International pathways and processes* (pp. 107–124). Oxford University Press. https://doi.org/10.1093/oso/9780190941512.003.0005
Domene, J. F., Landine, J., & Stewart, J. (2015). Emerging adult career transitions. In P. J. Hartung, M. L. Savickas, & W. B. Walsh (Eds.), *APA handbook of career intervention: Vol. 2. Applications* (pp. 479–494). American Psychological Association. https://doi.org/10.1037/14439-035
Domene, J. F., Nee, J. J., Cavanaugh, A. K., McLelland, S., Stewart, B., Stephenson, M., Kauffman, B., Tse, C. K., & Young, R. A. (2012). Young adult couples transitioning to work: The intersection of career and relationship. *Journal of Vocational Behavior*, *81*(1), 17–25. https://doi.org/10.1016/j.jvb.2012.03.005
Domene, J. F., Valach, L., & Young, R. A. (2015). Action in counselling: A contextual action theory perspective. In R. A. Young, J. F. Domene, & L. Valach (Eds.), *Counseling and action: Toward life-enhancing work, relationships, and identity* (pp. 151–166). Springer. https://doi.org/10.1007/978-1-4939-0773-1_9
Dunlap, S. T., Barth, J. M., & Chappetta, K. (2019). Gender roles in the romantic relationships of women in STEM and female-dominated majors: A study of heterosexual couples. *Gender Issues*, *36*(2), 113–135. https://doi.org/10.1007/s12147-018-9223-3
Fisher, M., Nyabaro, V., Mendum, R., & Osiru, M. (2020). Making it to the PhD: Gender and student performance in sub-Saharan Africa. *PLOS ONE*, *15*(12), Article e0241915. https://doi.org/10.1371/journal.pone.0241915
Frank, K. (2019). *A gender analysis of the occupational pathways of STEM graduates in Canada (Analytical Studies Branch Research Paper Series No. 429)*. Statistics Canada. https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2019017-eng.htm
Ghose, S. (2025, August 26). *The forgotten half-life of women in physics*. The MIT Press Reader. https://thereader.mitpress.mit.edu/the-forgotten-half-life-of-women-in-physics/
Graham, M. D. (2009). *Recovery from addiction as joint and gendered project: An action theoretical study* [Doctoral dissertation, The University of British Columbia]. UBC Theses and Dissertations. https://doi.org/10.14288/1.0053863
Hall, D. T., & Chandler, D. E. (2005). Psychological success: When the career is a calling. *Journal of Organizational Behavior*, *26*(2), 155–176. https://doi.org/10.1002/job.301
Hudson Breen, R. E., & Lawrence, B. (2021). A call for enhanced training and action on the intersections of mental health, decent work, and career in counselling and psychotherapy. *Canadian Journal of Counselling and Psychotherapy*, *55*(1), 28–50. https://doi.org/10.47634/cjcp.v55i1.68542
Ikkatai, Y., Inoue, A., Kano, K., Minamizaki, A., McKay, E., & Yokoyama, H. M. (2019). Parental egalitarian attitudes towards gender roles affect agreement on girls taking STEM fields at university in Japan. *International Journal of Science Education*, *41*(16), 2254–2270. https://doi.org/10.1080/09500693.2019.1671635
Jensen, C., Hoben, M., Chamberlain, S. A., K. Marshall, S., Young, R. A., & Gruneir, A. (2022). Data analyses using the action project method coding technique: A guide. *International Journal of Qualitative Methods*, *21*, 1–7. https://doi.org/10.1177/16094069221108035
Khalifa, H., Alnuaim, A. A., Young, R. A., Marshall, S. K., & Popadiuk, N. (2018). Crafting continuity and change in Saudi society: Joint parent-youth transition-to-adulthood projects. *Journal of Adolescence*, *63*, 142–152. https://doi.org/10.1016/j.adolescence.2017.12.014
Kirkpatrick Johnson, M. (2001). Job values in the young adult transition: Change and stability with age. *Social Psychology Quarterly*, *64*(4), 297–317. https://doi.org/10.2307/3090156
Klaassen, D. W. (2010). *Spiritual and relational dimensions of parental grieving* [Doctoral dissertation, University of British Columbia]. UBC Theses and Dissertations. https://doi.org/10.14288/1.0053677
Kuchynka, S. L., Salomon, K., Bosson, J. K., El-Hout, M., Kiebel, E., Cooperman, C., & Toomey, R. (2018). Hostile and benevolent sexism and college women's STEM outcomes. *Psychology of Women Quarterly*, *42*(1), 72–87. https://doi.org/10.1177/0361684317741889
Kvasková, L., Širůček, J., Ježek, S., Hrubá, L., Lacinová, L., & Macek, P. (2022). Personal goals and

identity of Czech university students. *Emerging Adulthood*, *10*(2), 354–359. https://doi.org/10.1177/2167696820917813

Kvitkovičová, L., Umemura, T., & Macek, P. (2017). Roles of attachment relationships in emerging adults' career decision-making process: A two-year longitudinal research design. *Journal of Vocational Behavior, 101*, 119–132. https://doi.org/10.1016/j.jvb.2017.05.006

Lavner, J. A., & Clark, M. A. (2017). Workload and marital satisfaction over time: Testing lagged spillover and crossover effects during the newlywed years. *Journal of Vocational Behavior*, *101*, 67–76. https://doi.org/10.1016/j.jvb.2017.05.002

Leaper, C., & Starr, C. R. (2019). Helping and hindering undergraduate women's STEM motivation: Experiences with STEM encouragement, STEM-related gender bias, and sexual harassment. *Psychology of Women Quarterly*, *43*(2), 165–183. https://doi.org/10.1177/0361684318806302

Lee, C. S. M. (2010). *Emotion as energiser in parent-adolescent projects during the transition to adulthood* [Master's thesis, University of British Columbia]. UBC Theses and Dissertations. https://doi.org/10.14288/1.0053690

Lewis, K. L., Stout, J. G., Finkelstein, N. D., Pollock, S. J., Miyake, A., Cohen, G. L., & Ito, T. A. (2017). Fitting in to move forward: Belonging, gender, and persistence in the physical sciences, technology, engineering, and mathematics (pSTEM). *Psychology of Women Quarterly*, *41*(4), 420–436. https://doi.org/10.1177/0361684317720186

Luyckx, K., Seiffge-Krenke, I., Schwartz, S. J., Crocetti, E., & Klimstra, T. A. (2014). Identity configurations across love and work in emerging adults in romantic relationships. *Journal of Applied Developmental Psychology*, *35*(3), 192–203. https://doi.org/10.1016/j.appdev.2014.03.007

Manning, W. D., Giordano, P. C., Longmore, M. A., & Hocevar, A. (2011). Romantic relationships and academic/career trajectories in emerging adulthood. In F. D. Fincham & M. Cui (Eds.), *Romantic relationships in emerging adulthood* (pp. 317–334). Cambridge University Press. https://doi.org/10.1017/CBO9780511761935.017

Mortimer, J. T., Zimmer-Gembeck, M. J., Holmes, M., & Shanahan, M. J. (2002). The process of occupational decision making: Patterns during the transition to adulthood. *Journal of Vocational Behavior*, *61*(3), 439–465. https://doi.org/10.1006/jvbe.2002.1885

Park, L. E., Young, A. F., Eastwick, P. W., Troisi, J. D., & Streamer, L. (2016). Desirable but not smart: Preference for smarter romantic partners impairs women's STEM outcomes. *Journal of Applied Social Psychology*, *46*(3), 158–179. https://doi.org/10.1111/jasp.12354

Park, L. E., Young, A. F., Troisi, J. D., & Pinkus, R. T. (2011). Effects of everyday romantic goal pursuit on women's attitudes toward math and science. *Personality and Social Psychology Bulletin*, *37*(9), 1259–1273. https://doi.org/10.1177/0146167211408436

Piatek-Jimenez, K. (2015). On the persistence and attrition of women in mathematics. *Journal of Humanistic Mathematics*, *5*(1), 3–54. https://doi.org/10.5642/jhummath.201501.03

Polak, E. L. (2014). *Mother-daughter conversations about appearance: Body image development through joint projects* [Doctoral dissertation, University of British Columbia]. UBC Theses and Dissertations. https://doi.org/10.14288/1.0166051

Puccia, E., Martin, J. P., Smith, C. A. S., Kersaint, G., Campbell-Montalvo, R., Wao, H., Lee, R., Skvoretz, J., & MacDonald, G. (2021). The influence of expressive and instrumental social capital from parents on women and underrepresented minority students' declaration and persistence in engineering majors. *International Journal of STEM Education*, *8*, Article 20. https://doi.org/10.1186/s40594-021-00277-0

Shen, A. (2024). Associations between women's retention in STEM or STEM-related fields and their spouses' occupations and majors. *Humanities and Social Sciences Communications*, *11*, Article 178. https://doi.org/10.1057/s41599-024-02692-4

Shulman, S., & Connolly, J. (2013). The challenge of romantic relationships in emerging adulthood: Reconceptualization of the field. *Emerging Adulthood*, *1*(1), 27–39. https://doi.org/10.1177/2167696812467330

Silva, V. (2019). *Navigating family caregiving for dementia: The joint actions and projects of family members* [Master's thesis, University of British Columbia]. UBC Theses and Dissertations. https://doi.

org/10.14288/1.0379649
Stuart, B. (2019, February 6). *Women and girls weigh in on gender diversity in STEM careers*. CERIC. https://ceric.ca/2019/02/women-and-girls-weigh-in-on-gender-diversity-in-stem-careers/
Tan-Wilson, A., & Stamp, N. (2015). College students' views of work–life balance in STEM research careers: Addressing negative preconceptions. *CBE—Life Sciences Education*, *14*(3), 1–13. https://doi.org/10.1187/cbe.14-11-0210
UNESCO. (2017). *Cracking the code: Girls' and women's education in science, technology, engineering and mathematics (STEM)*. https://unesdoc.unesco.org/ark:/48223/pf0000253479
Valach, L., & Young, R. (2013). The case study of therapy with a Swiss woman: An action theory perspective. In S. Poyrazli & C. E. Thompson (Eds.), *International case studies in mental health* (pp. 13–32). Sage Publications. https://doi.org/10.4135/9781452240589.n2
Wall, K. (2019). *Persistence and representation of women in STEM programs. Insights on Canadian Society*. Statistics Canada. https://www150.statcan.gc.ca/n1/pub/75-006-x/2019001/article/00006-eng.htm
Wang, X., Chan, H.-Y., Soffa, S. J., & Nachman, B. R. (2017). A nuanced look at women in STEM fields at two-year colleges: Factors that shape female students' transfer intent. *Frontiers in Psychology*, *8*, Article 146. https://doi.org/10.3389/fpsyg.2017.00146
Wyss, V. L., & Tai, R. H. (2010). Conflicts between graduate study in science and family life. *College Student Journal*, *44*(2), 475–491.
Youmans, A. R., Canby, N. K., & Córdova, J. V. (2022). College, career, commitment, oh my: How emerging adult women balance romantic relationships, career plans, and financial stability. *Emerging Adulthood*, *10*(3), 804–814. https://doi.org/10.1177/21676968211054612
Young, R. A., & Domene, J. F. (2012). Creating a research agenda in career counselling: The place of action theory. *British Journal of Guidance & Counselling*, *40*(1), 15–30. https://doi.org/10.1080/03069885.2011.620603
Young, R. A., & Domene, J. F. (2019). Contextual action theory: Concepts, processes, and examples. In N. Arthur & M. McMahon (Eds.), *Contemporary theories of career development: International perspectives* (pp. 78–90). Routledge. https://doi.org/10.4324/9781315276175
Young, R. A., Domene, J. F., Pradhan, K., Botia, L. A., Chi, E., Chiang, M. M.-J., Gendron, M. R., Noel, M., & Rosario, S. (2022). Facilitating goal-directed transition projects for young adult newcomers to Canada: A qualitative study of a brief supportive counseling intervention. *Counselling Psychology Quarterly*, *36*(2), 272–296. https://doi.org/10.1080/09515070.2022.2080643
Young, R. A., Domene, J. F., Valach, L., & Socholotiuk, K. (2021). Exploring human action in counseling psychology: The action-project research method. *Journal of Counseling Psychology*, *68*(3), 331–343. https://doi.org/10.1037/cou0000533
Young, R. A., Lynam, M. J., Valach, L., Novak, H., Brierton, I., & Christopher, A. (2000). Parent-adolescent health conversations as action: Theoretical and methodological issues. *Psychology & Health*, *15*(6), 853–868. https://doi.org/10.1080/08870440008405587
Young, R. A., Marshall, S. K., Domene, J. F., Graham, M., Logan, C., Templeton, L., Zaidman-Zait, A., & Valach, L. (2007). Meaningful actions and motivated projects in the transition to adulthood: Two case illustrations. *International Journal for Educational and Vocational Guidance*, *7*(3), 149–158. https://doi.org/10.1007/s10775-007-9127-3
Young, R. A., Marshall, S. K., Foulkes, K., Haber, C., Lee, C. S. M., Penner, C., & Rostram, H. (2011). Counseling for the transition to adulthood as joint, goal-directed action. *Journal of Vocational Behavior*, *79*(2), 325–333. https://doi.org/10.1016/j.jvb.2011.02.005
Young, R. A., Marshall, S. K., Wilson, L. J., Green, A. R., Klubben, L., Parada, F., Polak, E. L., Socholotiuk, K., & Zhu, M. (2015). Transition to adulthood as a peer project. *Emerging Adulthood*, *3*(3), 166–178. https://doi.org/10.1177/2167696814559304
Young, R. A., Valach, L., & Domene, J. F. (2005). The action-project method in counseling psychology. *Journal of Counseling Psychology*, *52*(2), 215–223. https://doi.org/10.1037/0022-0167.52.2.215

From Field to Future: Translating Extracurricular Activities into Transferable Skills for Career Success

Luca Sirianni & Hana EI Kaissi
Seneca Polytechnic

Abstract

This article explores the connection between skill development in extracurricular activities and skills needed for the workplace, highlighting the results from a survey with the Seneca Sting Women's Soccer Team, the 2023 Canadian College Athletic Association National Champions. Using survey results collected from the Seneca soccer team players and other broader research on employability and transferable soft skills needed in the workplace, findings reveal an awareness among the soccer players of the skills gained through participating in sports, such as communication, critical thinking, collaboration and adaptability. These findings suggest the importance of career professionals continuing to support students in developing these skills through targeted skills articulation programming that improves their confidence in communicating skills gained from academic and extracurricular activities for workplace success. This article examines the research question: How do skills gained through extracurricular activities such as varsity soccer translate into skills needed for the workplace?

Keywords: extracurricular activities, transferable skills, career success, skill development, varsity athletics, student athletes, career influencer, skills articulation

Disclaimer: Some of the information in this article was previously published in the March 2026 issue of CEIA Experience Magazine. This article contains expanded context and additional information that were not previously published or included in the original version.

Helping students connect their activities to workplace-relevant skills is essential. This understanding fosters self-efficacy and builds confidence in their ability to succeed in their chosen careers. Moreover, students need to realize that skills are the language employers and industries speak. Bridging the gap between the skills students develop and the skills employers need is vital for transitioning from school to work.

Graduating career-ready students is a primary mission for many post-secondary institutions and career centres. Career readiness involves having a clear understanding of oneself, one's work aspirations, and the ability to navigate changes in one's career. The National Association of Colleges and Employers (NACE) (n.d.) defines career readiness as the "foundation from which to demonstrate requisite core competencies that broadly prepare the college educated for success in the workplace and lifelong career management" (para 1). The competencies identified include Career and Self-Development, Communication, Critical Thinking, Equity and Inclusion, Leadership, Professionalism, Teamwork, and Technology (National Association of Colleges and Employers, 2025). It is no longer sufficient to prepare students solely in the subject matter; graduating confident, well-rounded students with academic and technical knowledge, as well as a variety of transferable skills, has become essential to their success in the workplace.

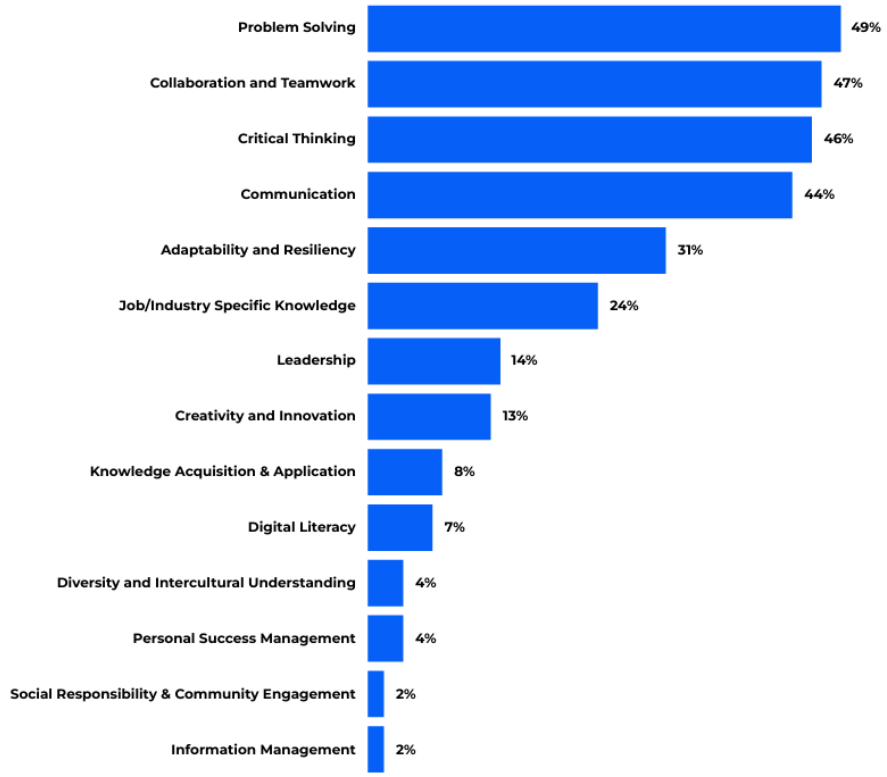
While career development literature emphasizes the importance of developing skills for career and workplace readiness, many post-secondary students continue to struggle with articulating these skills. As career educators, we frequently encounter students who struggle to communicate skills they have acquired through academic programs, experiences, and other extracurricular activities in relation to workplace requirements. Despite recognizing the importance of these skills for career success, many students find it challenging to articulate them confidently. According to Mary Pretotto, a Professor in the School of Marketing & Media at Seneca Polytechnic, "Traditionally, students laser focus on the outcome of what they learn and the grades they receive. By having them consciously consider the 'how and why' of the skills they are developing, the long-term benefits of what they are being taught begins to resonate with them in a more concrete way" (as cited in Seneca Polytechnic, 2023a, para. 11). Acquiring and developing skills is a fundamental pillar of self-awareness and career readiness. The Canadian Education and Research Institute for Counselling (CERIC) defines skills as "abilities and aptitudes, or that which a person is good at and which can be learned or developed" (CERIC, n.d.). These skills are needed for all individuals to start and progress in the workforce. Gaining skills and abilities to accomplish career related tasks is a recipe for achieving success in one's career.

A 2024 summary briefing conducted by The Conference Board of Canada looked at the needs for social and emotional skills (SES) in the workplace (Rose, 2024). Findings from employers indicated that those skills (also referred to as soft, human, or people skills) are as important as technical skills, adding that staff with strong SES contribute to a positive workplace culture while also boosting profitability.

Recently, the 2025 Canadian Campus Recruitment Outlook Report by Brainstorm Strategy Group (Brainstorm Strategy Group, 2025), surveyed over 150 employers from November 2024 to February 2025 to gauge the current state of campus recruiting and to forecast hiring trends for 2025 (see Figure 1). Findings indicated that employers ranked the top three skills they seek in new student recruits as problem solving (49%), collaboration and teamwork (47%), and critical thinking (46%).

Figure 1

Top Skills Sought After in New Student Job Candidates



Note. Adapted from 2025 Canadian campus recruitment outlook report by Brainstorm Strategy Group, 2025 https://brainstorm.ca/product/2025-campus-recruitment-outlook-report.

Seneca Polytechnic also recognizes the importance of such skills in career success. As part of its 2023-2026 strategic plan entitled *The Next*, it emphasizes its dedication to getting students "career and world ready," offering a seamless transition from education to employment (Seneca Polytechnic, 2023b). Through consultations with students and employers, Seneca identified the importance of graduating students with strong human skills, many of which are transferable—alongside their technical competencies, so that they could thrive in the workplace and life. Collaboration, communication, empathy, resourcefulness, and agility were among the human skills required in every sector today and critical to building a successful career. Subsequently, Seneca is embedding skill development in curriculum and providing learning opportunities in less formal settings to prepare students for daily work environments. It is in these less formal settings (including extracurricular activities such as varsity athletics) that students can often overlook as a place where they can gain and develop these skills. Dan Lonergan, Manager, Experiential Learning, emphasizes, "We're in a world filled with countless AI enhanced resumes, cover letters, and LinkedIn pages. Now more than ever, how effectively students articulate their skills can make all the difference. They need to use their lived experiences—whether those are from school, previous jobs or even sports to strengthen their ability to articulate skills" (D. Lonergan, personal communication, February 4, 2026).

Method

Research Design

This survey used a mixed-methods design to address the research question: How do skills gained through extracurricular activities such as varsity soccer translate into skills needed for the workplace? The relevant skills assessed by this research were communication, critical thinking, collaboration, adaptability, attitude, and digital skills. The combined quantitative approach contained measures of perceived skill development of each indicator. Qualitative measures supplemented these questions by providing participants with an opportunity to provide reflective accounts of how they recognize, apply, and articulate transferable skills gained through sports.

Participants

Participants were student-athletes from the Seneca Sting Women's Soccer Team, the 2023 Canadian Collegiate Athletic Association National Champions. All participants were full-time post-secondary students in a Canadian post-secondary institution at the time of the survey. Of the 24 eligible participants, 19 agreed to participate. Sixteen completed the survey in full, while three partially completed the survey—completing enough of the survey to be included in the analysis. All responses were included in the findings and summaries. Participation was voluntary, and informed consent was obtained electronically prior to online survey access. This survey received ethics clearance from the Seneca Polytechnic Research Ethics Board.

Instrument Development

The researcher-developed survey included 17 questions, spanning quantitative and qualitative formats. Item development was informed by contemporary employability literature and skills categories frequently referenced by career development organizations and employers. The skills categories in the survey include Communication, Critical Thinking, Collaboration, Adaptability, Attitude, and Digital Skills. The survey combined the following elements:

- Quantitative items, assessing perceived confidence in the skill, frequency of skill use, and situational application on a Likert-type scale, ranging from 1 (*Poorly*) to 5 (*Very Effectively*).
- Qualitative items, including open-ended prompts inviting reflection on where, how, and under what conditions the skills were developed and demonstrated through the activity.

To elicit concrete evidence rather than general labels, the survey emphasized context-specific prompts. For example, instead of asking, "What skills did you develop from your extracurricular activities?" the instrument used items such as, "How well do you communicate with teammates during intense matches?" This approach aimed to increase recall of authentic performance situations is consistent with self-efficacy theory (Bandura, 1977), which highlights the role of gained skills and strengthening confidence.

Procedure

The online survey was administered to all eligible athletes via a secure link distributed by email using Qualtrics Survey Platform. The estimated completion time was 10–20 minutes. Participants could complete the survey on a computer or mobile device at a time of their choosing.

Data Analysis

Quantitative responses were summarized using descriptive analyses (e.g., counts and response distributions) and summarized in percentages. Open-ended responses were analyzed using thematic coding to identify recurring patterns in how athletes articulated and applied transferable skills. Qualitative data were examined in full, but only responses that substantively contributed to the thematic categories and aligned with the research question were selected for inclusion in the findings (See Table 1).

Table 1

Team Skills Assessment Results

Skill Area	Survey Focus	Question	# of Respondents	Response Summary
Communication	Use of communication skills during team interactions	How effectively do you express your ideas during team discussions?	19	• 63% Very effectively & Effectively • 37% Average
		How well do you communicate with teammates during intense matches?	17	• 88% Very effectively & Effectively • 12% Average
Critical Thinking	Use of critical thinking skills during matches	How well are you able to understand and analyze opponenets' strategies during matches?	17	• 88% Very effectively & Effectively • 12% Average
		How comfortable are you with adjusting tactics mid-game?	17	• 100% Very effectively & Effectively
Collaboration	Use of collaboration skills with teammates	How effectively do you handle disagreements or differeing opinions within the team?	17	• 71% Very effectively & Effectively • 24% Average • 5% Fair
		How skillfully do you build strong working relationships with your teammates?	17	• 95% Very skillfully & Skilled • 5% Fair
Adaptability	Ability to adapt during matches	How open are you to adjusting your playing style based on the needs of the team?	17	• 88% Very open & Open • 12% Neither open nor Resistant
		How effectively do you handle unexpected changes during matches?	17	• 100% Very effectively & Effectively
Attitude	Ability to maintain a positive attitude during matches	How consistently do you maintain a positive mindset during challenging matches or setbacks?	17	• 22% Very consistently • 59% Consistently • 17% Sometimes

Results

Team Skills Assessment Results

Our Seneca skills survey shows a strong alignment between the skills students gain through extracurricular activities and those sought after by employers. Key findings seen in Table 1 include:

- Adaptability: 100% of participants reported handling unexpected changes very effectively and effectively in highly stressful in-game situations.
- Communication: 88% rated their communication as very effective and effective during intense matches.
- Collaboration: 95% answered they very skillfully and skillfully build strong working relationships.

The identification of these skills is an important first step. However, students often need support in recognizing and expressing these skills as they plan their next career steps. By providing tools to help students translate their academic, work, and extracurricular experiences into clearly articulated skills and strengths, we as career educators help foster their confidence and self-sufficiency in their career journeys.

Through some of the qualitative questions, we were able to gain further insight of how participants viewed the skills they have developed. One participant shared:

> "As a student in health care, using effective Communication and collaboration is crucial. Using these skills allows me to work together with others creating a better outcome for patients in our field. Communicating when help is needed allows us to prevent injury and improve overall care for patients" (Participant 1).

We also believe that the survey helped students reflect on their experience and recognize how the soccer activity they were involved in helped them develop these skills for their future workplaces. According to another participant, "All of the skills I have learned can be applied to my future career where I can be adaptable in my field, collaborate effectively with other team members and have a positive attitude going into work" (Participant 2).

Discussion

Recognizing the importance of skills highlighted in the various surveys mentioned, as career educators, we want to support and empower students to not only develop these skills but also to gain confidence in utilizing them. It is also important to recognize allies that can help with this endeavour inside and outside the classroom and to seek alliance in augmenting this learning. By providing students with the strategies to help them learn how to use career information, we help them develop career literacy for their career journey. However, despite our efforts, we still encounter many students who find it challenging to translate their classroom learning, paid and unpaid work, volunteering, or extracurricular experiences into industry-relevant skills. Some research studies support this idea and have shown that students report a lack of awareness of the full extent of the skills they have developed, often mentioning only a few when engaging with employers (Jackson, 2013, & Strachan, 2016, as cited in Tomasson Goodwin et al., 2019).

Furthermore, recent research studies have pointed to a "skills gap" between employability skills that graduates possess and the requirements of prospective employers (Boden & Nedeva, 2010, as cited in Tomasson Goodwin et al., 2019; Jackson & Chapman, 2012, as cited in Tomasson Goodwin et al., 2019). However, this may not be a "skills gap" rather an "articulation of skills gap" (Joy et al., 2013, as cited in Tomasson Goodwin et al., 2019). This "articulation skills gap" refers to the disconnect between students' actual employability skills and their ability to effectively communicate these skills to employers. This gap is not about students not having the skills, but rather about their non-ability to articulate those skills effectively with employers. Students might not be giving value to skills they develop from activities and extracurricular

experiences as they might believe they are less important than skills they developed in paid experiences.

This gap between the skills students develop and those they can confidently articulate can also be explained by Albert Bandura's self-efficacy theory (Bandura, 1977). It refers to a person's perception of their ability to achieve their goals by performing required tasks. In postulating this, Bandura's theory might explain why students feel they lack skills or believe that they have very few, even though they have developed them. Students might feel they lack expertise in a subject due to solely having theoretical exposure to it; they might think they have not developed practical skills in that area rather only gained academic knowledge. The lack of confidence in these skills might limit students in their career planning and development, as they may reject certain careers due to their limited perception of their potential, therefore restricting them to careers they feel they are capable of doing versus ones they aspire to pursue, according to Gottfredson's theory on Circumscription and Compromise (Gottfredson, 1981). This theory explains how people eliminate and choose careers based on self-concept, social factors and perceived options. Changing this perception is crucial for students to gain confidence in their work and activities inside and outside the classroom. Showing students that they have gained both technical and transferable skills through classroom projects, experiential learning, or extracurricular activities is vital to building their confidence in their abilities.

As career educators, we play an important role in helping students connect the skills they develop from academic learning, experiences, and activities to examples they can articulate in their career journey. Many standardized and non-standardized skills assessments and methods have been developed to help students identify their skills. While these can be helpful for some students, others might still struggle to articulate their skills. For example, even though some students complete a skills checklist or assessment to identify skills they have developed, they still seem to lack confidence in articulating these skills to employers on resumes or in interviews. This disconnect between identified skills and demonstrated experiences is an area where we can help students translate their experiences and fill the gaps.

One way to help close this gap is by incorporating a simple skills reflection activity, enabling students to clearly recognize and acknowledge the skills they have developed both inside and outside the classroom. Linking activities to the skills developed helps students articulate those skills. This three-step reflective process outlined in Figure 2 is as follows:

1. **Select Activity**: List a completed activity or experience. Write down duties, tasks and responsibilities completed (i.e., describe it in detail and consider the steps undertaken to complete the activity or experience).
2. **Identify Skills**: Identify the skills developed while completing each task from the activity or experience. (Note: The practitioner can provide a list of transferable skills).
3. **Accomplishments**: Add the results you achieved or accomplishments you felt proud of from the activity or experience. (Note: The student may apply this reflection to as many activities and experiences as desired.)

Figure 2

Reflection Activity: Identifying Acquired Skills



Research findings by Tomasson Goodwin et al. (2019) further support that the use of a reflection activity helps students better articulate their skills. In their research they discussed findings that indicate students have difficulties articulating their employability skills without targeted teaching interventions. They found that previous exposure to the STAR method format (Situation, Task, Action, and Result) was the only significant factor affecting students' ability to articulate skills. Their recommendation is to integrate employability skills articulation assignments across all years and programs.

This type of reflection enables students to express the skills they have gained by drawing tangible links between their experiences and how those skills were developed. It may also further help to identify areas for enhancement. This can be incorporated into class assignments or projects, co-op and experiential learning, career chats, and other activities, helping students change their perception of skills acquired, thereby gaining confidence in their abilities.

We recognize that allies are needed in this venture as helping students develop career literacy and self-confidence in skills is not solely the task of career educators. Others can also play a crucial role in helping students recognize their valuable skills. Students tend to interact with faculty members and actively seek their opinions and guidance (Sipos, 2024). This concept of Career Influencers (CIs) has emerged within literature, showcasing individuals that play an important role in a student's career development. CIs are defined as individuals working in postsecondary institutions who informally provide career-related advice, guidance, and/or counselling to prospective and current students and/or alumni (Ho, 2017, as cited in Sipos, 2024). It is important to harness the CI role in the development of students' self-concept and confidence in building skills. An alliance between career educators and CIs could significantly enhance students' self-efficacy and career development. Developing relationships among CIs—such as professors, academic advisors, student club leaders, sport coaches, and peer mentors, to name a few—and positioning them as allies, will enhance the learning gained inside and outside the classroom in relation to developing career literacy. Sharing career knowledge and information to equip CIs with career language and tools will also ensure that the messaging is compounded and impactful.

Conclusion

In examining the research question, "How do skills gained through extracurricular activities such as varsity soccer translate into skills needed for the workplace?" this article shows how the Seneca Sting Women's Soccer Team developed an awareness of skills gained through participating in sports. The survey results collected from the varsity team survey and other broader research on employability and transferable soft skills needed in the workplace shows an alignment between the skills students gain through extracurricular activities including communication, critical thinking, collaboration, and adaptability and those sought after by employers. This alignment might not be initially evident to students however through the support of career professionals, these skills can be identified and further articulated. Building on research by Tomasson Goodwin et al. (2019), the implementation of reflective and targeted skills articulation programming can assist in improving students' confidence in communicating and articulating skills. By providing tools to help students translate their academic, work, and extracurricular experiences into clearly articulated skills and strengths, we support the development of their self-confidence and self-sufficiency in their career journeys.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Brainstorm Strategy Group. (2025). *2025 Canadian campus recruitment outlook report*. https://brainstorm.ca/product/2025-campus-recruitment-outlook-report

CERIC. (n.d.). *Skills*. In Glossary of career development. https://ceric.ca/glossary-of-career-development

Gottfredson, L. S. (1981). Circumscription and compromise: A developmental theory of occupational aspirations. *Journal of Counseling Psychology*, *28*(6), 545–579. https://doi.org/10.1037/0022-0167.28.6.545

National Association of Colleges and Employers (NACE). (n.d.). *Career readiness defined*. https://www.naceweb.org/career-readiness/competencies/career-readiness-defined

Rose, E. (2024). S*ES in the workplace: Insights from Canadian employers (Publication No. 13588)*. The Conference Board of Canada. https://fsc-ccf.ca/wp-content/uploads/2024/07/ses-in-the-workplace_2024.pdf

Seneca Polytechnic. (2023a, May 9). Seneca Polytechnic helps students develop human skills for career success. https://www.senecapolytechnic.ca/news-and-events/seneca-news/seneca-polytechnic-helps-students-develop-human-skills-for-career-success.html

Seneca Polytechnic. (2023b, May 9). *The Next: Strategic plan 2023–2026*. https://senecacollege.dcatalog.com/v/Strategic-Plan-2023-2026/

Sipos, J. E. (2024). *Faculty intentions, preparation and learning processes influencing student career development* [Doctoral dissertation, University of Toronto]. University of Toronto Research Repository. https://utoronto.scholaris.ca/server/api/core/bitstreams/1c632967-235d-495b-922b-67eb56bad303/content

Tomasson Goodwin, J., Goh, J., Verkoeyen, S., & Lithgow, K. (2019). Can students be taught to articulate employability skills? *Education + Training*, *61*(4), 445–460. https://doi.org/10.1108/ET-08-2018-0186

CANADA'S CAREER DEVELOPMENT CONFERENCE
CONGRÈS CANADIEN EN DÉVELOPPEMENT DE CARRIÈRE

In-Person + Virtual | En présentiel + virtuel

By/Par CERIC

January 25-27 janvier 2027 | Centre Rogers Centre, Ottawa, Canada

CANNEXUS 27







Promotional flyer for CANEXUS 27, Canada's Career Development Conference, with images of diverse individuals, event details, and a list of session topics in English and French.

Navigating Uncertainty, Creating Possibility
Naviguer dans l'incertitude, ouvrir des possibilités

Be part of the largest bilingual Career Development Conference in Canada!
Faites partie du plus grand congrès bilingue en développement de carrière au Canada!

Register by the Nov. 6 Early Bird deadline to save
Inscrivez-vous d'ici le 6 novembre pour profiter des tarifs hâtifs









150+ sessions on the following topics | séances sur les sujets suivants

- Future of work & workplaces
- Effective career counselling and coaching
- Labour market information
- Empowering jobseekers
- Justice, equity, diversity & inclusion
- Trauma-informed practice
- Youth employment
- Talent management & leadership development
- AI & new technology/tools
- Workforce & community economic development

- Avenir du travail et du lieu de travail
- Services d'orientation professionnelle et d'accompagnement efficaces
- Information sur le marché du travail
- Outiller les demandeurs d'emploi
- Justice, équité, diversité et inclusion
- Pratique tenant compte des traumatismes
- Emploi des jeunes
- Gestion du talent et développement du leadership
- IA, nouvelles technologies et nouveaux outils
- Main-d'œuvre et développement économique communautaire

Supported by The Counselling Foundation of Canada and a broad network of supporting organizations.
Avec le soutien de The Counselling Foundation of Canada et d'un vaste réseau d'organisations collaboratives.

cannexus.ceric.ca

Aspirations et attentes scolaires et professionnelles de jeunes Québécois et Québécoises : portrait et liens avec les perceptions de discrimination selon le statut migratoire

Valentina Rengifo et Sabruna Dorceus
Université de Sherbrooke

Résumé

Bien que les jeunes issus de l'immigration (1re et 2e générations) présentent généralement des aspirations de carrière élevées (Bourdon et al., 2019), Abrahamsen et Drange (2015) ont observé que, chez les jeunes issus de minorités ethniques, ces aspirations s'accompagnaient d'attentes de carrière atténuées par rapport à celles-ci. Ces résultats pourraient refléter des perceptions de barrières structurelles (Fouad et Kantanmeni, 2020), dont la discrimination. La littérature scientifique comporte toutefois peu d'études qui distinguent la 1re et la 2e génération, considèrent conjointement les dimensions scolaires et professionnelles ou s'intéressent aux microagressions. Ainsi, cette étude vise à examiner la relation entre les aspirations et les attentes scolaires et professionnelles, ainsi que les perceptions de discrimination selon le statut migratoire, à partir des données du projet *L'étude de l'association entre les perceptions de discrimination et les aspirations scolaires et professionnelles de jeunes Québécois* (Dorceus, 2024). Des analyses descriptives révèlent que les jeunes issus de l'immigration présentent des aspirations et des attentes globalement plus élevées que ceux non issus de l'immigration (3e génération ou plus), sans différence dans la correspondance entre les aspirations et les attentes selon le statut migratoire. Par ailleurs, les analyses de régression avec modération révèlent une seule association significative entre les scores socioéconomiques des attentes professionnelles et deux formes de perceptions de discrimination (invisibilité et dévaluation, violence physique et verbale), sans interaction avec le statut migratoire. La discussion présente des pistes d'explication et des implications en orientation.

Mots clés : perceptions de discrimination, aspirations et attentes scolaires, aspirations et attentes professionnelles, jeunes, statut migratoire

Contexte général de l'immigration au Québec et au Canada

La population immigrante[1] au Canada a connu une évolution continue au cours des derniers siècles, passant de 16 % en 1871 à 23 % de la population générale en 2021 (Statistique Canada, 2025). Au Québec, elle constitue 14,6 % de la population québécoise en 2021 et est majoritairement issue de l'immigration économique[2] (Institut de la statistique du Québec, 2024a). Cette population se caractérise également par la présence importante de jeunes : les jeunes âgés de 15 à 34 ans représentent 20,1 % de la population immigrante totale en 2021 (Gouvernement du Québec, 2025).

L'immigration apporte plusieurs avantages au Québec, notamment en soutenant la croissance démographique et en atténuant le vieillissement de la population (Institut de la statistique du Québec, 2024b). Elle contribue aussi à combler la pénurie de main-d'œuvre (Statistique Canada, 2022). À ce sujet, la population immigrante représentait 19 % de la population active au Québec en 2023 (Institut de la statistique du Québec, 2024c). Or, l'insertion professionnelle des personnes immigrantes reste complexe, en raison de difficultés liées, entre autres, à leur maîtrise de la langue française (Organisation de coopération et de développement économiques, 2020), à la reconnaissance de leur diplôme et de leur expérience professionnelle (Dubois, 2019) et à la discrimination ethnoraciale à l'embauche, définie comme le fait d'écarter une candidature, consciemment ou non, en raison de l'origine, de la race ou de la couleur de la peau, limitant ainsi les chances de cette personne d'être évaluée en entrevue et selon ses qualifications (Beauregard, 2020; Eid et al., 2012). Par ailleurs, la majorité des études portant sur l'insertion professionnelle des personnes immigrantes (p. ex. Béji et Pellerin, 2010; Dubois, 2019) se concentre sur celles issues de la 1re génération arrivée à l'âge adulte, et moins sur celles arrivées plus jeunes (jeunes de 1re génération) et aux enfants (nés au Canada) des

1 La population immigrante regroupe « les personnes qui ont ou ont déjà eu le statut d'immigration reçu ou immigrante reçue ou de résident permanent ou résidente permanente » (Institut de la statistique du Québec, 2024a).

2 L'immigration économique regroupe les personnes immigrantes sélectionnées pour leur apport à l'économie canadienne (Institut de la statistique du Québec, 2024a).

personnes immigrantes de 1re génération (jeunes de 2e génération). Ces jeunes représentent pourtant une partie importante de la population issue de l'immigration et présentent des enjeux particuliers sur le plan social, académique et professionnel qui seront présentés dans les prochaines sections.

Portrait général de jeunes issus de l'immigration au Québec

Il n'y a pas de consensus sur la tranche d'âge qui définit la jeunesse, car elle varie selon l'état des connaissances publiques et scientifiques disponibles. Bien que l'Organisation des Nations Unies (ONU) considère les jeunes comme étant âgés de 15 à 24 ans (ONU, s.d.), la Politique québécoise de la jeunesse au Québec (Gouvernement du Québec, 2016a) classe les personnes âgées de 15 à 29 ans comme des jeunes. Statistique Canada (2018) utilise une définition plus spécifique pour désigner les personnes âgées de 20 à 34 ans en tant que jeunes adultes. Par conséquent, certaines données de Statistique Canada et de l'Institut de la statistique du Québec chevauchent ces délimitations. En ce qui concerne la recherche scientifique, la nature de la problématique de la population à l'étude peut suggérer différents écarts d'âge pour définir la population des jeunes. À titre d'exemple, certaines études utilisent un échantillon large, comme Bourdon et al. (2020), qui portent sur les jeunes de 13 à 29 ans, tandis que d'autres se concentrent sur des tranches d'âge plus restreintes, comme celle de Steinbach (2015), qui s'intéressait aux jeunes de 12 à 16 ans. Dans ce contexte, afin de fournir un portrait le plus complet possible de ce segment de la population au Québec tenant compte des variations notables dans les tranches d'âge définissant cette catégorie, et à la lumière de la définition de la Politique québécoise de la jeunesse, la description du contexte se concentrera spécifiquement sur les jeunes issus de l'immigration âgés de 15 à 29 ans. De plus, cette tranche d'âge correspond à une période développementale importante, marquée par des transitions majeures, telles que la fin de l'adolescence, l'émergence de l'âge adulte et l'entrée dans la vie professionnelle, ce qui en fait un moment charnière dans la construction des trajectoires scolaires, sociales et professionnelles.

Ces jeunes peuvent être également classés selon leur statut migratoire, qui fait référence aux différentes générations (1re génération, 2e génération et 3e génération ou plus) plutôt qu'au statut d'immigration qui distingue les non-immigrants, les immigrants et les résidents non permanents (Statistique Canada, 2021a). On distingue, selon la classification du statut de génération de Statistique Canada (2021b), les jeunes issus de l'immigration, soit la 1re génération (nés à l'extérieur du Canada) et la 2e génération (nés au Canada dont au moins l'un des parents est né à l'extérieur du pays) de jeunes de la 3e génération ou plus qui regroupe les jeunes nés au Canada, dont les deux parents sont nés au Canada et qui ne sont pas considérés comme issus de l'immigration. En 2021, les jeunes issus de l'immigration représentaient 33,4 % des 15 à 24 ans au Québec (Institut de la statistique du Québec, 2023). Ils sont aussi plus susceptibles d'appartenir à une minorité visible[3]. Selon les données de 2021, 71,5 % des jeunes de la 1re génération et 54,9 % de ceux de la 2e génération appartiennent à une minorité visible, contre 1,1 % des jeunes de la 3e génération ou plus âgés de 15 à 24 ans (Statistique Canada, 2024a). Bien que les jeunes issus de l'immigration soient avantagés par rapport aux adultes immigrants sur le plan de leur intégration, notamment en raison d'une meilleure maîtrise d'au moins une des deux langues officielles (Boudarbat et Ebrahimi, 2016 ; Statistique Canada, 2023a), acquise en grande partie par l'expérience de scolarisation, ils rencontrent également des enjeux sur le plan social, scolaire et professionnel.

Enjeux des jeunes issus de l'immigration en matière d'intégration sociale, académique et professionnelle au Québec

Sur le plan de l'intégration sociale, les jeunes issus de l'immigration font face à différents obstacles qui peuvent se manifester de diverses manières. Par exemple, certaines études québécoises rapportent des rapports conflictuels entre les jeunes récemment arrivés au Québec et les jeunes non issus de l'immigration, en raison de différences en termes de valeurs, de pratiques culturelles et d'expériences de discrimination, telles que des insultes et des agressions physiques de la part d'autres élèves (p. ex. Steinbach, 2015). En plus de

3 Le terme « minorité visible » réfère aux personnes, autres que les Autochtones, qui ne sont pas de race blanche ou n'ont pas la peau blanche (Statistique Canada, 2024a).

rapports conflictuels et d'exclusion, la difficulté de développer un sentiment d'appartenance à l'égard du groupe majoritaire, c'est-à-dire les francophones québécois, est aussi évoquée chez les jeunes issus de la 2e génération (Magnan et al., 2016, 2018). Enfin, les jeunes issus de minorités visibles sont aussi exposés à la discrimination dans les services publics, notamment sous forme de profilage racial par des autorités policières, comme cela a été documenté à Montréal et à Repentigny (Armony et al., 2019, 2021).

Sur le plan académique, bien que, dans l'ensemble, les jeunes issus de l'immigration présentent un taux de diplomation au niveau secondaire et universitaire comparable ou supérieur à celui de leurs pairs de la 3e génération ou plus au Québec (Boudarbat et Ebrahimi, 2016 ; Gouvernement du Québec, 2022), certains sous-groupes demeurent désavantagés (p. ex. jeunes originaires de l'Asie du Sud, des Antilles, de l'Afrique subsaharienne et de l'Amérique centrale et du Sud) (Kamanzi, 2021 ; McAndrew et al., 2013). Ces disparités dans les parcours scolaires des jeunes issus de l'immigration peuvent s'expliquer par de nombreux facteurs. Elles peuvent être en partie causées par le statut socioéconomique des familles (McAndrew et al., 2013), les pratiques et les valeurs éducatives des familles (Kanouté et Lafortune, 2011), des difficultés scolaires (Kamanzi, 2021), ainsi que des compétences parfois moins développées en français (McAndrew et al., 2013). Ces disparités académiques peuvent également être liées à des expériences de discrimination, telles que la surveillance accrue par le personnel (Mason et al., 2022), les faibles attentes des personnes enseignants à leur égard fondées sur des stéréotypes (Colins et Magnan, 2018 ; Magnan et al., 2019 ; Mason et al., 2022), des expériences négatives auprès de conseillers d'orientation au Québec (Collins et Magnan, 2018) et l'exclusion (Magnan et al., 2019, 2021).

Au niveau du marché du travail québécois, les jeunes issus de l'immigration sont défavorisés par rapport à leurs pairs en matière de participation et de la qualité de l'emploi, laquelle renvoie à plusieurs dimensions, dont la rémunération, la stabilité, le niveau de qualification et les heures de travail (Institut de la statistique du Québec, 2025). Par exemple, les jeunes issus de l'immigration présentent des taux de chômage plus élevés et affichent des écarts salariaux négatifs comparativement à ceux de la 3e génération ou plus (Bourdarbat et Ebrahimi, 2016). Ces disparités peuvent être expliquées par différents obstacles, dont la discrimination ethnique à l'embauche (Beauregard, 2020) et les perceptions de discrimination pouvant influencer les choix de milieux de travail (Darchinian et al., 2017).

En résumé, bien que la discrimination ne soit qu'un facteur parmi d'autres associés à ces enjeux sur le plan social, académique et professionnel, plusieurs recherches présentées ci-dessus la décrivent sous différentes formes dans la vie de ces jeunes (p. ex. Beauregard, 2020; Darchinian et al., 2017; Magnan et al., 2019, 2021). Par ailleurs, il est possible qu'une partie des écarts observés puisse être expliquée par des choix individuels, mais qu'ils reflètent également, voire davantage, des choix restreints par des perceptions de barrières structurelles (Fouad et Kantamneni, 2020), telles que la discrimination. À ce sujet, certains chercheurs avancent que les perceptions de discrimination, définies comme des expériences subjectives dans lesquelles les individus estiment être la cible d'un traitement injuste et fondé sur leur appartenance à un groupe social (de Freitas et al., 2018; Major et al., 2002), peuvent influencer les aspirations et les attentes scolaires et professionnelles. Les aspirations font référence à l'expression des objectifs ou des choix d'une personne quant au plus haut niveau d'études souhaité (aspirations scolaires), ou aux professions ou métiers convoités (aspirations professionnelles), alors que les attentes reflètent des objectifs de carrière perçus comme étant réalistes et accessibles pour la personne (Rojewski, 2005). Cette relation entre les perceptions de discrimination et les aspirations et les attentes pourrait ensuite se traduire par des disparités sur le plan scolaire et professionnel, notamment à travers le processus de prise de décision de carrière chez les jeunes issus de l'immigration (p. ex. perception limitée de possibilités de carrière) (Fouad et Kantameni, 2020). Or, les perceptions de discrimination semblent encore relativement peu étudiées dans le cadre du choix de carrière. En effet, les études qui abordent les perceptions de discrimination le font principalement dans des analyses descriptives sur le vécu général des jeunes issus de l'immigration (p. ex. Collins et Magnan, 2018). Par ailleurs, bien que certaines recherches rapportent des manifestations de discrimination, telles que des insultes (Steinbach, 2015) ou du profilage racial (Armony et al., 2019, 2021), il demeure difficile d'identifier les formes de discrimination les plus fréquemment perçues par ces jeunes dans leurs différents contextes de vie (p. ex. stigmatisation, exclusion, etc.). En effet, peu d'études recensées les mesurent de manière systématique, ce qui limite la possibilité de dégager des tendances générales et leur rôle sur les choix de carrière. Ainsi, il est

pertinent d'examiner la relation potentielle entre les perceptions de discrimination et les aspirations et attentes scolaires et professionnelles de ces jeunes.

Enjeux des jeunes issus de l'immigration sur le plan des aspirations et attentes scolaires et professionnelles

La littérature scientifique rapporte des différences sur le plan des aspirations et des attentes scolaires et professionnelles des jeunes issus de l'immigration (1re et 2e générations) et des jeunes non issus de l'immigration (3e génération ou plus). Par exemple, l'étude québécoise de Bourdon et al. (2019) révèle que les jeunes de la 1re et 2e génération ont des aspirations scolaires plus élevées que ceux de la 3e génération ou plus. L'étude québécoise de Debrosse et al. (2024) suggère également que les jeunes issus de l'immigration ont des aspirations scolaires élevées, mais ne compare pas celles-ci à celles des jeunes de la 3e génération ou plus. Aussi, comparativement aux jeunes nés au Canada, ceux de la 1re génération se montrent également peu attirés par les domaines des métiers et du transport, des ressources naturelles et de l'agriculture, ainsi que de la fabrication et des services d'utilité publique (Bourdon et al., 2020). Par ailleurs, bien que l'étude norvégienne d'Abrahamsen et Drange (2015) montre que les jeunes issus de minorités ethniques ont des aspirations professionnelles plus élevées que celles des jeunes issus du groupe majoritaire, leurs attentes professionnelles ne sont pas proportionnellement élevées. En effet, ils aspirent à des carrières ambitieuses, mais anticipent moins souvent pouvoir accéder à des postes de direction dans une organisation. En revanche, leurs attentes scolaires, notamment quant à l'obtention d'un diplôme de maîtrise, demeurent supérieures à celles des jeunes du groupe majoritaire. Certaines études américaines font aussi des constats en ce qui concerne la correspondance et la congruence entre les aspirations et les attentes scolaires et professionnelles. L'étude de Metz et al. (2009) indique une différence significative dans la correspondance entre les aspirations et attentes professionnelles selon le statut de minorité : les jeunes issus des minorités visibles présentent une meilleure correspondance entre leurs aspirations et leurs attentes que les jeunes non issus des minorités visibles. L'étude américaine de Chavira et al. (2016) révèle que les aspirations scolaires des jeunes d'origine mexicaine sont corrélées à leurs attentes scolaires, ainsi qu'à leurs aspirations professionnelles. Il rapporte également une corrélation entre les aspirations et les attentes professionnelles. Enfin, bien qu'une association significative soit observée entre les aspirations scolaires et professionnelles de ces jeunes, seulement 39 % ont des aspirations scolaires et professionnelles congruentes (Chavira et al., 2016), c'est-à-dire que pour une majorité d'entre eux, le niveau de scolarité souhaité ne correspond pas nécessairement à la profession ou au métier envisagé.

Différents facteurs peuvent expliquer ces disparités entre les aspirations et les attentes (Swanson et Fouad, 2020). Des études américaines suggèrent que les jeunes issus de l'immigration perçoivent divers obstacles à la carrière, dont la discrimination autant flagrante que subtile, ce qui pourrait potentiellement influencer leurs aspirations et leurs attentes scolaires et professionnelles (Fouad et Byars-Winston, 2005 ; McWhirter et al., 2013). Les quelques études qui examinent directement cette association ne traitent pas toutes de la même forme de discrimination et des mêmes variables liées à la carrière, ce qui engendre des résultats divergents quant à la nature de la relation. L'étude américaine de Conkel-Ziebell et al. (2019) rapporte que l'anticipation de la discrimination sur le marché du travail est associée significativement à un sentiment d'efficacité personnelle (SEP) relatif à la carrière plus faible chez les garçons et à des attentes relatives à la carrière plus faible chez les filles, ce qui peut réduire leurs attentes professionnelles. Similairement, l'étude américaine d'O'Hara et al. (2012), portant sur les expériences perçues de discrimination dès le jeune âge à l'école des jeunes afro-américains, rapporte que celles-ci n'affectent pas les aspirations scolaires des jeunes, mais diminuent leurs attentes scolaires. Par ailleurs, l'étude américaine de Tovar-Murray et al. (2012), portant aussi sur les expériences perçues de discrimination raciale des jeunes afro-américains, souligne que plus celles-ci augmentent dans un contexte de faible identité ethnique, c'est-à-dire un faible engagement envers un groupe d'origine commune et les activités culturelles qui lui sont associées (Phinney, 1992), plus les aspirations professionnelles diminuent. Enfin, l'étude belge de Teney et al. (2013) examine à la fois l'anticipation de la discrimination et les expériences perçues de discrimination des jeunes issus des minorités ethniques et ne relève aucune relation avec l'anticipation de la discrimination, mais une association positive entre les aspirations scolaires et les expériences perçues de discrimination, ce qui diverge des constats des autres études.

Par ailleurs, cet état des connaissances présente plusieurs limites. Premièrement, la plupart des recherches n'étudient pas conjointement les dimensions scolaires et professionnelles des aspirations et attentes, alors qu'elles sont complémentaires. La dimension scolaire concerne le niveau de scolarité visé, tandis que la dimension professionnelle porte sur les professions ou métiers spécifiques envisagés. Bien qu'elles soient liées, elles ne se recouvrent pas entièrement, comme le montrent Chavira et al. (2016). Cela justifie ainsi leur intégration conjointe dans une même étude. Ensuite, la littérature suggère que les jeunes issus de l'immigration présentent des aspirations élevées et des attentes atténuées par rapport aux jeunes non issus de l'immigration. Toutefois, l'étude de Metz et al. (2009) est la seule à analyser la correspondance entre celles-ci selon le statut de minorité visible, mais pas selon le statut migratoire. Or, aucune de ces études n'a été menée auprès d'un échantillon canadien ou québécois ni n'a pris en compte la distinction entre les jeunes de la 1re et de la 2e génération. En effet, la majorité de ces études comparent les jeunes natifs (2e et 3e générations ou plus confondues) à ceux nés à l'étranger (1re génération) ou à différents groupes ethniques. Pourtant ces distinctions apparaissent importantes puisque, comme présenté précédemment, les jeunes de la 1re et 2e génération sont confrontés à des enjeux d'intégration moins observés chez ceux de la 3e génération ou plus. De plus, au sein même des jeunes issus de l'immigration, des différences se dégagent quant aux conditions d'intégration sociale et scolaire : les jeunes de la 1re génération font généralement face à des défis d'adaptation liés à la migration, notamment sur le plan linguistique et scolaire, tandis que ceux de la 2e génération peuvent notamment faire face à des enjeux d'appartenance et de discrimination. À notre connaissance, la seule étude ayant examiné les aspirations en fonction du statut migratoire est celle de Bourdon et al. (2019), laquelle portait exclusivement sur les aspirations scolaires, sans considérer le volet professionnel ni les attentes. En outre, la majorité des études examinant l'association entre les perceptions de discrimination, les aspirations et les attentes se concentrent principalement sur les expériences de discrimination ou l'anticipation de discriminations, sans considérer l'association relative entre ces formes de discrimination ainsi que les aspirations et attentes. Enfin, la majorité des études laissent de côté la discrimination subtile qui peut potentiellement influencer également les aspirations et les attentes. Par conséquent, l'objectif général de cette étude est d'examiner la relation entre les perceptions de discrimination et les aspirations et les attentes scolaires et professionnelles de jeunes Québécois selon leur statut migratoire.

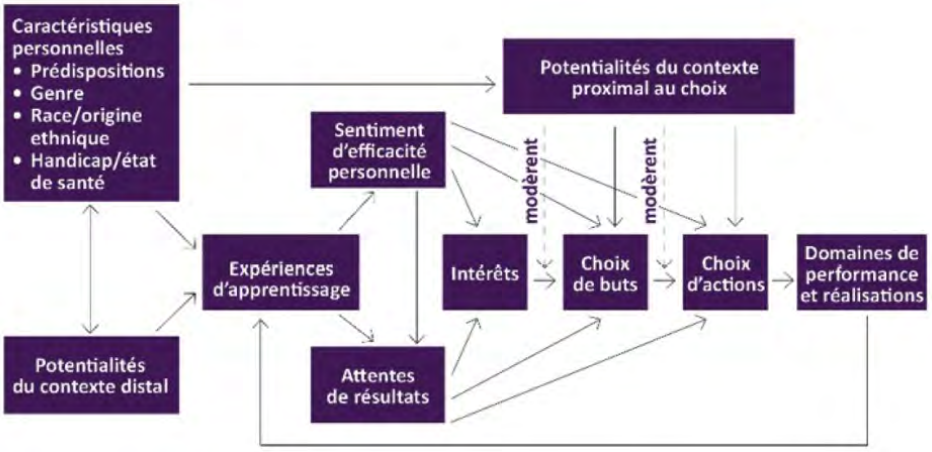
Cadre de référence de l'étude

Cette étude se base sur le modèle du processus du choix professionnel de la théorie sociocognitive relative à la carrière de Lent et al. (2000), puisqu'il considère la discrimination en tant que barrière pouvant contribuer aux aspirations et aux attentes relatives à la carrière. Plusieurs études s'intéressant à la relation entre les perceptions de discrimination et les aspirations et attentes mobilisent d'ailleurs ce modèle (p. ex. Conkel-Ziebell et al., 2019; O'Hara et al., 2012; Tovar-Murray et al., 2012). Ce modèle vise à comprendre comment les individus développent leurs intérêts, prennent des décisions et atteignent différents niveaux de succès dans leurs projets scolaires et professionnels (Lent et al., 2000). Ainsi, il met l'accent sur des variables cognitives et personnelles, ainsi que sur la manière dont celles-ci interagissent avec d'autres aspects de la personne et de son environnement pour aider à façonner le parcours de développement de carrière. La Figure 1 illustre l'articulation des variables dans le modèle du choix professionnel.

Le modèle repose sur trois concepts clés : (1) le sentiment d'efficacité personnelle (SEP), soit les croyances des individus quant à leur capacité à réaliser les actions nécessaires pour atteindre leurs objectifs; (2) les attentes de résultats, soit les croyances concernant les conséquences attendues de leurs comportements; et (3) les buts, qui correspondent aux actions dans lesquelles une personne choisit de s'engager ou aux résultats qu'elle souhaite atteindre (Lent, 2020). Ensuite, les variables personnelles (p. ex. race, genre) et environnementales, soit les influences contextuelles distales et les influences contextuelles proximales, modèrent le processus de prise de décision de carrière (Lent et al., 2000). Plus précisément, les variables personnelles et les influences contextuelles distales influencent les expériences d'apprentissage à l'origine du développement du SEP et des attentes de résultats, qui façonnent ensuite les intérêts, les buts et les actions pertinentes pour le choix de carrière. Enfin, les influences contextuelles proximales (p. ex. soutien financier, anticipation de la discrimination) agissent sur les phases actives de la prise de décision (Lent et al., 2000).

Figure 1

Modèle du processus du choix professionnel de la théorie sociocognitive de Lent et al. (2000)



Note. Figure reproduite de Sheu et Wang (2021) à partir de la figure originale de Lent et al. (1994).

Bien que l'ensemble des variables du modèle du processus du choix professionnel ne soit pas repris dans la présente étude, il permet de comprendre comment les perceptions de discrimination peuvent contribuer à la formation des aspirations et des attentes scolaires et professionnelles. Ainsi, dans ce modèle, les perceptions de discrimination peuvent être considérées, soit comme des influences contextuelles distales susceptibles d'affecter les expériences d'apprentissage, soit comme des influences contextuelles proximales influençant directement les phases actives de la prise de décision. Les aspirations et les attentes sont quant à elles envisagées comme des buts relatifs à la carrière qui orientent les actions liées au choix de carrière, puisqu'elles renvoient respectivement aux objectifs de carrière visés sans ou avec des contraintes. Les perceptions de discrimination influenceraient ainsi les aspirations et les attentes en modulant les croyances des jeunes quant à leur capacité à réaliser les actions nécessaires pour atteindre leurs objectifs, ainsi que leurs croyances quant aux résultats auxquels ils s'attendent, ce qui influencerait par la suite leurs intérêts et leurs buts relatifs à la carrière.

Dans cette perspective théorique, les aspirations et les attentes scolaires et professionnelles sont considérées comme des buts relatifs à la carrière et sont définies opérationnellement à l'aide de la conception de Rojewski (2005), largement mobilisée dans la littérature (p. ex. Metz et al., 2009). Ainsi, les aspirations scolaires sont définies comme l'expression des objectifs d'une personne quant au plus haut niveau d'études souhaité, alors que les attentes scolaires réfèrent au plus haut niveau d'études considéré comme réaliste et accessible. En complément, les aspirations professionnelles correspondent aux objectifs idéaux d'un individu en matière de professions ou de métiers, sans tenir compte des contraintes, et les attentes professionnelles aux professions ou métiers réalistes et accessibles en tenant en compte des chances de réussite.

Quant aux perceptions de discrimination, considérées comme des influences contextuelles, elles peuvent être documentées à travers différentes formes. La discrimination manifeste réfère aux formes explicites de discrimination, telles que les injures, des comportements d'évitement ou des actions discriminatoires délibérées (Donovan et al., 2013). La catégorisation retenue est celle proposée par Brondolo et al. (2005), adaptée dans une perspective intersectionnelle. Elle comprend : l'exclusion et le rejet, qui renvoient aux expériences d'exclusion sociale ou de rejet basées sur des caractéristiques distinctives (p. ex. race, genre) ; la stigmatisation, qui concerne les expériences de jugements négatifs ou de représentations dévalorisantes associées à ses caractéristiques distinctives ; la discrimination au travail/à l'école, qui réfère aux expériences de traitement injuste vécues en milieu scolaire et professionnel ; et la menace et l'agression, qui concernent les expériences de menace ou d'agression physique (Brondolo et al., 2005).

La discrimination subtile se caractérise plutôt par des microagressions, soit des échanges subtils qui transmettent des messages négatifs, dégradants ou d'exclusion (Sue et al., 2007). La perspective

intersectionnelle proposée par Singh et al. (2021) permet d'identifier quatre dimensions : les invalidations, qui délégitiment l'expérience liée à l'identité de la personne (p. ex. être perçue comme « trop sensible ») ; l'invisibilité, qui se manifeste par le fait d'être ignoré, minimisé et dévalorisé ; la présomption d'infériorité, qui associe les personnes à des stéréotypes d'incompétences et d'incapacité ; et la présomption de criminalité, qui repose sur la perception des personnes comme potentiellement dangereuses ou criminelles. Enfin, l'anticipation de la discrimination fait référence aux attentes d'expériences discriminatoires qui découlent des expériences de vie (Conkel-Ziebell et al., 2019).

Objectifs spécifiques de recherche

Trois objectifs spécifiques se dégagent : 1) Comparer les aspirations et attentes scolaires et professionnelles de jeunes Québécois et Québécoises selon leur statut migratoire ; 2) Examiner la correspondance entre les aspirations et les attentes de ces jeunes selon leur statut migratoire ; 3) Examiner la relation entre les perceptions de discrimination de ces jeunes et leurs aspirations et attentes scolaires et professionnelles selon leur statut migratoire.

Méthode

Échantillonnage et personnes participantes

Les données de la présente étude proviennent d'un projet intitulé *L'étude de l'association entre les perceptions de discrimination et les aspirations scolaires et professionnelles de jeunes Québécois* (Dorceus, 2024). L'échantillon, recruté par convenance, est composé de 703 jeunes de 4e (31,6 %) et 5e secondaire (68,4 %) fréquentant des écoles du Centre de services scolaire[4] de la Pointe-de-l'île (CSSPI) (93,6 %) et du Centre de services scolaire de la Région-de-Sherbrooke (CSSRS) (6,4 %). Parmi ces jeunes dont l'âge moyen est de 16,2 ans (*ÉT* = 0,9), 54,1 % s'identifient comme femmes, 44,2 % comme hommes et 1,7 % autrement. Aussi, 39,1 % (*n* = 275) de jeunes sont issus de la 1re génération, 36,8 % (*n* = 240) de la 2e génération et 24,0 % (*n* = 241) de la 3e génération ou plus[5]. Les jeunes issus de minorités visibles sont surreprésentés dans cet échantillon (1re génération = 90,0 % ; 2e génération = 92,0 % et 3e génération ou plus = 7,0 %), car les jeunes issus de l'immigration du CSSPSI sont majoritairement issus des minorités visibles (CSSPI, 2024). Il importe de noter que cette surreprésentation des jeunes issus de minorités visibles constitue une limite de la présente étude susceptible de restreindre la portée des résultats. Cette limite sera davantage discutée dans la discussion et la conclusion.

Instrument de mesure

La collecte de données a été réalisée à l'aide d'un questionnaire en ligne[6] d'environ 20 minutes principalement administré en classe[7], portant sur les aspirations et les attentes scolaires et professionnelles, les perceptions limitantes relatives à la carrière, ainsi que les perceptions de discrimination.

Les aspirations scolaires ont été mesurées en fonction du plus haut diplôme souhaité, si tout était possible, parmi une liste (1. Diplôme d'études secondaires (DES), Diplôme d'études professionnelles (DEP), Attestation de spécialisation professionnelle (ASP) ou moins, 2. Diplôme d'études collégiales (DEC), 3. Baccalauréat, 4. Maîtrise et 5. Doctorat). Les attentes scolaires, soit le plus haut diplôme susceptible d'être atteint selon les possibilités, sont mesurées de la même façon.

Les aspirations professionnelles ont été mesurées à l'aide de la profession ou du métier que les personnes participantes souhaitaient exercer autour de l'âge de 30 ans, si tout était possible. Ces réponses ont

4 Les centres de services scolaires sont des organismes scolaires délimités par un territoire qui leur est propre et dont la mission est de soutenir et d'accompagner les établissements d'enseignement pour qu'ils puissent prendre les décisions répondant le mieux aux besoins des élèves, selon leurs caractéristiques et les besoins du milieu (Gouvernement du Québec, 2026b).

5 Un tableau détaillant les caractéristiques sociodémographiques de l'échantillon selon le statut migratoire est présenté en Annexe 1

6 Le questionnaire de recherche est disponible sur demande auprès des personnes auteures.

7 Bien que la grande majorité des passations se soient déroulées en classe, certaines ont dû être faites à distance.

été codées selon les 10 grandes catégories et 162 sous-catégories de la Classification nationale des professions (CNP) 2021 (Statistique Canada, 2023b). Un score socioéconomique a ensuite été calculé, selon la méthode de Boyd (2008), à partir des données du recensement de 2021 sur le revenu moyen et le taux de diplomation universitaire (Statistique Canada, 2024b, 2024c). Les attentes professionnelles renvoient à la profession ou le métier que la personne participante pense exercer autour de l'âge de 30 ans en considérant les possibilités qui s'offrent à elle. Celles-ci sont codées de la même façon que les aspirations professionnelles.

La discrimination manifeste a été mesurée à partir d'une échelle de fréquence avec des items adaptés du *Brief Perceived Ethnic Discrimination Questionnaire-Community Version* (Keum et al., 2018). Des analyses factorielles exploratoires suggèrent un modèle à trois facteurs (plutôt que le modèle d'origine à quatre facteurs). Cette structure factorielle montre des indices d'ajustement satisfaisants ($\chi^2(101) = 344.369$, Comparative Fit index (CFI) = 0,932, Tucker-Lewis Index (TLI) = 0,920, Root Mean square Error of approximation (RMSEA) = 0,055, Standardized Root Square Residual (SRMR) = 0,044, facteur d'échelle = 1,678, Akaike Information criterion (AIC) = 31511,024, Bayesian Information Criterion (BIC) =31750,130, Sample-size-Adjusted BIC (SBIC) = 31588,177). Les trois sous-échelles sont : l'exclusion et l'injustice (Nb d'items : 6; $\alpha = 0,829$; $\omega = 0,829$; ex. d'item : *Des gens m'ont ignoré ou n'ont pas fait attention à moi*), la stigmatisation (Nb d'items : 5; $\alpha = 0,841$; $\omega = 0,839$; ex. d'item : *Des gens ne m'ont pas fait confiance*) et la violence physique et verbale (Nb d'items : 5; $\alpha = 0,858$; $\omega = 0,855$; ex. d'item : *Des gens ont réellement endommagé mes biens*).

Les microagressions ont été mesurées sur une échelle de fréquence avec des items adaptés de trois sous-échelles (*Invisibility*, *Assumptions of criminality*, *Environmental invalidations*) du *Racial Microagressions Scale* (Torres-Harding et al., 2012) et d'une sous-échelle (*Assumptions of inferiority*) du *Microaggressions Against Religious individuals Scale* (Cheng et al., 2019). Des analyses factorielles exploratoires soutiennent un modèle à quatre facteurs avec des indices d'ajustement acceptables ($\chi^2(129) = 532,925$, CFI = 0,893, TLI = 0,873, RMSEA = 0,061, SRMR = 0,056, facteur d'échelle = 1,304, AIC = 40014,361, BIC = 40 297,72, SBIC = 40 107,18). Les quatre sous-échelles sont : les invalidations environnementales (Nb d'items : 5; $\alpha = 0,739$; $\omega = 0,735$; ex. d'item : *Les figures d'autorité avec lesquelles j'interagis ne partagent pas mes caractéristiques distinctives*), l'invisibilité et la dévaluation (Nb d'items : 6; $\alpha = 0,845$; $\omega = 0,837$; ex. d'item : *Je me sens invisible*), la présomption d'infériorité (Nb d'items : 3; $\alpha = 0,713$; $\omega = 0,752$; ex. d'item : *Les gens sont surpris par rapport à mes réussites professionnelles*), et la présomption de criminalité (Nb d'items : 4; $\alpha = 0,815$; $\omega = 0,808$; ex. d'item : *Les gens agissent comme s'ils avaient peur de moi*). Enfin, l'anticipation de la discrimination a été mesurée via un des items liés aux perceptions limitantes relatives à la carrière et adapté à partir du *Perceptions of Barriers Scale* de McWhirter (1997) (*À cause de mes caractéristiques distinctives, il est probable que je vive de la discrimination sur le marché du travail*).

Procédure

Le questionnaire a été développé à l'automne 2021 en s'appuyant notamment sur la rédaction d'items liés aux variables à l'étude, ainsi que sur la traduction et l'adaptation d'items. Plus spécifiquement, les items portant sur les perceptions de discrimination ont d'abord été traduits de l'anglais vers le français par un comité d'expert composé de deux personnes chercheures bilingues possédant une expertise en traduction et validation de questionnaires, ainsi qu'en développement d'items. Ces items ont ensuite été adaptés afin que le motif de discrimination mentionné dans la phrase introductive renvoie aux caractéristiques distinctives des élèves participants plutôt qu'à un motif spécifique (p. ex. leur appartenance raciale). Le questionnaire a ensuite été validé dans son ensemble quant à sa pertinence et sa clarté par un comité d'experts composé de cinq personnes chercheures et de deux personnes étudiantes aux cycles supérieurs, à l'hiver 2022. Enfin, comme dernière étape de validation, un prétest visant à évaluer le contenu, la forme et la durée du questionnaire a été réalisé auprès de deux élèves de 4e et 5e secondaire ne faisant pas partie des centres de services scolaires (CSS) ciblés.

En ce qui concerne la collecte de données, réalisée à l'aide d'un questionnaire en ligne, celle-ci s'est déroulée dans sept écoles entre mai 2022 et février 2023. Pour la grande majorité des élèves participants, la passation du questionnaire en ligne a eu lieu en présentiel, en classe, sous la supervision d'une personne enseignante, dans le cadre d'activités pédagogiques liées aux thématiques abordées. Toutefois, quelques

passations ont été effectuées hors classe, sans supervision, au moyen du lien du questionnaire transmis par la direction de l'école.

Traitement et analyses de données

Les données ont été analysées à l'aide du logiciel SPSS (Version 29). Pour le premier objectif spécifique, des analyses du chi-carré ont été effectuées pour comparer les aspirations et attentes scolaires (variables ordinales) selon le statut migratoire (variable catégorielle). Le V de Cramer est l'indicateur de taille d'effet[8]. Par ailleurs, des analyses de variance (ANOVA)[9] ont été réalisées pour comparer les aspirations et attentes professionnelles à partir des scores socioéconomiques des 162 sous-catégories de la CNP (variable continue) selon le statut migratoire, avec l'oméga carré comme indicateur de taille d'effet. Pour le deuxième objectif spécifique, deux indicateurs ont été créés afin d'évaluer la correspondance entre les aspirations et les attentes selon le statut migratoire : un indicateur dichotomique (correspondance ou non correspondance)[10] pour le niveau scolaire (chi-carré) et un indicateur continu mesurant l'écart entre les scores socioéconomiques des aspirations et des attentes professionnelles pour les 162 sous-catégories de la CNP (ANOVA). Enfin, pour le troisième objectif spécifique, examinant la relation entre les variables, des analyses de régression avec effet modérateur ont été réalisées via la méthode Macro-Process de Hayes.[11] Les perceptions de discrimination sont traitées comme des variables indépendantes continues et les aspirations et attentes au niveau scolaire (niveau de diplôme) et professionnel (scores socioéconomiques pour les 162 sous-catégories de la CNP) comme des variables dépendantes continues. Le statut migratoire (variable catégorielle) est traité comme variable modératrice. Enfin, quatre variables de contrôle ont été retenues : le niveau de scolarité de la mère et du père (variables ordinales), ainsi que celle du jeune et le niveau de diversité culturelle des CSS (variables dichotomiques).

Considérations éthiques

Cette étude s'inscrit dans un projet ayant obtenu une certification éthique par le comité d'éthique de la recherche de l'université d'attache des auteurs. Aussi, le consentement libre et éclairé des personnes participantes a été obtenu via un formulaire précédent le questionnaire en ligne.

Résultats

Objectif spécifique 1 : comparaison des aspirations et attentes scolaires et professionnelles selon le statut migratoire

Le tableau 1 présente les résultats des analyses du chi-carré comparant les aspirations et les attentes scolaires selon le statut migratoire. Les résultats indiquent des différences significatives, mais de petite taille, dans les proportions de jeunes aspirant au plus haut niveau de diplôme souhaité selon leur statut migratoire ($\chi^2(8, N = 606) = 25{,}072$, $p = 0{,}002$, V de Cramer = 0,144). Les tests post-hoc montrent qu'une proportion significativement plus élevée de jeunes de la 3e génération ou plus (14,00 %) aspire à un DES, un DEP ou moins, comparativement aux jeunes issus de l'immigration (1re génération = 5,30 % ; 2e génération = 3,10 %). En revanche, les jeunes de la 1re génération aspirent à obtenir un diplôme de doctorat dans une proportion plus élevée (48,20 %) que ceux de la 3e génération ou plus (32,40 %).

8 L'ensemble des indicateurs de taille d'effet sont interprétés selon les barèmes de Cohen (1988).

9 Lorsque les variances sont égales, la correction Tukey est retenue pour les comparaisons post hoc. En cas de variances inégales, le test de Welch est appliqué, suivi de la correction de Games-Howell pour les comparaisons post hoc.

10 La correspondance au niveau scolaire fait référence à l'absence d'écart entre le plus haut niveau de diplôme souhaité (aspirations) et le plus haut niveau de diplôme visé (attentes), tandis que la non-correspondance se présente lorsque le plus haut niveau de diplôme souhaité (aspirations) est différent du plus haut niveau de diplôme visé (attentes).

11 Cette méthode ne permet pas de générer automatiquement des betas standardisés. Ceux-ci ont été calculés a posteriori pour les effets directs, mais tel que mentionné par Hayes (2022), le calcul a posteriori des betas standardisés pour les effets d'interaction n'est pas recommandé.

Tableau 1

Comparaison des aspirations et attentes scolaires selon le statut migratoire

	1re gén.	2e gén.	3e gén. +			
	%	%	%	χ^2	*p*	V de Cramer
Aspirations scolaires (n = 606)				25,072	0,002	0,144
DES, DEP ou moins	$5{,}30_a$	$3{,}10_a$	$14{,}00_b$			
DEC technique ou général	$10{,}60_a$	$13{,}80_a$	$14{,}70_a$			
Diplôme de baccalauréat	$19{,}90_a$	$25{,}40_a$	$22{,}80_a$			
Diplôme de maîtrise	$15{,}40_a$	$14{,}70_a$	$16{,}20_a$			
Diplôme de doctorat	$48{,}20_a$	$42{,}90_{a,b}$	$32{,}40_b$			
Attentes scolaires (n = 608)				21,973	0,005	0,134
DES, DEP ou moins	$7{,}70_a$	$6{,}10_a$	$16{,}10_b$			
DEC technique ou général	$15{,}30_a$	$16{,}50_a$	$22{,}40_a$			
Diplôme de baccalauréat	$23{,}00_a$	$29{,}60_a$	$23{,}80_a$			
Diplôme de maîtrise	$20{,}40_a$	$17{,}00_a$	$18{,}40_a$			
Diplôme de doctorat	$33{,}60_a$	$30{,}90_{a,b}$	$20{,}30_b$			

Note. Des indices de lettres différentes signalent des différences significatives entre les proportions des colonnes ($p < 0{,}05$), tandis que des lettres identiques indiquent l'absence de différence significative. V de Cramer : 0,10 = effet de petite taille, 0,30 = effet de taille moyenne, 0,50 = effet de grande taille.

Des différences significatives, de petite taille, sont aussi observées au niveau des attentes scolaires selon le statut migratoire ($\chi^2(8, N = 608) = 21{,}973$, $p = 0{,}005$, V de Cramer = 0,134). Les tests post-hoc indiquent également qu'une plus grande proportion des jeunes de la 3e génération ou plus pense obtenir un DES, DEP ou un diplôme de niveau inférieur (16,10 %) en comparaison avec les jeunes issus de l'immigration (1re génération = 7,70 % ; 2e génération = 6,10 %). À l'inverse, la proportion de jeunes de la 1re génération qui pensent atteindre un diplôme de doctorat est plus élevée (33,60 %), comparativement à celle observée chez les jeunes de la 3e génération ou plus (20,30 %).

Le tableau 2 présente les résultats des ANOVAs portant sur les scores socioéconomiques (162 sous-catégories de la CNP) associées aux aspirations et attentes professionnelles selon le statut migratoire[12]. Des différences significatives, bien que de moyenne taille, ont été observées pour les scores socioéconomiques des 162 sous-catégories de la CNP ($F(2, 302{,}98) = 16{,}796$, $p < 0{,}001$, $\omega^2 = 0{,}069$). Les tests post hoc de Games-Howell ont révélé que les jeunes de la 1re génération ($M = 81{,}62$; $ÉT = 18{,}40$) et de la 2e génération ($M = 79{,}17$; $ÉT = 20{,}96$) ont des aspirations professionnelles significativement supérieures à celles des jeunes de la 3e génération ou plus ($M = 66{,}41$; $ÉT = 26{,}41$).

Similairement, des différences significatives de moyenne taille ont été également observées pour les scores socioéconomiques liés aux attentes professionnelles pour les scores socioéconomiques des 162 sous-catégories de la CNP ($F(2, 237{,}41) = 11{,}294$, $p < 0{,}001$, $\omega^2 = 0{,}061$). Les tests post hoc de Games-Howell révèlent que les jeunes de la 1re génération ($M = 81{,}02$; $ÉT = 19{,}43$) et de la 2e génération ($M = 80{,}40$;

12 Les résultats de l'analyse comparant les domaines professionnels des aspirations et des attentes professionnelles en fonction des 10 grandes catégories de la CNP selon le statut migratoire sont présentées dans l'Annexe 2. Ceux de l'analyse comparant les scores socioéconomiques des aspirations et attentes professionnelles en fonction des 10 catégories de la CNP figurent dans l'Annexe 3.

ÉT = 19,54) rapportent aussi des attentes significativement supérieures à celles des jeunes de la 3e génération ou plus (*M* = 67,63 ; *ÉT* = 25,48).

Tableau 2

Comparaison des scores socioéconomiques (162 sous-catégories de la CNP) associés aux aspirations et attentes professionnelles en fonction du statut migratoire

	1re gén.	2e gén.	3e gén. +			
	M (ÉT)	*M (ÉT)*	*M (ÉT)*	ANOVA *F* test	*p*	ω²
ASP (*n* = 570)						
CNP 162	$81{,}62\ (18{,}40)_a$	$79{,}17\ (20{,}96)_a$	$66{,}41\ (26{,}41)_b$	16,796	0,001	0,068
ATP (*n* = 432)						
CNP 162	$81{,}02\ (19{,}43)_a$	$80{,}40\ (19{,}54)_a$	$67{,}63\ (25{,}48)_b$	11,294	0,001	0,061

Note. ASP = Aspirations professionnelles. ATP = Attentes professionnelles. CNP = Classification nationale des professions. Des indices de lettres différentes signalent des différences significatives entre les moyennes des colonnes ($p < 0{,}05$), tandis que des lettres identiques indiquent l'absence de différence significative. ω² : 0,01 = effet de petite taille, 0,06 = effet de taille moyenne, 0,14 = effet de grande taille.

Objectif spécifique 2 : correspondance entre aspirations et attentes selon le statut migratoire

Le tableau 3 présente les résultats du chi-carré comparant la correspondance entre les aspirations et les attentes scolaires selon le statut migratoire. Les différences s'avèrent non significatives ($\chi^2(2, N = 580) = 0{,}163$, $p = 0{,}922$, V de Cramer = 0,017), ce qui indique que la correspondance entre les aspirations et les attentes scolaires ne varie pas selon le statut migratoire.

Le tableau 4 montre la correspondance entre les aspirations et les attentes professionnelles selon le statut migratoire[13]. Les différences se révèlent non significatives pour les scores socioéconomiques des 162 sous-catégories de la CNP ($F(2, 231{,}21) = 2{,}575$, $p = 0{,}078$, $\omega^2 = 0{,}009$). Ainsi, la correspondance entre les aspirations et les attentes professionnelles ne varie pas selon le statut migratoire.

Tableau 3

Comparaison de la correspondance entre les aspirations et attentes scolaires selon le statut migratoire

	1re gén.	2e gén.	3e gén. +			
	%	%	%	χ^2	*p*	V de Cramer
Correspondance (*n* = 580)				0,163	0,922	0,017
Oui	$73{,}50_a$	$75{,}10_a$	$74{,}30_a$			
Non	$26{,}50_a$	$24{,}90_a$	$25{,}60_a$			

Note. Des indices de lettres différentes signalent des différences significatives entre les proportions des colonnes ($p < 0{,}05$), tandis que des lettres identiques indiquent l'absence de différence significative. V de Cramer : 0,10 = effet de petite taille, 0,30 = effet de taille moyenne, 0,50 = effet de grande taille.

13 Les résultats concernant la correspondance entre les aspirations et les attentes professionnelles, selon les scores socioéconomiques des 10 catégories de la CNP, sont présentés dans l'Annexe 4.

Tableau 4

Correspondance entre les aspirations et les attentes professionnelles en fonction du statut migratoire pour les scores socioéconomiques des 162 sous-catégories de la CNP

	1re gén.	2e gén.	3e gén. +			
	M (ÉT)	*M (ÉT)*	*M (ÉT)*	ANOVA *F* test	*p*	ω²
Correspondance						
CNP 162 (*n* = 410)	2,83 (14,10)$_a$	0,66 (9,99)$_a$	-0,86 (11,42)$_a$	2,576	0,078	0,009

Note. CNP = Classification nationale des professions. Des indices de lettres différentes signalent des différences significatives entre les moyennes des colonnes ($p < 0,05$), tandis que des lettres identiques indiquent l'absence de différence significative. ω² : 0,01 = effet de petite taille, 0,06 = effet de taille moyenne, 0,14 = effet de grande taille.

Objectif spécifique 3 : relation entre les perceptions de discrimination et les aspirations et attentes scolaires et professionnelles selon le statut migratoire

Le tableau 5 présente les résultats des analyses de régression de l'association entre les perceptions de discrimination[14] et les aspirations scolaires selon le statut migratoire. En cohérence avec les résultats du tableau 1, les résultats montrent que les jeunes de la 3e génération ou plus présentent des aspirations plus faibles que ceux de la 1re génération pour l'ensemble des modèles, avec des valeurs de *p* allant de < 0,001 à 0,004. Toutefois, aucune relation directe significative n'a été observée entre les perceptions de discrimination et les aspirations scolaires, avec des valeurs de *p* variant de 0,305 à 0,641. En outre, aucune interaction entre les perceptions de discrimination et le statut migratoire en lien avec les aspirations scolaires ne se révèle significative : la présomption d'infériorité ($\Delta R^2 = 0,008$, $F(2,400) = 1,856$, $p = 0,158$), l'invisibilité et la dévaluation ($\Delta R^2 = 0,000$, $F(2,401) = 0,253$, $p = 0,975$), les invalidations environnementales ($\Delta R^2 = 0,001$, $F(2,402) = 0,350$, $p = 0,705$), la présomption de criminalité ($\Delta R^2 = 0,001$, $F(2,401) = 0,223$, $p = 0,800$), la violence physique et verbale ($\Delta R^2 = 0,001$, $F(2,398) = 0,155$, $p = 0,856$), l'exclusion et l'injustice ($\Delta R^2 = 0,004$, $F(2,398) = 0,907$, $p = 0,405$), la stigmatisation ($\Delta R^2 = 0,001$, $F(2,398) = 0,364$, $p = 0,695$) et l'anticipation de la discrimination ($\Delta R^2 = 0,001$, $F(2,403) = 0,349$, $p = 0,705$). Les modèles globaux intégrant les différentes formes de perceptions de discrimination expliquent entre 17,30 % et 18,30 % de la variance des aspirations scolaires, ce qui correspond à des effets de taille moyenne.

14 Un tableau de résultats comparant les perceptions de discrimination selon le statut migratoire est présenté à l'Annexe 5.

Tableau 5

Association entre les perceptions de discrimination et les aspirations scolaires selon le statut migratoire

	B	IC 95%	SE	*t*	*p*	*β*	R²	ΔR²
Présomption d'infériorité (INF) (n = 400)							0,183	0,008
Constant	3,16	[2,62; 3,70]	0,27	11,59	< 0,001			
INF	0,07	[-0,12; 0,27]	0,10	0,71	0,478	0,050		
2e gén. vs 1re gén. (S1)	-0,13	[-0,40; 0,14]	0,14	-0,95	0,345			
3e gén. + vs 1re gén. (S2)	-0,61	[-0,94; -0,28]	0,17	-3,64	< 0,001			
INF * S1	0,05	[-0,22; 0,32]	0,14	0,36	0,721			
INF * S2	-0,24	[-0,56; 0,07]	0,16	-1,52	0,129			
Invisibilité et dévaluation (INV-D) (n = 401)							0,174	0,000

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
Constant	3,05	[2,52; 3,59]	0,27	11,21	< 0,001			
INV-D	0,06	[-0,19; 0,31]	0,13	0,48	0,629	0,036		
2e gén. vs 1re gén. (S1)	-0,11	[-0,38; 0,17]	0,14	-0,76	0,446			
3e gén. + vs 1re gén. (S2)	-0,54	[-0,86; -0,22]	0,16	-3,28	0,001			
INV-D * S1	0,02	[-0,32; 0,36]	0,17	0,11	0,913			
INV-D* S2	0,04	[-0,33; 0,42]	0,19	0,22	0,822			
Invalidations environnementales (INV-E) (n = 402)							0,175	0,001
Constant	3,08	[2,54; 3,61]	0,27	11,29	< 0,001			
INV-E	0,05	[-0,17; 0,28]	0,12	0,47	0,641	0,033		
2e gén. vs 1re gén. (S1)	-0,11	[-0,38; 0,17]	0,14	-0,77	0,443			
3e gén. + vs 1re gén. (S2)	-0,55	[-0,87; -0,22]	0,16	-3,31	0,001			
INV-E * S1	-0,14	[-0,46; 0,18]	0,16	-0,84	0,404			
INV-E * S2	-0,07	[-0,39; 0,24]	0,16	-0,45	0,650			
Présomption de criminalité (CRIM) (n = 401)							0,178	0,001
Constant	3,08	[2,54; 3,61]	0,27	11,35	< 0,001	0,044		
CRIM	0,07	[-0,14; 0,28]	0,11	0,65	0,514			
2e gén. vs 1re gén. (S1)	-0,11	[-0,39; 0,16]	0,14	-0,82	0,411			
3e gén. + vs 1re gén. (S2)	-0,49	[-0,82; -0,15]	0,17	-2,87	0,004			
CRIM * S1	0,07	[-0,23; 0,38]	0,16	0,46	0,649			
CRIM * S2	0,14	[-0,30; 0,58]	0,23	0,61	0,539			
Violence physique et verbale (VPV) (n = 398)							0,176	0,001
Constant	3,09	[2,55; 3,63]	0,28	11,24	< 0,001			
VPV	0,10	[-0,17; 0,36]	0,14	0,71	0,479	0,054		
2e gén. vs 1re gén. (S1)	-0,12	[-0,40; 0,15]	0,14	-0,89	0,374			
3e gén. + vs 1re gén. (S2)	-0,53	[-0,86; -0,21]	0,17	-3,21	0,001			
VPV * S1	0,11	[-0,28; 0,51]	0,20	0,55	0,580			
VPV * S2	0,07	[-0,38; 0,51]	0,23	0,29	0,775			
Exclusion et injustice (E/I) (n = 399)							0,179	0,004
Constant	3,05	[2,51; 3,59]	0,27	11,09	< 0,001			
E/I	0,12	[-0,11; 0,36]	0,12	1,03	0,305	0,071		
2e gén. vs 1re gén. (S1)	-0,12	[-0,40; 0,15]	0,14	-0,86	0,391			
3e gén. + vs 1re gén. (S2)	-0,52	[-0,85; -0,19]	0,17	-3,07	0,002			
E/I * S1	0,13	[-0,21; 0,47]	0,18	0,72	0,473			
E/I * S2	-0,15	[-0,54; 0,24]	0,20	-0,75	0,457			
Stigmatisation (STIG) (n = 398)							0,173	0,001
Constant	3,08	[2,54; 3,62]	0,28	11,21	< 0,001			
STIG	0,10	[-0,12; 0,31]	0,11	0,87	0,386	0,071		
2e gén. vs 1re gén. (S1)	-0,13	[-0,41; 0,14]	0,14	-0,94	0,350			

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
3e gén. + vs 1re gén. (S2)	-0,53	[-0,86; -0,20]	0,17	-3,19	0,002			
STIG * S1	0,02	[-0,29; 0,32]	0,16	0,12	0,906			
STIG * S2	-0,11	[-0,43; 0,21]	0,16	-0,69	0,492			
Anticipation de la discrimination (n = 403)							0,176	0,001
Constant	3,08	[2,54; 3,61]	0,27	11,25	< 0,001			
Anticipation	0,05	[-0,10; 0,19]	0,08	0,60	0,550	0,050		
2e gén. vs 1re gén. (S1)	-0,11	[-0,39; 0,17]	0,14	-0,77	0,443			
3e gén. + vs 1re gén. (S2)	-0,53	[-0,88; -0,19]	0,17	-3,06	0,002			
Anticipation * S1	-0,07	[-0,28; 0,14]	0,11	-0,66	0,512			
Anticipation * S2	0,02	[-0,21; 0,25]	0,12	0,17	0,867			

Note. Les valeurs de *n* correspondent à la taille de l'échantillon pour chacune des analyses en fonction de la forme de perceptions de discrimination ciblée. IC 95% = intervalle de confiance à 95%. Les valeurs entre crochets indiquent les bornes inférieure et supérieure de l'intervalle. R^2 : 0,01 = effet de petite taille, 0,09 = effet de taille moyenne, 0,25 = effet de grande taille.

Le tableau 6 présente les résultats des analyses de régression pour les attentes scolaires. Les résultats des régressions sont comparables à ceux des aspirations scolaires. Les jeunes de la 3e génération ou plus présentent des attentes scolaires plus faibles que ceux de la 1re génération ($p < 0,001$ dans tous les cas), ce qui est cohérent avec les résultats du tableau 1. Or, la relation directe entre les perceptions de discrimination et les attentes scolaires s'avère non significative, avec des *p* allant de 0,254 à 0,940. De plus, aucune interaction significative n'a été observée entre les perceptions de discrimination et le statut migratoire en lien avec les attentes scolaires : la présomption d'infériorité ($\Delta R^2 = 0,003$, $F(2,403) = 0,853$, $p = 0,427$), l'invisibilité et dévaluation ($\Delta R^2 = 0,008$, $F(2,404) = 2,153$, $p = 0,118$), les invalidations environnementales ($\Delta R^2 = 0,006$, $F(2,404) = 1,575$, $p = 0,208$), la présomption de criminalité ($\Delta R^2 = 0,008$, $F(2,404) = 2,028$, $p = 0,133$), la violence physique et verbale ($\Delta R^2 = 0,002$, $F(2,399) = 0,407$, $p = 0,666$), l'exclusion et l'injustice ($\Delta R^2 = 0,004$, $F(2,399) = 0,905$, $p = 0,405$), la stigmatisation ($\Delta R^2 = 0,008$, $F(2,400) = 1,946$, $p = 0,144$) et l'anticipation de la discrimination ($\Delta R^2 = 0,001$, $F(2,406) = 0,379$, $p = 0,685$). Les modèles globaux intégrant les différentes formes de perceptions de discrimination expliquent entre 20,20 % et 21,80 % de la variance des aspirations scolaires, ce qui correspond à des tailles d'effet se situant entre moyennes et grandes.

Tableau 6

Association entre les perceptions de discrimination et les attentes scolaires selon le statut migratoire

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
Présomption d'infériorité (INF) (n = 403)							0,209	0,003
Constant	2,72	[2,18; 3,25]	0,27	10,00	< 0,001			
INF	0,08	[-0,12; 0,28]	0,10	0,80	0,427	0,057		
2e gén. vs 1re gén. (S1)	-0,06	[-0,33; 0,22]	0,14	-0,42	0,677			
3e gén. + vs 1re gén. (S2)	-0,76	[-1,08; -0,43]	0,17	-4,57	< 0,001			
INF * S1	0,04	[-0,23; 0,30]	0,14	0,26	0,795			
INF * S2	-0,16	[-0,47; 0,15]	0,16	-1,01	0,312			
Invisibilité et dévaluation (INV-D) (n = 404)							0,215	0,008
Constant	2,66	[2,14; 3,19]	0,27	9,93	< 0,001			

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
INV-D	-0,15	[-0,42; 0,11]	0,13	-1,14	0,254	-0,090		
2e gén. vs 1re gén. (S1)	-0,04	[-0,31; 0,23]	0,14	-0,28	0,777			
3e gén. + vs 1re gén. (S2)	-0,69	[-1,01; -0,38]	0,16	-4,30	< 0,001			
INV-D * S1	0,21	[-0,15; 0,57]	0,18	1,16	0,248			
INV-D* S2	-0,18	[-0,56; 0,21]	0,20	-0,90	0,371			
Invalidations environnementales (INV-E) (n = 404)							0,218	0,006
Constant	2,68	[2,16; 3,21]	0,27	9,98	< 0,001			
INV-E	0,04	[-0,19; 0,28]	0,12	0,34	0,731	0,027		
2e gén. vs 1re gén. (S1)	-0,04	[-0,31; 0,23]	0,14	-0,29	0,773			
3e gén. + vs 1re gén. (S2)	-0,74	[-1,06; -0,42]	0,16	-4,57	< 0,001			
INV-E * S1	-0,28	[-0,61; 0,04]	0,16	-1,71	0,087			
INV-E * S2	-0,21	[-0,53; 0,11]	0,16	-1,29	0,197			
Présomption de criminalité (CRIM) (n = 404)							0,210	0,008
Constant	2,64	[2,11; 3,17]	0,27	9,82	< 0,001	0,025		
CRIM	0,04	[-0,17; 0,26]	0,11	0,38	0,708			
2e gén. vs 1re gén. (S1)	-0,05	[-0,32; 0,22]	0,14	-0,36	0,722			
3e gén. + vs 1re gén. (S2)	-0,78	[-1,11; -0,45]	0,17	-4,68	< 0,001			
CRIM * S1	0,09	[-0,21; 0,40]	0,15	0,59	0,555			
CRIM * S2	-0,35	[-0,78; 0,08]	0,22	-1,59	0,122			
Violence physique et verbale (VPV) (n = 399)							0,202	0,002
Constant	2,66	[2,13; 3,20]	0,27	9,77	< 0,001			
VPV	-0,07	[-0,37; 0,22]	0,15	-0,49	0,622	-0,038		
2e gén. vs 1re gén. (S1)	-0,06	[-0,34; 0,21]	0,14	-0,46	0,646			
3e gén. + vs 1re gén. (S2)	-0,71	[-1,03; -0,38]	0,16	-4,28	< 0,001			
VPV * S1	0,08	[-0,33; 0,49]	0,21	0,38	0,703			
VPV * S2	-0,13	[-0,59; 0,33]	0,23	-0,55	0,583			
Exclusion et injustice (E/I) (n = 399)							0,203	0,004
Constant	2,66	[2,13; 3,20]	0,27	9,76	< 0,001			
E/I	-0,01	[-0,26; 0,24]	0,13	-0,08	0,940	-0,006		
2e gén. vs 1re gén. (S1)	-0,07	[-0,35; 0,21]	0,14	-0,50	0,614			
3e gén. + vs 1re gén. (S2)	-0,74	[-1,06; -0,41]	0,17	-4,42	< 0,001			
E/I * S1	0,12	[-0,23; 0,47]	0,18	0,70	0,487			
E/I * S2	-0,15	[-0,55; 0,25]	0,20	-0,73	0,465			
Stigmatisation (STIG) (n = 400)							0,208	0,008
Constant	2,69	[2,16; 3,23]	0,27	9,93	< 0,001			
STIG	0,01	[-0,22; 0,24]	0,11	0,09	0,926	0,007		
2e gén. vs 1re gén. (S1)	-0,07	[-0,34; 0,20]	0,14	-0,50	0,615			

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
3e gén. + vs 1re gén. (S2)	-0,72	[-1,04; -0,40]	0,16	-4,43	< 0,001			
STIG * S1	0,008	[-0,26; 0,36]	0,16	0,31	0,760			
STIG * S2	-0,24	[-0,56; 0,07]	0,16	-1,50	0,134			
Anticipation de la discrimination (n = 406)							0,205	0,001
Constant	2,67	[2,14; 3,20]	0,27	9,91	< 0,001			
Anticipation	0,05	[-0,10; 0,20]	0,08	0,64	0,522	0,050		
2e gén. vs 1re gén. (S1)	-0,03	[-0,31; 0,25]	0,14	-0,20	0,840			
3e gén. + vs 1re gén. (S2)	-0,72	[-1,05; -0,38]	0,17	-4,20	< 0,001			
Anticipation * S1	-0,09	[-0,30; 0,12]	0,11	-0,85	0,398			
Anticipation * S2	-0,07	[-0,30 0,16]	0,12	-0,58	0,560			

Note. Les valeurs de *n* correspondent à la taille de l'échantillon pour chacune des analyses en fonction de la forme de perceptions de discrimination ciblée. IC 95% = intervalle de confiance à 95%. Les valeurs entre crochets indiquent les bornes inférieure et supérieure de l'intervalle. R^2 : 0,01 = effet de petite taille, 0,09 = effet de taille moyenne, 0,25 = effet de grande taille.

Le tableau 7 présente les résultats des analyses de régression examinant l'association entre les perceptions de discrimination et les scores socioéconomiques (162 sous-catégories de la CNP) des aspirations professionnelles selon le statut migratoire[15]. Les résultats de régressions ont relevé que les jeunes de la 3e génération ou plus affichent des scores socioéconomiques inférieurs à ceux de la 1re génération pour l'ensemble des modèles ($p < 0,001$), ce qui est en cohérence avec les résultats du tableau 2. Par ailleurs, aucune relation directe significative n'a été observée entre les perceptions de discrimination et les scores socioéconomiques des aspirations professionnelles (des valeurs de p variant entre 0,083 et 0,979). De façon similaire, les interactions entre les perceptions de discrimination et le statut migratoires en lien avec les scores socioéconomiques des aspirations professionnelles se sont révélées non significatives : la présomption d'infériorité ($\Delta R^2 = 0,002$, $F(2,346) = 0,351$, $p = 0,704$), l'invisibilité et dévaluation ($\Delta R^2 = 0,003$, $F(2,348) = 0,665$, $p = 0,515$), les invalidations environnementales ($\Delta R^2 = 0,002$, $F(2,348) = 0,368$, $p = 0,693$), la présomption de criminalité ($\Delta R^2 = 0,008$, $F(2,348) = 1,731$, $p = 0,179$), la violence physique et verbale ($\Delta R^2 = 0,014$, $F(2,345) = 22,912$, $p = 0,056$), l'exclusion et l'injustice ($\Delta R^2 = 0,014$, $F(2,345) = 2,925$, $p = 0,055$), la stigmatisation ($\Delta R^2 = 0,004$, $F(2,346) = 0,809$, $p = 0,446$) et l'anticipation de la discrimination ($\Delta R^2 = 0,003$, $F(2,350) = 0,578$, $p = 0,561$). Les modèles globaux intégrant les différentes formes de perceptions de discrimination expliquent entre 15,30 % et 17,4 % de la variance des scores socioéconomiques (162 sous-catégories de la CNP) des aspirations professionnelles, ce qui correspond à des effets de taille moyenne.

15 Les résultats de l'association entre les perceptions de discrimination, les aspirations et les attentes professionnelles selon les scores socioéconomiques des 10 catégories de la CNP figurent à l'Annexe 6.

Tableau 7

Association entre les perceptions de discrimination et les scores socioéconomiques (162 sous-catégories de la CNP) des aspirations professionnelles selon le statut migratoire

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
Présomption d'infériorité (INF) (n = 369)							0,153	0,002
Constant	76,35	[66,23; 86,47]	5,15	14,84	< 0,001			
INF	-0,57	[-4,33; 3,19]	1,91	-0,30	0,765	-0,024		
2e gén. vs 1re gén. (S1)	-3,27	[-8,47; 1,94]	2,65	-1,23	0,218			

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
3e gén. + vs 1re gén. (S2)	-19,05	[-25,30; -12,79]	3,18	-5,99	< 0,001			
INF * S1	0,71	[-4,36; 5,77]	2,58	0,27	0,784			
INF * S2	-1,84	[-8,02; 4,35]	3,14	-0,58	0,560			
Invisibilité et dévaluation (INV-D) (n = 371)							0,161	0,003
Constant	76,27	[66,36; 86,17]	5,04	15,14	< 0,001			
INV-D	-3,85	[-8,95; 1,24]	2,59	-1,49	0,138	-0,139		
2e gén. vs 1re gén. (S1)	-2,75	[-7,83; 2,32]	2,58	-1,07	0,287			
3e gén. + vs 1re gén. (S2)	-17,92	[-23,87; -11,97]	3,03	-5,92	< 0,001			
INV-D * S1	3,11	[-3,51; 9,73]	3,37	0,92	0,356			
INV-D* S2	-0,38	[-7,80; 7,04]	3,77	-0,10	0,920			
Invalidations environnementales (INV-E) (n = 371)							0,155	0,002
Constant	75,84	[65,91; 85,75]	5,04	15,04	< 0,001			
INV-E	-1,27	[-5,78; 3,24]	2,30	-0,55	0,581	-0,051		
2e gén. vs 1re gén. (S1)	-3,00	[-8,09; 2,09]	2,59	-1,16	0,248			
3e gén. + vs 1re gén. (S2)	-18,25	[-24,25; -12,26]	3,05	-5,99	< 0,001			
INV-E * S1	0,85	[-5,24; 6,94]	3,09	0,27	0,784			
INV-E * S2	-1,67	[-7,79; 4,45]	3,11	-0,54	0,592			
Présomption de criminalité (CRIM) (n = 371)							0,169	0,008
Constant	75,72	[65,86; 85,58]	5,01	15,11	< 0,001	-0,087		
CRIM	-2,30	[-6,25; 1,65]	2,01	-1,15	0,253			
2e gén. vs 1re gén. (S1)	-2,99	[-8,08; 2,11]	2,59	-1,15	0,250			
3e gén. + vs 1re gén. (S2)	-21,41	[-27,82; -15,00]	3,26	-6,57	< 0,001			
CRIM * S1	0,37	[-5,13; 5,88]	2,80	0,13	0,894			
CRIM * S2	-8,44	[-18,00; 1,13]	4,86	-1,73	0,084			
Violence physique et verbale (VPV) (n = 368)							0,174	0,014
Constant	74,67	[64,68; 84,66]	5,08	14,69	< 0,001			
VPV	-4,82	[-10,26; 0,63]	2,77	-1,74	0,083	-0,156		
2e gén. vs 1re gén. (S1)	-2,75	[-7,81; 2,32]	2,58	-1,07	0,287			
3e gén. + vs 1re gén. (S2)	-17,90	[-23,91; -11,89]	3,06	-5,85	< 0,001			
VPV * S1	4,63	[-2,72; 11,99]	3,74	1,24	0,216			
VPV * S2	-6,35	[-15,77; 3,07]	4,79	-1,33	0,186			
Exclusion et injustice (E/I) (n = 368)							0,161	0,014
Constant	74,31	[64,21; 84,40]	5,13	14,48	< 0,001			
E/I	-0,30	[-4,78; 4,17]	2,28	-0,13	0,895	-0,011		
2e gén. vs 1re gén. (S1)	-2,84	[-7,99; 2,30]	2,62	-1,09	0,278			
3e gén. + vs 1re gén. (S2)	-19,01	[-25,24; -12,78]	3,17	-6,00	< 0,001			

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
E/I * S1	2,70	[-3,55; 8,95]	3,18	0,85	0,396			
E/I * S2	-7,11	[-15,14; 0,92]	4,08	-1,74	0,083			
Stigmatisation (STIG) (n = 369)							0,156	0,004
Constant	75,52	[65,44; 85,61]	5,13	14,73	< 0,001			
STIG	-1,18	[-5,32; 2,97]	2,11	-0,56	0,576	-0,050		
2e gén. vs 1re gén. (S1)	-2,72	[-7,85; 2,41]	2,61	-1,04	0,298			
3e gén. + vs 1re gén. (S2)	-18,05	[-24,11; -11,99]	3,08	-5,86	< 0,001			
STIG * S1	0,89	[-4,70; 6,49]	2,85	0,31	0,754			
STIG * S2	-2,91	[-9,14; 3,33]	3,17	-0,92	0,360			
Anticipation de la discrimination (n = 373)							0,160	0,003
Constant	74,51	[64,55; 84,47]	5,07	14,71	< 0,001			
Anticipation	0,04	[-2,75; 2,83]	1,42	0,03	0,979	0,002		
2e gén. vs 1re gén. (S1)	-2,98	[-8,16; 2,20]	2,63	-1,13	0,259			
3e gén. + vs 1re gén. (S2)	-19,60	[-25,92; -13,27]	3,22	-6,09	< 0,001			
Anticipation * S1	0,44	[-3,44; 4,31]	1,97	0,22	0,825			
Anticipation * S2	-1,88	[-6,26; 2,51]	2,23	-0,84	0,401			

Note. Les valeurs de *n* correspondent à la taille de l'échantillon pour chacune des analyses en fonction de la forme de perceptions de discrimination ciblée. IC 95% = intervalle de confiance à 95%. Les valeurs entre crochets indiquent les bornes inférieure et supérieure de l'intervalle. R^2 : 0,01 = effet de petite taille, 0,09 = effet de taille moyenne, 0,25 = effet de grande taille.

Finalement, le tableau 8 présente les résultats des analyses de régression pour les scores socioéconomiques des 162 sous-catégories de la CNP des attentes professionnelles. En cohérence avec le tableau 2, les résultats montrent que les jeunes de la 3e génération ou plus affichent des scores socioéconomiques inférieurs à ceux de la 1re génération, avec des valeurs de $p < 0,001$ pour tous les cas. Les résultats indiquent également des associations directes significatives et de force comparable entre les scores socioéconomiques des attentes professionnelles et deux formes de perceptions de discrimination, soit l'invisibilité et la dévaluation (β = -0,305; B = -5,90 ; $p = 0,044$) et la violence physique et verbale (β = -0,321; B = -6,92 ; $p = 0,032$). Autrement dit, plus la fréquence de perceptions d'invisibilité et de dévaluation ou de violence physique et verbale est élevée chez les jeunes, plus les scores socioéconomiques associés à leurs attentes professionnelles tendent à être faibles. Or, les associations entre les autres formes de perceptions de discrimination et les scores socioéconomiques des attentes professionnelles restent non significatives (des valeurs de p allant de 0,283 à 0,778). Quant à l'interaction entre les perceptions de discrimination et le statut migratoire en lien avec les scores socioéconomiques des attentes professionnelles, aucune interaction significative n'a été observée : la présomption d'infériorité ($\Delta R^2 = 0,000$, $F(2,277) = 0,060$, $p = 0,942$), l'invisibilité et dévaluation ($\Delta R^2 = 0,007$, $F(2,278) = 1,099$, $p = 0,335$), les invalidations environnementales ($\Delta R^2 = 0,001$, $F(2,279) = 0,116$, $p = 0,891$), la présomption de criminalité ($\Delta R^2 = 0,002$, $F(2,278) = 0,332$, $p = 0,717$), la violence physique et verbale ($\Delta R^2 = 0,005$, $F(2,275) = 0,816$, $p = 0443$), l'exclusion et l'injustice ($\Delta R^2 = 0,001$, $F(2,275) = 0,126$, $p = 0,882$), la stigmatisation ($\Delta R^2 = 0,002$, $F(2,275) = 0,340$, $p = 0,712$) et l'anticipation de la discrimination ($\Delta R^2 = 0,000$, $F(2,280) = 0,027$, $p = 0,973$). Les modèles globaux intégrant les différentes formes de perceptions de discrimination expliquent entre 12,10 % et 14,00 % de la variance des scores socioéconomiques (162 sous-catégories de la CNP) des attentes professionnelles, ce qui est considéré comme des effets de taille moyenne.

Tableau 8

Association entre les perceptions de discrimination et les scores socioéconomiques (162 sous-catégories de la CNP) des attentes professionnelles selon le statut migratoire

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
Présomption d'infériorité (INF) (n = 346)							0,132	0,000
Constant	77,02	[65,75; 88,29]	5,72	13,46	< 0,001			
INF	0,58	[-3,45; 4,61]	2,05	0,28	0,778	0,036		
2e gén. vs 1re gén. (S1)	-2,70	[-8,26; 2,87]	2,83	-0,95	0,341			
3e gén. + vs 1re gén. (S2)	-16,02	[-22,89; -9,16]	3,49	-4,59	< 0,001			
INF * S1	0,90	[-4,39; 6,20]	2,69	0,34	0,738			
INF * S2	0,26	[-6,22; 6,73]	3,29	0,08	0,938			
Invisibilité et dévaluation (INV-D) (n = 348)							0,136	0,007
Constant	75,07	[63,93; 86,21]	5,66	13,27	< 0,001			
INV-D	-5,90	[-11,63; -0,17]	2,91	-2,03	0,044	-0,305		
2e gén. vs 1re gén. (S1)	-1,44	[-6,99; 4,11]	2,82	-0,51	0,610			
3e gén. + vs 1re gén. (S2)	-15,03	[-21,71; -8,34]	3,40	-4,42	< 0,001			
INV-D * S1	4,94	[-2,40; 12,51]	3,73	1,33	0,186			
INV-D* S2	5,32	[-2,87; 13,51]	4,16	1,28	0,202			
Invalidations environnementales (INV-E) (n = 348)							0,130	0,001
Constant	75,01	[63,87; 86,14]	5,66	13,26	< 0,001			
INV-E	-0,72	[-5,78; 4,33]	2,57	-0,28	0,779	-0,041		
2e gén. vs 1re gén. (S1)	-1,88	[-7,43; 3,67]	2,82	-0,67	0,506			
3e gén. + vs 1re gén. (S2)	-15,53	[-22,21; -8,85]	3,39	-4,58	< 0,001			
INV-E * S1	-1,61	[-8,37; 5,15]	3,43	-0,47	0,640			
INV-E * S2	-1,21	[-7,93; 5,52]	3,42	-0,35	0,725			
Présomption de criminalité (CRIM) (n = 348)							0,139	0,002
Constant	75,05	[63,96; 86,15]	5,64	13,32	< 0,001	-0,134		
CRIM	-2,47	[-7,00; 2,05]	2,30	-1,08	0,283			
2e gén. vs 1re gén. (S1)	-1,72	[-7,29; 3,84]	2,83	-0,61	0,543			
3e gén. + vs 1re gén. (S2)	-17,55	[-24,71; -10,38]	3,64	-4,82	< 0,001			
CRIM * S1	-0,70	[-6,81; 5,42]	3,11	-0,22	0,822			
CRIM * S2	-4,47	[-15,27; 6,32]	5,49	-0,81	0,416			
Violence physique et verbale (VPV) (n = 345)							0,140	0,005

	B	IC 95%	SE	*t*	*p*	*β*	R^2	ΔR^2
Constant	74,83	[63,44; 86,22]	5,79	12,93	< 0,001			
VPV	-6,92	[-13,25; -0,59]	3,22	-2,15	0,032	-0,321		
2e gén. vs 1re gén. (S1)	-1,67	[-7,28; 3,94]	2,85	-0,59	0,558			
3e gén. + vs 1re gén. (S2)	-14,93	[-21,78; -8,08]	3,48	-4,29	< 0,001			
VPV * S1	5,39	[-2,94; 13, 72]	4,23	1,27	0,204			
VPV * S2	2,75	[-7,06; 12,55]	4,98	0,55	0,582			
Exclusion et injustice (E/I) (n = 345)							0,121	0,001
Constant	74,40	[62,90; 85,90]	5,84	12,74	< 0,001			
E/I	-0,46	[-6,12; 5,21]	2,88	-0,16	0,874	-0,024		
2e gén. vs 1re gén. (S1)	-2,04	[-7,72; 3,64]	2,89	-0,71	0,481			
3e gén. + vs 1re gén. (S2)	-15,24	[-22,17; -8,31]	3,52	-4,33	< 0,001			
E/I * S1	1,68	[-5,68; 9,04]	3,74	0,45	0,654			
E/I * S2	0,16	[-8,31; 8,63]	4,30	0,04	0,970			
Stigmatisation (STIG) (n = 346)							0,126	0,002
Constant	74,72	[63,24; 86,19]	5,83	12,82	< 0,001			
STIG	-3,18	[-8,15; 1,79]	2,53	-1,26	0,209	-0,195		
2e gén. vs 1re gén. (S1)	-1,62	[-7,31; 4,06]	2,89	-0,56	0,574			
3e gén. + vs 1re gén. (S2)	-15,12	[-22,02; -8,22]	3,51	-4,31	< 0,001			
STIG * S1	2,36	[-4,01; 8,73]	3,24	0,73	0,466			
STIG * S2	2,54	[-4,38; 9,47]	3,52	0,72	0,471			
Anticipation de la discrimination (n = 350)							0,134	0,000
Constant	73,70	[62,54; 84,86]	5,67	13,00	< 0,001			
Anticipation	1,04	[-2,09; 4,17]	1,59	0,65	0,514	0,091		
2e gén. vs 1re gén. (S1)	-1,76	[-7,42; 3,90]	2,88	-0,61	0,541			
3e gén. + vs 1re gén. (S2)	-15,33	[-22,38; -8,29]	3,58	-4,28	< 0,001			
Anticipation * S1	-0,20	[-4,39; 3,98]	2,13	-0,10	0,924			
Anticipation * S2	-0,55	[-5,22; 4,12]	2,37	-0,23	0,816			

Note. Les valeurs de *n* correspondent à la taille de l'échantillon pour chacune des analyses en fonction de la forme de perceptions de discrimination ciblée. IC 95% = intervalle de confiance à 95%. Les valeurs entre crochets indiquent les bornes inférieure et supérieure de l'intervalle. R^2 : 0,01 = effet de petite taille, 0,09 = effet de taille moyenne, 0,25 = effet de grande taille

Discussion

L'objectif général de cet article était d'examiner la relation entre les perceptions de discrimination, ainsi que les aspirations et les attentes scolaires et professionnelles des jeunes Québécois et Québécoises selon leur statut migratoire. Les résultats du premier objectif spécifique indiquent que les jeunes issus de

l'immigration (1re et 2e générations) présentent globalement des aspirations scolaires et professionnelles plus élevées que celles des jeunes non issus de l'immigration (3e génération ou plus). De plus, au niveau des aspirations scolaires, seuls les jeunes de la 1re génération se distinguent de ceux de la 3e génération ou plus pour l'obtention d'un diplôme de doctorat. Ainsi, les résultats convergent partiellement avec ceux de Bourdon et al. (2019) qui soulignent que les jeunes issus de la 1re et de la 2e génération aspirent à des diplômes plus élevés que ceux de la 3e génération ou plus. Les résultats s'inscrivent également dans le prolongement de ceux de l'étude d'Abrahamsen et Drange (2015) qui indiquent que les jeunes issus de minorités ethniques ont des aspirations professionnelles plus élevées que celles du groupe majoritaire. Par ailleurs, les résultats de la présente étude sont comparables en ce qui concerne les attentes scolaires et professionnelles : elles sont globalement plus élevées chez les jeunes issus de l'immigration. Ils rejoignent également ceux d'Abrahamsen et Drange (2015) en ce qui concerne les attentes scolaires, mais s'en distinguent sur le plan professionnel, ces auteurs ayant constaté que les attentes professionnelles concernant l'obtention de postes de direction ne sont pas proportionnellement plus élevées chez les jeunes issus des minorités ethniques comparativement à ceux issus du groupe majoritaire. Ces auteurs suggèrent que les attentes scolaires élevées peuvent constituer une stratégie pour renforcer leur employabilité, un diplôme de maitrise pouvant les rendre plus attractifs sur le marché du travail. Cette croyance quant aux résultats associés à l'obtention d'un diplôme de maîtrise peut être interprétée, dans le cadre de la théorie sociocognitive relative à la carrière (Lent et al., 2000), comme une attente de résultat favorable pouvant contribuer à la formation d'attentes scolaires plus élevées. Or, ces résultats soulèvent des questions quant à la considération de la dimension du réalisme associée aux attentes. En effet, Bourdon et al. (2019) rapportent que les jeunes des trois générations se disent très confiants quant à leur capacité à atteindre le plus haut niveau de diplôme souhaité, ce qui pourrait contribuer à expliquer les attentes élevées observées dans l'échantillon. D'ailleurs, cette confiance en leur capacité à atteindre ce niveau de scolarité peut être conceptualisée comme un fort SEP relatif à la carrière susceptible d'orienter leurs attentes scolaires et leurs choix de carrière. De même, les aspirations et attentes élevées des jeunes issus de l'immigration pourraient s'expliquer par leurs propres intérêts et par la recherche de réalisation de soi. Selon l'étude de Teney et al. (2013), pour ces jeunes, poursuivre des études supérieures apparaît comme une décision évidente, voire la seule alternative dans leur trajectoire de vie. Cependant, certains expriment aussi le désir de ne pas décevoir leurs parents. À ce sujet, des associations sont observées entre les aspirations scolaires de jeunes Latinos et les aspirations scolaires et professionnelles, ainsi que les attentes scolaires de leurs parents (Chavira et al., 2016). Parallèlement, les perceptions des parents par rapport à certains niveaux de scolarité et les domaines professionnels pourraient influencer les aspirations et attentes de ces jeunes. Selon l'étude de Magnan et al. (2017), certains jeunes issus de l'immigration perçoivent que leurs parents valorisent différemment les domaines d'études, certains étant considérés comme plus prestigieux que d'autres (Magnan et al., 2017). En effet, cette étude a montré que plusieurs parents de ces jeunes considèrent que le choix d'un programme technique au cégep contredit leur souhait de les voir poursuivre des études universitaires. Dans cette perspective, les aspirations parentales et les perceptions associées peuvent être comprises comme des influences contextuelles proximales, susceptibles de jouer un rôle direct dans le processus de prise de décision, notamment en façonnant les aspirations et les attentes des jeunes.

En ce qui a trait au deuxième objectif spécifique, les résultats montrent que la correspondance entre les aspirations et les attentes ne diffère pas selon le statut migratoire, que ce soit sur le plan scolaire ou professionnel. Pour les trois générations, le pourcentage de jeunes dont les aspirations et attentes scolaires sont correspondantes demeure élevé et l'écart entre les scores socioéconomiques moyens associés aux aspirations et attentes professionnelles reste relativement faible, suggérant une forte correspondance. Bien que l'étude de Chavira et al. (2016) rapporte une corrélation significative entre les aspirations et les attentes scolaires et professionnelles chez les jeunes Latinos, celle de Metz et al. (2009) est la seule à avoir examiné précisément la correspondance entre les aspirations et les attentes professionnelles selon l'appartenance à un groupe. Elle rapporte que cette correspondance est plus élevée chez les jeunes issus des minorités visibles (catégorie à laquelle appartiennent une forte proportion des jeunes issus de l'immigration dans l'échantillon de la présente étude) comparativement à leurs pairs, ce qui diverge des constats de la présente étude. Comme mentionné plus haut, le haut degré de confiance que les jeunes accordent à leur capacité de réaliser leurs aspirations (Bourdon et al., 2019) pourrait expliquer la forte correspondance entre les aspirations et les attentes pour l'ensemble des

générations, et donc l'absence de différence significative selon le statut migratoire. Ainsi, dans une perspective sociocognitive, ce haut degré de correspondance pourrait refléter l'alignement entre le SEP et les attentes de résultats liés à la carrière, lesquelles contribuent conjointement à structurer les intentions et choix de carrière.

Finalement, pour ce qui est du troisième objectif spécifique, aucune association significative n'a été observée entre les perceptions de discriminations ainsi que les aspirations scolaires et les scores socioéconomiques associés aux aspirations professionnelles (selon les 162 sous-groupes de la CNP). Ces résultats sont cohérents avec ceux d'O'Hara et al. (2012) qui n'ont relevé aucune association significative entre les perceptions de discrimination et les aspirations scolaires, mais contrastent avec ceux de Teney et al. (2013) qui rapportent une association positive entre les perceptions de discrimination à l'école et les aspirations scolaires. Ces résultats divergents par rapport à la présente étude pourraient s'expliquer par des différences dans la mesure des perceptions de discrimination : Teney et al. (2013) utilisent une variable dichotomique (présence/absence) fondée sur une seule question alors que la présente étude les mesure à l'aide de plusieurs items sur une échelle Likert. En outre, le statut migratoire ne semble pas modérer la relation entre les perceptions de discriminations et les aspirations scolaires et professionnelles (selon les scores socioéconomiques des 162 sous-groupes de la CNP). Or, des interactions significatives ont été observées pour les aspirations professionnelles selon les scores socioéconomiques des 10 catégories de la CNP (présentées dans les matériaux supplémentaires), ce qui pourrait s'expliquer par la différence de niveau d'agrégation entre les 10 catégories et 162 sous-catégories de la CNP. Par ailleurs, à notre connaissance, aucune étude n'a encore exploré le rôle du statut migratoire comme modérateur de la relation entre les perceptions de discrimination ainsi que les aspirations et attentes. L'étude la plus proche est celle de Tovar-Murray et al. (2012), qui examine plutôt la force de l'identité ethnique comme modérateur. Ces auteurs montrent que, dans un contexte de faible identité ethnique, une augmentation de la discrimination raciale est associée à une diminution des aspirations professionnelles chez les jeunes Afro-Américains.

Au niveau des attentes, les résultats révèlent une association négative entre les attentes professionnelles et deux formes de perceptions de discrimination, soit l'invisibilité et la dévaluation (microagressions) et la violence physique et verbale (discrimination manifeste). Aucune association n'a toutefois été observée pour l'anticipation de la discrimination, contrairement à l'étude de Conkel-Ziebell et al. (2019). Plus précisément, ces résultats suggèrent que les jeunes qui perçoivent davantage ces formes de discrimination tendent à avoir des attentes professionnelles plus faibles, ou inversement, que les jeunes avec des attentes professionnelles moins élevées seraient plus susceptibles de percevoir ces formes de discrimination. Aucune association significative n'a par ailleurs été relevée pour les attentes scolaires, contrairement aux constats d'O'Hara et al. (2012), ce qui pourrait peut-être s'expliquer par des différences méthodologiques. L'absence d'association pour les attentes scolaires dans la présente étude pourrait aussi être liée à leur proximité temporelle (Lent et al., 2000) : les attentes scolaires, plus concrètes et immédiates, pourraient être perçues comme relativement contrôlables, tandis que les attentes professionnelles, plus lointaines et incertaines, pourraient être davantage sensibles aux obstacles perçus, lesquels constituent, dans la théorie sociocognitive relative à la carrière (Lent et al., 2000), des contraintes contextuelles susceptibles de freiner la formation et la poursuite des buts professionnels. Enfin, tout comme dans le cas des aspirations, la relation entre les perceptions de discrimination et les attentes scolaires et professionnelles ne varie pas selon le statut migratoire. La modestie des liens observés entre les différentes formes de discrimination et les attentes pourrait s'expliquer en partie par la composition multiculturelle de l'échantillon, largement constitué d'élèves issus des minorités visibles et de l'immigration, ainsi que par la présence de politiques interculturelles dans les écoles du CSSPI (Commission scolaire de la Pointe-de-l'île, 2009). Cette spécificité du contexte limite la représentativité de l'échantillon et pourrait contribuer à sous-estimer la fréquence réelle des perceptions de discrimination. Ces éléments pourraient expliquer pourquoi les perceptions de discrimination demeurent en moyenne rares et occasionnelles pour l'ensemble des jeunes de l'échantillon. Ce contexte multiculturel, qui expose quotidiennement les jeunes à la diversité culturelle et vise explicitement à promouvoir des pratiques inclusives, pourrait contribuer à réduire la fréquence des situations de discrimination et à en atténuer les perceptions, lesquelles peuvent être comprises comme des influences contextuelles dans la théorie sociocognitive relative à la carrière (Lent et al., 2000). Dans cette perspective, la faible intensité des perceptions de discrimination observée pourrait limiter leur effet sur le

SEP et les attentes de résultats liés à la carrière, et, ultimement, sur la formation des intérêts et des buts relatifs à la carrière, soit les aspirations et les attentes scolaires et professionnelles.

Conclusion

En conclusion, les résultats de cet article permettent de formuler quelques implications pratiques en orientation professionnelle. D'abord, ils soutiennent la pertinence d'examiner les attentes scolaires et professionnelles élevées chez les jeunes issus de l'immigration, en considérant le rôle des aspirations parentales et le réalisme de leurs projets professionnels. Plus précisément, il serait utile d'examiner avec les jeunes leurs différentes contraintes, soit les influences contextuelles proximales ou distales, auxquelles ils font face et de les accompagner dans l'ajustement de leurs attentes. Il serait aussi pertinent d'examiner avec les jeunes dans quelle mesure leurs aspirations et attentes sont façonnées par celles que leurs parents ont à leur égard, lesquelles pourraient influencer leurs croyances liées à leur SEP et leurs attentes de résultats liés à la carrière. Ces stratégies permettraient de soutenir des choix de carrière cohérents et réalisables. Il est aussi recommandé d'examiner les perceptions de discrimination, notamment celles liées à la violence physique et verbale, ainsi qu'à l'invisibilité et à la dévaluation, vu leur association négative avec les attentes professionnelles. Une attention particulière devrait être portée aux options professionnelles écartées, car elles pourraient refléter ces perceptions de discrimination. Enfin, il importe d'examiner ces perceptions non seulement chez les jeunes issus de l'immigration, mais aussi chez ceux non issus de l'immigration, puisque les résultats montrent que chez les jeunes de la 3e génération ou plus, une plus grande anticipation de la discrimination ou une perception accrue de présomption de criminalité est associée à des aspirations professionnelles plus faibles.

Par ailleurs, bien que la mesure systématique des perceptions de discrimination constitue un apport important en permettant une compréhension nuancée de leurs liens avec les aspirations et attentes scolaires et professionnelles, et que l'analyse selon le statut migratoire offre un éclairage nouveau, certaines limites de l'étude sont à noter. D'abord, comme mentionné plus haut, l'échantillon est non représentatif, ce qui limite la portée et la généralisation des résultats. Ensuite, les attentes relativement élevées observées suscitent un questionnement quant à la prise en compte du réalisme par les jeunes dans l'évaluation de leurs attentes. En outre, la mesure intersectionnelle des perceptions de discrimination constitue une limite, puisqu'elle se centre sur les caractéristiques distinctives plutôt que sur un motif en particulier. Ainsi, cela ne permet pas d'examiner des formes spécifiques de discrimination (p. ex. ethnoraciale), ce qui pourrait avoir influencé les résultats. En effet, en l'absence d'une évaluation centrée sur une forme précise de discrimination, il pourrait être plus difficile pour les jeunes de relier leurs expériences vécues à la discrimination. Ensuite, les multiples régressions distinctes menées ne tiennent pas compte des possibles corrélations entre les différentes perceptions de discrimination, ce qui limite l'interprétation des résultats (Field, 2018). En effet, chaque forme de perception de discrimination est analysée comme si elle était totalement indépendante des autres, alors qu'elles peuvent être corrélées. Cette approche risque de biaiser les estimations, en sous-estimant ou en surestimant les effets, puisque chaque modèle ignore l'influence des autres types de perceptions de discrimination qui lui sont liées. De plus, l'interprétation des coefficients non standardisés est limitée, car ils sont exprimés dans les unités originales des variables (Hayes, 2022). Par conséquent, la comparaison de la magnitude relative des effets entre prédicteurs doit être faite avec prudence, car les coefficients non standardisés ne permettent pas une comparaison directe entre des variables mesurées sur des échelles différentes. Finalement, l'approche par régression ne permet pas d'établir de lien de causalité ni de déterminer la direction des associations significatives observées (Hayes, 2022).

Des recherches futures pourraient examiner plus finement les effets de formes spécifiques de discrimination sur les aspirations et les attentes, en considérant l'influence d'autres variables explicatives, telles que les aspirations parentales. Il serait également pertinent de mieux comprendre comment les jeunes intègrent la dimension de réalisme dans la formulation de leurs attentes et conçoivent la distinction entre les aspirations et les attentes. Enfin, le recours à des échantillons plus diversifiés et représentatifs permettrait d'optimiser la validité et la généralisation des résultats.

Références

Abrahamsen, B. et Drange, I. (2015). Ethnic minority students' career expectations in prospective professions: Navigating between ambitions and discrimination. *Sociology*, *49*(2), 252–269. https://doi.org/10.1177/0038038514542494

Armony, V., Hassaoui, M. et Mulone, M. (2019). *Les interpellations policières à la lumière des identités racisées des personnes interpellées. Analyse des données du Service de Police de la Ville de Montréal (SPVM) et élaboration d'indicateurs de suivi en matière de profilage racial* [Rapport de recherche adressé au SPVM]. SPVM. https://spvm.qc.ca/upload/Rapport_Armony-Hassaoui-Mulone.pdf

Armony, V., Hassaoui, M. et Mulone, M. (2021). *Portrait de recherche sur les interpellations dans le dossier profilage* [Rapport de recherche adressé au SPVR]. CRIDAQ. https://cridaq.uqam.ca/wp-content/uploads/2021/09/Rapport-Armony-Hassaoui-Mulone-SPVR.pdf

Beauregard, J.-P. (2020). Dévoiler la barrière de la discrimination ethnoraciale à l'embauche à Québec par un testing intersectionnel. *Nouvelles Pratiques Sociales*, *31*(2), 66–81. https://doi.org/10.7202/1076645ar

Béji, K. et Pellerin, A. (2010). L'intégration socioprofessionnelle des immigrants récents au Québec : le rôle de l'information et des réseaux sociaux. *Relations industrielles*, *65*(4), *562–583*. *https://doi.org/10.7202/045586ar*

Bourdon, S., Baril, D., Desroches, I., Dionne, P. et Supeno, E. (2020). *Résultats du sondage rapports au travail, orientation et persévérance aux études, du secondaire à l'université (RTOPS)*. Rapport de recherche préparé dans le cadre d'une Action concertée Persévérance et réussite scolaire MEESE et FRQSC. Chaire-réseau de recherche sur la jeunesse du Québec (CJR). https://chairejeunesse.ca/sites/default/files/2020-06/CRJ_Bourdon_SondageRTOPS%20VFF.pdf

Bourdon, S., Baril, D. et Dionne, P. (2019, 29-31 octobre). *Les aspirations et rapports au travail des jeunes issus de l'immigration en Estrie* [communication orale]. Colloque Diversités en emploi : Perspectives et enjeux au Québec et au Canada. Québec, Canada.

Boudarbat, B. et Ebrahimi, P. (2016). L'intégration économique des jeunes issus de l'immigration au Québec et au Canada. *Cahiers québécois de démographie*, *45*(2), 121–144. https://doi.org/10.7202/1040392ar

Boyd, M. (2008). A Socioeconomic scale for Canada : Measuring occupational status from the census. *Canadian Review of Sociology*, *45*(1), 51–91. https://doi.org/10.1111/j.1755-618X.2008.00003.x

Brondolo, E., Kelly, K. P., Coakley, V., Gordon, T., Thompson, S., Levy, E., Cassells, A., Tobin, J. N., Sweeney, M. et Contrada, R. J. (2005). The perceived ethnic discrimination questionnaire: Development and preliminary validation of a community version. *Journal of Applied Social Psychology*, *35*(2), 335–365. https://doi.org/10.1111/j.1559-1816.2005.tb02124.x

Centre de services scolaire de la Pointe-de-l'île (CSSPI). (2024). *Rapport Annuel. Centre de services scolaire de la Pointe-de-l'Île 2023-2024*. https://csspi.gouv.qc.ca/components/com_gdwgestion/download.php?fileid=16138

Chavira, G., Cooper, C. R. et Vasquez-Salgado, Y. (2016). Pathways to achievement: Career and educational aspirations and expectations of Latina/o immigrant parents and early adolescents. *Journal of Latinos and Education*, *15*(3), 214–228. https://doi.org/10.1080/15348431.2015.1131693

Cheng, Z. H., Pagano, L. A. et Shariff, A. F. (2019). The development, validation, and clinical implications of the Microaggressions Against Religious Individuals Scale (MARIS). *Psychology of Religion and Spirituality*, *11*(4), 327–338. https://doi.org/10.1037/rel0000126

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2e éd.). Lawrence Erlbaum Associates.

Collins, T. et Magnan, M.-O. (2018). Post-secondary pathways among second-generation immigrant youth of Haitian origin in Quebec. *Canadian Journal of Education*, *41*(2), 413–440. https://journals.sfu.ca/cje/index.php/cje-rce/article/view/2426

Commission scolaire de la Pointe-de-l'île. (2009). *Politique interculturelle*. https://www.csspi.gouv.qc.ca/images/Politique-Interculturelle_PDF.pdf

Conkel-Ziebell, J. L., Gushue, G. V. et Turner, S. L. (2019). Anticipation of racism and sexism: Factors related to setting career goals for urban youth of color. *Journal of Counseling Psychology*, *66*(5), 588–599. https://doi.org/10.1037/cou0000357

Darchinian, F., Magnan, M.-O. et Kanouté, F. (2017). Jeunes adultes issus de l'immigration et marché du travail. Logiques d'orientation professionnelle. *Diversité urbaine*, *17*, 113–132. https://doi.org/10.7202/1047980ar

de Freitas, D. F., Fernandes-Jesus, M., Ferreira, P. D., Coimbra, S., Teixeira, P. M., de Moura, A., Gato, J., Marques, S. C. et Fontaine, A. M. (2018). Psychological correlates of perceived ethnic discrimination in Europe: A meta-analysis. *Psychology of Violence*, *8*(6), 712–725. https://psycnet.apa.org/doi/10.1037/vio0000215

Debrosse, R., Boatswain-Kyte, A., David, S., Gooding, G., Vaval, P. et Lafortune, G. (2024). No identity connections without representation? Exploring associations between neighbourhood opportunities, ethnic-ideal alignment and well-being in Black, Indigenous and other youths of colour in Canada. *Journal of Community & Applied Social Psychology*, *34*(2), e2777. https://doi.org/10.1002/casp.2777

Donovan, R. A., Galban, D. J., Grace, R. K., Bennett, J. K. et Felicié, S. Z. (2013). Impact of racial macro- and microaggressions in Black Women's lives: A preliminary analysis. *Journal of Black Psychology*, *39*(2), 185–196. https://doi.org/10.1177/0095798412443259

Dorceus, S. (2024). The association between perceived discrimination profiles and career aspirations and expectations of high school students. Dans M. Carmo (dir.), *Education and new developments 2024: Volume 1*. (p. 51-55). inScience Press. https://end-educationconference.org/wp-content/uploads/2024/06/Education-and-New-Developments_2024_Vol_I.pdf

Dubois, H. (2019). Les enjeux de la reconnaissance professionnelle au Québec. *Recherches sociographiques*, *60*(2), 261–285. https://doi.org/10.7202/1070972ar

Eid, P., Azzaria, M. et Quérat, M. (2012). *Mesurer la discrimination à l'embauche subie par les minorités racisées : résultats d'un « testing » mené dans le grand Montréal* [Rapport présenté à la Commission des droits de la personne et des droits de la jeunesse]. Commission des droits de la personne et des droits de la jeunesse. www.cdpdj.qc.ca/publications/etude_testing_discrimination_emploi.pdf

Field, A. P. (2018). *Discovering statistics using IBM® SPSS® statistics* (5e éd.). SAGE.

Fouad, N. A. et Byars-Winston, A. M. (2005). Cultural context of career choice: Meta-analysis of race/ethnicity differences. *The Career Development Quarterly*, 53(3), 223–233. https://doi.org/10.1002/j.2161-0045.2005.tb00992.x

Fouad, N. A. et Kantamneni, N. (2020). The role of race and ethnicity in career choice, development, and adjustment. Dans S.D. Brown et R.W. Lent (dir.), *Career Development and Counseling: Putting Theory and Research to Work* (p. 309-340). John Wiley et Sons, Inc. https://doi.org/10.1002/9781394258994.ch10

Gouvernement du Québec. (2016a). *Politique québécoise de la jeunesse 2030*. Ministère du Conseil exécutif. https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/culture-communications/documents/jeunesse/publications/politique-jeunesse-2030.pdf

Gouvernement du Québec. (2016b). *Gouvernance scolaire*. https://www.quebec.ca/education/prescolaire-primaire-et-secondaire/administration-encadrements/gouvernance-scolaire/gouvernance-scolaire

Gouvernement du Québec. (2022). *Taux de diplomation et de qualification par cohorte de nouveaux inscrits au secondaire*. Ministère de l'Éducation. https://www.education.gouv.qc.ca/fileadmin/site_web/documents/PSG/statistiques_info_decisionnelle/Rapport-diplomation-qualif-sec-2022.pdf

Gouvernement du Québec. (2025). *Population immigrée au Québec et au Canada, recensement de 2021*. Ministère de l'Immigration, de la Francisation et de l'Intégration. https://cdn-contenu.quebec.ca/cdn-contenu/immigration/publications/fr/recherches-statistiques/PUB_Pop_immigree_Quebec_regions_2021.pdf

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3e éd.). The Guilford Press.

Institut de la statistique du Québec. (2023). *Statut de génération*. Gouvernement du Québec. https://statistique.quebec.ca/vitrine/15-29-ans/theme/demographie/statut-generation

Institut de la statistique du Québec. (2024a). *Personnes immigrantes*. Gouvernement du Québec. https://statistique.quebec.ca/vitrine/egalite/dimensions-egalite/demographie/personnes-immigrantes#statut

Institut de la statistique du Québec. (2024b). *Bilan démographique du Québec*. Édition 2024. Gouvernement du Québec. https://statistique.quebec.ca/fr/fichier/bilan-demographique-quebec-edition-2024.pdf

Institut de la statistique du Québec. (2024c). *Bilan du marché du travail au Québec en 2023*. Gouvernement du Québec. https://statistique.quebec.ca/fr/fichier/bilan-marche-travail-quebec-2023.pdf

Institut de la statistique du Québec. (2025). *Qualité de l'emploi*. Gouvernement du Québec. https://statistique.quebec.ca/vitrine/egalite/dimensions-egalite/travail/qualite-emploi?onglet=ensemble-de-la-population

Kamanzi, P. C. (2021). La résilience dans le parcours scolaire des jeunes noirs d'origine africaine et caribéenne au Québec. *Canadian Journal of Education / Revue canadienne de l'éducation*, *44*(1), 32–63. https://doi.org/10.53967/cje-rce.v44i1.5027

Kanouté, F. et Lafortune, G. (2011). La réussite scolaire des élèves d'origine immigrée : réflexions sur quelques enjeux à Montréal. *Éducation et francophonie*, *39*(1), 80–92. https://doi.org/10.7202/1004331ar

Keum, B. T., Thai, C. J., Truong, N. N., Ahn, H. L. et Lu, Y. (2018). Factor structure and measurement invariance of the Perceived Ethnic Discrimination Questionnaire-Community Version Brief. *International Journal of Culture and Mental Health*, *11*(4), 498–512. https://doi.org/10.1080/17542863.2018.1436578

Lent. R.W. (2020). Career development and counseling: A social cognitive framework. Dans S.D. Brown et R.W. Lent (dir.), *Career development and counseling: Putting theory and research work* (p.129–163). John Wiley & Sons. https://doi.org/10.1002/9781394258994.ch5

Lent, R. W., Brown, S. D. et Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, *45*, 79–122. https://doi.org/10.1006/jvbe.1994.1027

Lent, R.W., Brown, S.D. et Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology*, *47*(1), 36–49. https://doi.org/10.1037/0022-0167.47.1.36

Magnan, M.-O., Collins, T., Darchinian, F., Kamanzi, P. C. et Valade, V. (2021). Student voices on social relations of race in Québec universities. *Race Ethnicity and Education*, *27*(2), 156–172. https://doi.org/10.1080/13613324.2021.1890564

Magnan, M.-O., Darchinian, F. et Larouche, É. (2016). École québécoise, frontières ethnoculturelles et identités en milieu pluriethnique. *Minorités linguistiques et société*, *7*, 97–121. https://doi.org/10.7202/1036418ar

Magnan, M.-O., Darchinian, F. et Larouche, É. (2018). Identifications et rapports entre majoritaires et minoritaires. Discours de jeunes issus de l'immigration. *Diversité urbaine*, *17*, 29–47. https://doi.org/10.7202/1047976ar

Magnan, M.-O., Pilote, A., Collins, T. et Kamanzi, P. C. (2019). Discours de jeunes issus de groupes minoritaires sur les inégalités scolaires au Québec. *Diversité urbaine*, *19*, 93–114. https://doi.org/10.7202/1065122ar

Magnan, M.-O., Pilote, A., Grenier, V. et Darchinian, F. (2017). Jeunes issus de l'immigration et choix d'orientation au postsecondaire à Montréal. *Canadian Journal of Higher Education*, *47*(3), 34–53. https://doi.org/10.47678/cjhe.v47i3.188056

Major, B., Quinton, W. J. et McCoy, S. K. (2002). Antecedents and consequences of attributions to discrimination: Theoretical and empirical advances. *Advances in Experimental Social Psychology*, *34*, 251–330. https://doi.org/10.1016/s0065-2601(02)80007-7

Mason, A., Salami, B., Fouché, C., Richter, S., Sibeko, L. et Adekola, S. (2022). Aspirations, schooling experiences, and educational outcomes of African migrant children in Canada. *Canadian Ethnic Studies*, *54*(2), 1–21. https://doi.org/10.1353/ces.2022.0013

Metz, A. J., Fouad, N. et Ihle-Helledy, K. (2009). Career aspirations and expectations of college students: Demographic and labor market comparisons. *Journal of Career Assessment*, *17*(2), 155–171. https://doi.org/10.1177/1069072708328862

Mc Andrew, M., Ledent, J., Murdoch, J., Ait-Said, R. et Balde, A. (2013). Le profil et le cheminement scolaire des jeunes québécois issus de l'immigration au secondaire : un portrait statistique. *Cahiers québécois de démographie*, *42*(1), 31–55. https://doi.org/10.7202/1017097ar

McWhirter, E. H. (1997). Perceived barriers to education and career: Ethnic and gender differences. *Journal of Vocational Behavior*, *50*(1), 124–140. http://dx.doi.org/10.1006/jvbe.1995.1536

McWhirter, E. H., Valdez, M. et Caban, A. R. (2013). Latina adolescents' plans, barriers, and supports: A focus group study. *Journal of Latina/o Psychology*, *1*(1), 35–52. https://doi.org/10.1037/a0031304

Organisation des Nations Unies (ONU). (s.d.). *Jeunes*. https://www.un.org/fr/global-issues/youth

Organisation de coopération et de développement économiques (OCDE). (2020). Intégrer les immigrants pour stimuler l'innovation au Québec, Canada. Dans *Revues de l'OCDE sur la création locale d'emplois*. https://doi.org/10.1787/2b41b9e8-fr

O'Hara, R. E., Gibbons, F. X., Weng, C.-Y., Gerrard, M. et Simons, R. L. (2012). Perceived racial discrimination as a barrier to college enrollment for African Americans. *Personality and Social Psychology Bulletin*, *38*(1), 77–89. https://doi.org/10.1177/0146167211420732

Phinney, J. S. (1992). The multigroup ethnic identity measure: A new scale for use with adolescents and young adults from diverse groups. *Journal of Adolescent Research*, *7*, 156–176. https://doi.org/10.1177/074355489272003

Rojewski, J. W. (2005). Occupational aspirations: Constructs, meanings, and application. Dans S. D. Brown et R. W. Lent (dir.), *Career development and counseling: Putting theory and research to work* (p. 131–154). John Wiley et Sons, Inc. https://protean.or.id/wp-content/uploads/2025/05/Career-Development-and-Counseling-Putting-Theory-and-Research-to-Work.pdf

Sheu, H.-B. et Wang, X. T. (2021). Théorie sociocognitive de la carrière (SCCT) : aperçu et applications pratiques. Dans N. Arthur, R. Neault et M. McMahon (dir.), *Théories et modèles orientés sur la carrière : des idées pour la pratique* (p. 471–483). CERIC. https://ceric.ca/fr/publications/theories-et-modeles-orientes-sur-la-carriere-des-idees-pour-la-pratique

Singh, R. S., Bhambhani, Y., Skinta, M. D. et Torres-Harding, S. R. (2021). Measurement of intersectional microaggressions: Conceptual barriers and recommendations. *Perspectives on Psychological Science*, *16*(5), 956–971. https://doi.org/10.1177/1745691621991855

Statistique Canada. (2018). *Jeune adulte*. https://www23.statcan.gc.ca/imdb/p3Var_f.pl?Function=Unit&Id=116021

Statistique Canada. (2021a). *Classification pour le statut d'immigrant*. https://www23.statcan.gc.ca/imdb/p3VD_f.pl?Function=getVD&TVD=1324474&CVD=1324474&CLV=0&MLV=1&D=1

Statistique Canada. (2021b). *Classification du statut de génération*. https://www23.statcan.gc.ca/imdb/p3VD_f.pl?Function=getVD&TVD=117200&CVD=117200&CLV=0&MLV=1&D=1

Statistique Canada. (2022). *L'immigration comme source de main-d'œuvre*. https://www150.statcan.gc.ca/n1/daily-quotidien/220622/dq220622c-fra.htm

Statistique Canada. (2023a). *Tableau 98-10-0364-01 Langue maternelle selon le statut des générations et le nombre de langues connues : Canada, provinces et territoires, régions métropolitaines de recensement et agglomérations de recensement y compris les parties*. https://doi.org/10.25318/9810036401-fra

Statistique Canada. (2023b). *Classification nationale des professions (CNP) 2021 Version 1.0*. https://www.statcan.gc.ca/fr/sujets/norme/cnp/2021/indexV1

Statistique Canada. (2024a). *Tableau 98-10-0326-01 Minorité visible selon le lieu de naissance et le statut des générations : Canada, provinces et territoires, régions métropolitaines de recensement et agglomérations de recensement y compris les parties*. https://doi.org/10.25318/9810032601-fra

Statistique Canada. (2024b). *Tableau 98-10-0412-01 Statistiques du revenu d'emploi, selon la profession, le principal domaine d'études et le plus haut niveau de scolarité : Canada*. https://doi.org/10.25318/9810041201-fra

Statistique Canada. (2024c). *Tableau 98-10-0452-01 Statistiques du revenu d'emploi selon le sous-groupe des professions, le travail pendant l'année de référence, l'âge et le genre : Canada, provinces et territoires et régions métropolitaines de recensement y compris les parties*. https://doi.org/10.25318/9810045201-fra

Statistique Canada. (2025). *Série « Perspective géographique », Recensement de la population de 2021 : Canada – Immigration, lieu de naissance et citoyenneté*. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/page.cfm?lang=F&topic=9&dguid=2021A000011124

Steinbach, M. (2015). Les défis de l'intégration sociale des jeunes immigrants à l'extérieur de la métropole québécoise. *Diversité urbaine*, *15*(1), 69–85. https://doi.org/10.7202/1037872ar

Sue, D. W., Capodilupo, C. M., Torino, G. C., Bucceri, J. M., Holder, A. M. B., Nadal, K. L. et Esquilin, M. (2007). Racial microaggressions in everyday life: Implications for clinical practice. *American Psychologist*, *62*(4), 271–286. https://doi.org/10.1037/0003-066X.62.4.271

Swanson, J. L. et Fouad, N. A. (2020). Cultural contexts and career counseling. Dans J. L. Swanson et N. A. Fouad (dir.), *Career theory and practice. Learning through case studies* (4e éd., p. 41–71). SAGE Publications.

Teney, C., Devleeshouwer, P. et Hanquinet, L. (2013). Educational aspirations among ethnic minority youth in Brussels: Does the perception of ethnic discrimination in the labour market matter? A mixed-method approach. *Ethnicities*, *13*(5), 584–606. https://doi.org/10.1177/1468796812472009

Torres-Harding, S. R., Andrade, A. L. et Romero Diaz, C. E. (2012). The Racial Microaggressions Scale (RMAS): A new scale to measure experiences of racial microaggressions in people of color. *Cultural Diversity and Ethnic Minority Psychology*, *18*(2), 153–164. https://doi.org/10.1037/a0027658

Tovar-Murray, D., Jenifer, E. S., Andrusyk, J., D'Angelo, R. et King, T. (2012). Racism-related stress and ethnic identity as determinants of African American college students' career aspirations. *The Career Development Quarterly*, *60*(3), 254–262. https://doi.org/10.1002/j.2161-0045.2012.00021.x

Annexe 1. Caractéristiques sociodémographiques de l'échantillon

Tableau 1

Caractéristiques sociodémographiques des jeunes Québécois et Québécoises selon le statut migratoire

	1re génération %	2e génération %	3e génération + %
Niveau de scolarité de l'élève			
4e secondaire	25,80	27,50	47,00
5e secondaire	74,20	72,50	53,00
Genre			
Femmes	54,80	54,30	52,70
Hommes	43,80	43,80	45,50
Autres	1,50	2,00	1,80
Minorité visible			
Oui	90,30	92,00	6,70
Non	9,70	8,00	93,20
Orientation sexuelle			
Hétérosexuelle	88,00	87,90	71,80
Bisexuelle	7,40	5,90	15,40
Autres	4,70	6,20	12,80
Centre de services scolaires			
CSSPI	98,50	98,40	78,10
CSSRS	1,50	1,60	21,90

Note. CSSPI : Centre de services scolaire de la Pointe-de-l'île. CSSRS : Centre de services scolaire de la Région-de-Sherbrooke

Annexe 2. Comparaison des domaines professionnels des aspirations et attentes professionnelles (10 catégories de la CNP) selon le statut migratoire

Le tableau 2 présente les résultats de la comparaison des domaines professionnels des aspirations et attentes (10 catégories de la CNP) selon le statut migratoire des jeunes. L'analyse de chi-carré a mis en évidence des différences significatives au niveau des 10 catégories de la CNP pour les aspirations professionnelles des jeunes ($\chi^2(16, N = 617) = 52{,}169$, $p < 0{,}001$, V de Cramer = 0,206), dont la taille d'effet est petite. Les jeunes issus de l'immigration (1re génération = 35,7 % ; 2e génération = 35,9 %) aspirent en plus grande proportion à occuper un poste dans le secteur de la santé que ceux de la 3e génération ou plus (18,9 %). En revanche, pour la catégorie des arts, culture, sports et loisirs, ce sont les jeunes de la 3e génération ou plus (19,6 %) qui y aspirent en plus grand nombre, comparativement aux jeunes issus de la 1re génération (9,7 %) et de la 2e génération (9,5 %). Les jeunes de la 3e génération ou plus (8,1 %) aspirent également en plus grande proportion à occuper un poste dans les secteurs des métiers, transport, machinerie et domaines apparentés, des ressources naturelles, agriculture et production connexe, ainsi que de la fabrication et services d'utilité publique, comparativement aux jeunes issus de l'immigration (1re génération = 1,7 % ; 2e génération = 1,7 %).

En ce qui concerne les attentes professionnelles, l'analyse de chi-carré a relevé également des différences significatives pour les 10 catégories de la CNP des attentes professionnelles des jeunes (χ^2 (16, $N = 553$) = 56,206, $p < 0{,}001$, V de Cramer = 0,225), mais la taille d'effet demeure petite. Plus précisément, les jeunes de la 2e génération sont proportionnellement plus nombreux à penser atteindre une carrière dans le domaine des affaires, finance et administration (6,6 %) alors que cette proportion est nettement plus faible chez ceux de la 3e génération ou plus (0,8 %). De plus, une plus grande proportion de jeunes de la 2e génération (34,6 %) pensent atteindre une carrière dans le secteur de la santé, comparativement aux jeunes de la 3e génération ou plus (20,3 %). De même, une proportion plus élevée des jeunes de la 1re (23,4 %) et de la 2e (23,7 %) génération pensent atteindre une profession dans le domaine des sciences naturelles et appliquées, contre 12,5 % des jeunes de la 3e génération ou plus. À l'inverse, les jeunes de la 1re génération sont moins nombreux à penser atteindre une profession dans le domaine des arts, culture, sports et loisirs (7,0 %) comparativement à ceux de la 3e génération ou plus (16,4 %). Enfin, les jeunes issus de l'immigration (1re génération = 1,9 % ; 2e génération = 0,9 %) pensent atteindre dans une plus faible proportion une profession dans les domaines des métiers, transport, machinerie et domaines apparentés, des ressources naturelles, agriculture et production connexe, ainsi que de la fabrication et services d'utilité publique, comparativement aux jeunes de la 3e génération ou plus (8,6 %).

Tableau 2

Répartition des jeunes dans les 10 domaines de la CNP en fonction du statut migratoire

	1re génération %	2e génération %	3e génération+ %	χ^2	V de Cramer
Aspirations professionnelles (n = 617)				52,169	0,206
0 Membre des corps législatifs et cadres supérieurs	$6{,}70_a$	$7{,}80_a$	$2{,}70_a$		
1 Affaires, finance et administration	$4{,}20_a$	$4{,}30_a$	$1{,}40_a$		
2 Sciences naturelles et appliquées	$21{,}00_a$	$21{,}20_a$	$16{,}20_a$		
3 Secteur de la santé	$35{,}70_a$	$35{,}90_a$	$18{,}90_b$		
4 Éducation, droit et services sociaux, communautaires et gouvernementaux	$15{,}50_a$	$15{,}20_a$	$21{,}60_a$		
5 Arts, culture, sports et loisirs	$9{,}70_a$	$9{,}50_a$	$19{,}60_b$		
6 Vente et services	$2{,}90_a$	$2{,}20_a$	$6{,}10_a$		
7, 8, 9 Métiers, transport, machinerie et domaines apparentés ; ressources naturelles, agriculture et production connexe ; fabrication et services d'utilité publique	$1{,}70_a$	$1{,}70_a$	$8{,}10_b$		

	1re génération %	2e génération %	3e génération+ %	χ^2	V de Cramer
Ne sait pas	$2{,}50_{a}$	$2{,}20_{a}$	$5{,}40_{a}$		
Attentes professionnelles (n = 553)				56,206	0,225
0 Membre des corps législatifs et cadres supérieures	$7{,}90_{a}$	$3{,}30_{a}$	$4{,}70_{a}$		
1 Affaires, finance et administration	$4{,}70_{a,b}$	$6{,}60_{b}$	$0{,}80_{a}$		
2 Sciences naturelles et appliquées	$23{,}40_{a}$	$23{,}70_{a}$	$12{,}50_{b}$		
3 Secteur de la santé	$31{,}80_{a,b}$	$34{,}60_{b}$	$20{,}30_{a}$		
4 Éducation, droit et services sociaux, communautaires et gouvernementaux	$14{,}00_{a}$	$15{,}60_{a}$	$21{,}90_{a}$		
5 Arts, culture, sports et loisirs	$7{,}00_{a}$	$8{,}10_{a,b}$	$16{,}40_{b}$		
6 Vente et services	$2{,}80_{a}$	$1{,}90_{a}$	$6{,}30_{a}$		
7, 8, 9 Métiers, transport, machinerie et domaines apparentés ; ressources naturelles, agriculture et production connexe ; fabrication et services d'utilité publique	$1{,}90_{a}$	$0{,}90_{a}$	$8{,}60_{b}$		
Ne sait pas	$6{,}50_{a}$	$5{,}20_{a}$	$8{,}60_{a}$		

Note. Des indices de lettres différentes indiquent des différences significatives entre les proportions des colonnes ($p < 0{,}05$), tandis que des lettres identiques indiquent l'absence de différence. V de Cramer : 0,10 = effet de petite taille, 0,30 = effet de taille moyenne, 0,50 = effet de grande taille.

Annexe 3. Comparaison des aspirations et des attentes professionnelles selon les scores socioéconomiques des 10 catégories de la CNP

Le tableau 3 présente les résultats des ANOVAs portant sur les scores socioéconomiques des 10 catégories de la CNP associées aux aspirations et attentes professionnelles selon le statut migratoire. Les résultats rapportent des différences significatives, bien que de petite taille, pour les scores socioéconomiques des aspirations professionnelles ($F(2, 321{,}74) = 6{,}466$, $p = 0{,}002$, $\omega^2 = 0{,}028$). Les tests post hoc de Games-Howell ont révélé que les jeunes de la 1re génération ($M = 66{,}04$; $ÉT = 14{,}00$) et de la 2e génération ($M = 66{,}50$; $ÉT = 13{,}41$) ont des aspirations professionnelles significativement supérieures à celles des jeunes de la 3e génération ou plus ($M = 59{,}76$; $ÉT = 20{,}14$) pour les 10 catégories de la CNP.

De façon comparable, des différences significatives de petite taille ont été observées pour les scores socioéconomiques liés aux attentes professionnelles ($F(2, 267{,}24) = 5{,}443$, $p = 0{,}005$, $\omega^2 = 0{,}029$). Les tests post hoc de Games-Howell ont révélé que les jeunes de la 1re génération ($M = 66{,}65$; $ÉT = 14{,}04$) et de la 2e génération ($M = 66{,}64$; $ÉT = 12{,}54$) ont rapporté aussi des attentes professionnelles significativement supérieures à celles des jeunes de la 3e génération ou plus ($M = 59{,}97$; $ÉT = 20{,}65$) pour les 10 catégories de la CNP.

Tableau 3

Comparaison des scores socioéconomiques des 10 catégories de la CNP selon le statut migratoire pour les aspirations et les attentes professionnelles

	1re gén. *M (ÉT)*	2e gén. *M (ÉT)*	3e gén. + *M (ÉT)*	ANOVA *F* test	*p*	ω²
Aspirations professionnelles						
CNP 10 (*n* = 599)	66,04 (14,00)$_a$	66,50 (13,41)$_a$	59,76 (20,14)$_b$	6,466	0,002	0,028
Attentes professionnelles						
CNP 10 (*n* = 517)	66,65 (14,04)$_a$	66,64 (12,54)$_a$	59,97 (20,65)$_b$	5,443	0,005	0,029

Note. CNP = Classification nationale des professions. Des indices de lettres différentes signalent des différences significatives entre les moyennes des colonnes ($p < 0{,}05$), tandis que des lettres identiques indiquent l'absence de différence significative. ω² : 0,01 = effet de petite taille, 0,06 = effet de taille moyenne, 0,14 = effet de grande taille.

Annexe 4. Correspondance entre les aspirations et les attentes professionnelles pour les scores socioéconomiques des 10 catégories de la CNP.

Le tableau 4 présente la correspondance entre les aspirations et les attentes professionnelles pour les scores socioéconomiques des 10 catégories de la CNP. Les résultats se révèlent non significatifs ($F(2,485) = 0,376$, $p = 0,687$, $\omega^2 = 0,000$). Ainsi, la correspondance entre les aspirations et les attentes professionnelles ne varie pas selon le statut migratoire.

Tableau 4

Correspondance entre les aspirations et les attentes professionnelles en fonction du statut migratoire pour les scores socioéconomiques des 10 catégories de la CNP.

	1re gén. *M (ÉT)*	2e gén. *M (ÉT)*	3e gén. + *M (ÉT)*	ANOVA *F* test	*p*	ω²
Correspondance						
CNP 10 (*n* = 488)	-0,70 (13,48)$_a$	0,17 (8,56)$_a$	-0,79 (11,22)$_a$	0,634	0,687	0,000

Note. CNP = Classification nationale des professions. Des indices de lettres différentes signalent des différences significatives entre les moyennes des colonnes ($p < 0,05$), tandis que des lettres identiques indiquent l'absence de différence significative. ω² : 0,01 = effet de petite taille, 0,06 = effet de taille moyenne, 0,14 = effet de grande taille.

Annexe 5. Comparaison des perceptions de discrimination selon le statut migratoire

Le tableau 5 présente les résultats de la comparaison des perceptions de discrimination selon le statut migratoire des jeunes. D'abord, les résultats mettent en évidence des différences significatives pour l'anticipation de la discrimination ($F(2, 700) = 34{,}593$, $p < 0{,}001$, $\omega^2 = 0{,}042$). Les tests post hoc de Tukey ont montré que les jeunes de la 1re et de la 2e génération anticipent davantage de la discrimination sur le marché du travail (1re génération : $M = 2{,}13$; $ÉT = 1{,}35$; 2e génération : $M = 2{,}02$; $ÉT = 1{,}32$) que leurs pairs de la 3e génération ou plus ($M = 1{,}12$; $ÉT = 1{,}21$).

Concernant les perceptions de discrimination manifeste, les résultats indiquent des différences significatives pour l'exclusion et l'injustice ($F(2, 684) = 5{,}588$, $p = 0{,}004$, $\omega^2 = 0{,}013$). Les analyses post hoc de Tukey indiquent que les jeunes de la 1re ($M = 0{,}84$; $ÉT = 0{,}80$) et la 2e génération ($M = 0{,}83$; $ÉT = 0{,}78$) rapportent davantage de perceptions d'exclusion et d'injustice que ceux de la 3e génération ou plus ($M = 0{,}60$; $ÉT = 0{,}70$). En revanche, les résultats ne révèlent pas de différence significative pour la violence physique et verbale ($F(2, 684) = 0{,}319$, $p = 0{,}727$, $\omega^2 = 0{,}000$) ainsi que pour la stigmatisation ($F(2, 683) = 1{,}290$, $p = 0{,}276$, $\omega^2 = 0{,}001$).

En ce qui a trait aux perceptions de microagressions, les résultats montrent des différences significatives pour la présomption d'infériorité ($F(2, 689) = 10{,}927$, $p < 0{,}001$, $\omega^2 = 0{,}028$), les invalidations environnementales ($F(2, 692) = 3{,}102$, $p = 0{,}046$, $\omega^2 = 0{,}006$) ainsi que la présomption de criminalité ($F(2, 451{,}644) = 15{,}800$, $p < 0{,}001$, $\omega^2 = 0{,}027$). Les tests post hoc de Tukey ont rapporté que les jeunes de la 1re génération ($M = 1{,}37$; $ÉT = 0{,}96$) et de la 2e génération ($M = 1{,}34$; $ÉT = 0{,}99$) perçoivent davantage de présomption d'infériorité à leur égard que ceux de la 3e génération ou plus ($M = 0{,}96$; $ÉT = 0{,}88$). Toutefois, bien qu'une différence significative ait été observée pour les invalidations environnementales, les comparaisons post-hoc de Tukey n'ont pas mis en évidence des différences significatives selon le statut migratoire. Par ailleurs, les analyses post hoc de Games-Howell indiquent que les jeunes issus de l'immigration (1re génération : $M = 0{,}68$; $ÉT = 0{,}90$; 2e génération : $M = 0{,}68$; $ÉT = 0{,}84$) rapportent davantage de perceptions liées à la présomption de criminalité que ceux de la 3e génération ou plus ($M = 0{,}35$; $ÉT = 0{,}59$). Enfin, aucune différence significative n'a été observée pour l'invisibilité et la dévaluation ($F(2, 690) = 0{,}130$, $p = 0{,}878$, $\omega^2 = 0{,}000$). Les différences significatives présentent toutes des tailles d'effet négligeables à faibles (ω^2 variant de 0,001 à 0,042), correspondant à une proportion de variances expliquée comprise entre 0,1 % et 4,2 %.

Tableau 5

Comparaison des perceptions de discrimination selon le statut migratoire

Perceptions de discrimination	1re génération *M (ÉT)*	2e génération *M (ÉT)*	3e génération + *M (ÉT)*	ANOVA *F* test	*p*	ω^2
Anticipation de la discrimination	$2{,}13\ (1{,}35)_a$	$2{,}02\ (1{,}32)_a$	$1{,}12\ (1{,}21)_b$	34,593	< 0,001	0,042
Perceptions de discrimination manifeste						
Violence physique et verbale	$0{,}39\ (0{,}68)_a$	$0{,}44\ (0{,}69)_a$	$0{,}40\ (0{,}64)_a$	0,319	0,727	0,000
Exclusion et injustice	$0{,}84\ (0{,}80)_a$	$0{,}83\ (0{,}78)_a$	$0{,}60\ (0{,}70)_b$	5,588	0,004	0,013
Stigmatisation	$1{,}09\ (0{,}90)_a$	$1{,}17\ (0{,}98)_a$	$1{,}02\ (0{,}98)_a$	1,290	0,276	0,001
Perceptions de microagressions						
Présomption d'infériorité	$1{,}37\ (0{,}96)_a$	$1{,}34\ (0{,}99)_a$	$0{,}96\ (0{,}88)_b$	10,927	< 0,001	0,028
Invisibilité et dévaluation	$0{,}76\ (0{,}78)_a$	$0{,}77\ (0{,}79)_a$	$0{,}80\ (0{,}80)_a$	0,130	0,878	0,000
Invalidations environnementales	$1{,}35\ (0{,}86)_a$	$1{,}35\ (0{,}86)_a$	$1{,}15\ (1{,}01)_a$	3,102	0,046	0,006
Présomption de criminalité	$0{,}68\ (0{,}90)_a$	$0{,}68\ (0{,}84)_a$	$0{,}35\ (0{,}59)_b$	15,800	< 0,001	0,027

Note. Des indices de lettres différentes signalent des différences significatives entre les moyennes des colonnes ($p < 0{,}05$), tandis que des lettres identiques indiquent l'absence de différence significative. ω^2 : 0,01 = effet de petite taille, 0,06 = effet de taille moyenne, 0,14 = effet de grande taille.

Annexe 6. Association entre les perceptions de discrimination et les scores socioéconomiques (10 catégories de la CNP) des aspirations et attentes professionnelles selon le statut migratoire

Le tableau 6 présente les résultats des analyses de régression examinant la relation entre les perceptions de discrimination et les scores socioéconomiques (10 catégories de la CNP) des aspirations professionnelles selon le statut migratoire. Les résultats montrent que les jeunes de la 3e génération ou plus affichent des scores socioéconomiques inférieurs à ceux de la 1re génération dans l'ensemble des modèles, avec des $p < 0{,}001$ pour tous les cas. Cela dit, aucune association directe n'a été observée entre les perceptions de discrimination et les scores socioéconomiques des aspirations professionnelles (p allant de 0,223 à 0,959).

Cependant, les résultats ont mis en évidence des interactions significatives entre deux formes de perceptions de discrimination et le statut migratoire en lien avec les scores socioéconomiques des aspirations professionnelles : la présomption de criminalité ($\Delta R^2 = 0{,}010$, $F(2,371) = 2{,}107$, $p = 0{,}123$) et l'anticipation de la discrimination ($\Delta R^2 = 0{,}021$, $F(2,373) = 4{,}409$, $p = 0{,}013$). Plus précisément, le tableau 7 présente les effets conditionnels associés aux interactions significatives mises en évidence dans le tableau 6 entre les deux perceptions de discrimination (la présomption de criminalité et l'anticipation de la discrimination) et le statut migratoire. L'effet de ces perceptions varie particulièrement pour les jeunes de la troisième génération. Ainsi, chez ces derniers, une plus grande fréquence de perceptions de présomption de criminalité (B = -3,57 ; $p = 0{,}002$) et une plus grande anticipation de la discrimination (B = -7,80 ; $p = 0{,}007$) sont associées à des aspirations professionnelles correspondant à des scores socioéconomiques plus faibles. Les figures 1 et 2 illustrent respectivement les effets d'interaction associés à la perception de présomption de criminalité et à l'anticipation de la discrimination.

En revanche, tel que présenté dans le tableau 6, les interactions entre les autres formes de perceptions de discrimination et le statut migratoire sont non significatives : la présomption d'infériorité ($\Delta R^2 = 0{,}009$, $F(2,369) = 1{,}830$, $p = 0{,}162$), l'invisibilité et dévaluation ($\Delta R^2 = 0{,}002$, $F(2,371) = 0{,}364$, $p = 0{,}695$), les invalidations environnementales ($\Delta R^2 = 0{,}010$, $F(2,371) = 2{,}075$, $p = 0{,}127$), la violence physique et verbale ($\Delta R^2 = 0{,}008$, $F(2,368) = 1{,}579$, $p = 0{,}208$), l'exclusion et injustice ($\Delta R^2 = 0{,}003$, $F(2,368) = 0{,}519$, $p = 0{,}596$), la stigmatisation ($\Delta R^2 = 0{,}001$, $F(2,369) = 0{,}209$, $p = 0{,}812$). Les modèles globaux intégrant les différentes formes de perceptions de discrimination expliquent entre 7,5 % et 9,9 % de la variance des scores socioéconomiques (10 catégories de la CNP) des aspirations professionnelles, ce qui correspond à des effets de taille faible à modérée.

Tableau 6

Association entre les perceptions de discrimination et les scores socioéconomiques (10 catégories de la CNP) des aspirations professionnelles selon le statut migratoire

	B	IC 95%	SE	*t*	*p*	β	R^2	ΔR^2
Présomption d'infériorité (INF) (n = 369)							0,085	0,009
Constant	68,01	[61,01; 75,02]	3,56	19,10	< 0,001			
INF	0,28	[-2,38; 2,94]	1,35	0,21	0,836	0,017		
2e gén. vs 1re gén. (S1)	-0,90	[-4,54; 2,75]	1,85	-0,48	0,630			
3e gén. + vs 1re gén. (S2)	-10,70	[-15,03; -6,37]	2,20	-4,86	< 0,001			
INF * S1	-0,52	[-4,11; 3,07]	1,83	-0,28	0,777			
INF * S2	-3,76	[-7,87; 0,35]	2,09	-1,80	0,073			
Invisibilité et dévaluation (INV-D) (n = 371)							0,081	0,002
Constant	68,34	[61,44; 75,23]	3,51	19,49	< 0,001			
INV-D	-2,26	[-5,89; 1,38]	1,85	-1,22	0,223	-0,117		
2e gén. vs 1re gén. (S1)	-1,01	[-4,60; 2,57]	1,82	-0,56	0,578			
3e gén. + vs 1re gén. (S2)	-9,92	[-14,11; -5,73]	2,13	-4,66	< 0,001			

	B	IC 95%	SE	*t*	*p*	β	R^2	ΔR^2
INV-D * S1	1,77	[-2,95; 6,49]	2,40	0,74	0,461			
INV-D* S2	0,08	[-5,14; 5,30]	2,65	0,03	0,976			
Invalidations environnementales (INV-E) (n = 371)							0,091	0,010
Constant	68,07	[61,22; 74,91]	3,48	19,55	< 0,001			
INV-E	-0,10	[-3,28; 3,09]	1,62	-0,06	0,952	-0,006		
2e gén. vs 1re gén. (S1)	-1,12	[-4,68; 2,44]	1,81	-0,62	0,537			
3e gén. + vs 1re gén. (S2)	-10,24	[-14,42; -6,07]	2,12	-4,82	< 0,001			
INV-E * S1	-0,38	[-4,64; 3,89]	2,17	-0,17	0,863			
INV-E * S2	-3,85	[-8,08; 0,38]	2,15	-1,79	0,075			
Présomption de criminalité (CRIM) (n = 371)							0,099	0,010
Constant	68,16	[61,34; 74,98]	3,47	19,66	< 0,001	-0,073		
CRIM	-1,34	[-4,16; 1,47]	1,43	-0,94	0,348			
2e gén. vs 1re gén. (S1)	-1,09	[-4,67; 2,48]	1,82	-0,60	0,548			
3e gén. + vs 1re gén. (S2)	-12,18	[-16,58; -7,77]	2,24	-5,44	< 0,001			
CRIM * S1	-0,61	[-4,51; 3,28]	1,98	-0,31	0,757			
CRIM * S2	-6,45	[-12,73; -0,17]	3,19	-2,02	0,044			
Violence physique et verbale (VPV) (n = 368)							0,092	0,008
Constant	68,00	[61,04; 74,95]	3,54	19,23	< 0,001			
VPV	-2,39	[-6,34; 1,57]	2,01	-1,19	0,236	-0,111		
2e gén. vs 1re gén. (S1)	-1,06	[-4,64; 2,53]	1,82	-0,58	0,562			
3e gén. + vs 1re gén. (S2)	-9,99	[-14,23; -5,75]	2,16	-4,63	< 0,001			
VPV * S1	1,61	[-3,72; 6,94]	2,71	0,59	0,554			
VPV * S2	-3,79	[-10,04; 2,45]	3,18	-1,19	0,234			
Exclusion et injustice (E/I) (n = 368)							0,075	0,003
Constant	67,98	[60,94; 75;01]	3,58	19,01	< 0,001	-0,062		
E/I	-1,19	[-4,42; 2,05]	1,65	-0,72	0,472			
2e gén. vs 1re gén. (S1)	-1,21	[-4,85; 2,43]	1,85	-0,65	0,513			
3e gén. + vs 1re gén. (S2)	-10,34	[-14,70; -5,97]	2,22	-4,66	< 0,001			
E/I * S1	2,08	[-2,42; 6,59]	2,29	0,91	0,364			
E/I * S2	-0,06	[-5,42; 5,20]	2,73	-0,02	0,981			
Stigmatisation (STIG) (n = 369)							0,077	0,001
Constant	68,19	[61,18; 75,20]	3,56	19,13	< 0,001			
STIG	0,08	[-2,90; 3,05]	1,51	0,05	0,959	0,005		
2e gén. vs 1re gén. (S1)	-0,99	[-4,61; 2,63]	1,84	-0,54	0,591			
3e gén. + vs 1re gén. (S2)	-10,17	[-14,43; -5,91]	2,17	-4,69	< 0,001			
STIG * S1	-0,83	[-4,84; 3,18]	2,04	-0,41	0,685			
STIG * S2	-1,40	[-5,72; 2,91]	2,19	-0,64	0,523			
Anticipation de la discrimination (n = 373)							0,096	0,021
Constant	67,07	[60,24; 73,91]	3,48	19,30	< 0,001			
Anticipation	0,52	[-147; 2,51]	1,01	0,51	0,609	0,046		
2e gén. vs 1re gén. (S1)	-0,98	[-4,59; 2,64]	1,84	-0,53	0,596			

	B	IC 95%	SE	*t*	*p*	β	R^2	ΔR^2
3e gén. + vs 1re gén. (S2)	-11,86	[-16,23; -7,49]	2,22	-5,34	< 0,001			
Anticipation * S1	-0,20	[-2,94; 2,55]	1,40	-0,14	0,889			
Anticipation * S2	-4,09	[-7,09; -1,09]	1,52	-2,68	0,008			

Note. Les valeurs de n correspondent à la taille de l'échantillon pour chacune des analyses en fonction de la forme de perceptions de discrimination ciblée. IC 95% = intervalle de confiance à 95%. Les valeurs entre crochets indiquent les bornes inférieure et supérieure de l'intervalle. R^2 : 0,01 = effet de petite taille, 0,09 = effet de taille moyenne, 0,25 = effet de grande taille.

Tableau 7

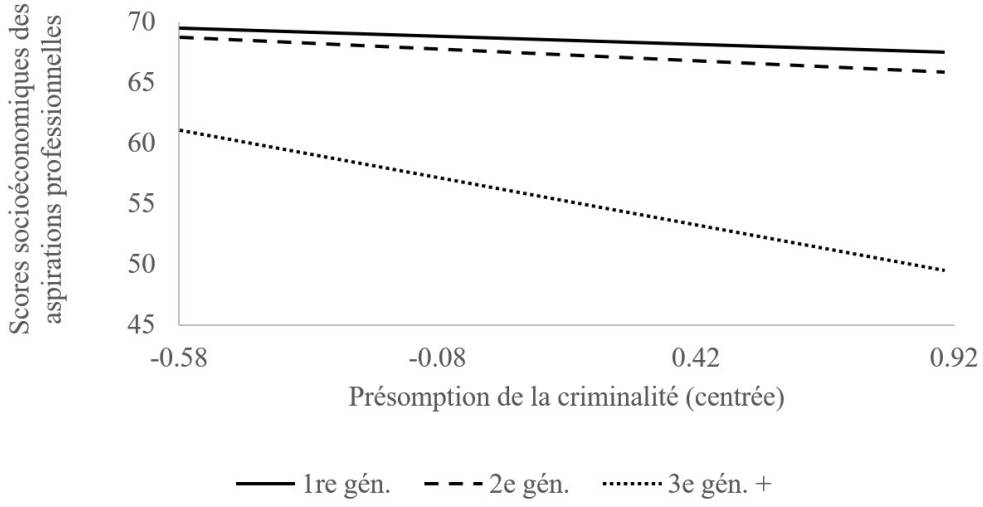
Effets conditionnels de la présomption de la criminalité et de l'anticipation de la discrimination sur les scores socioéconomiques (10 catégories de la CNP) des aspirations professionnelles selon le statut migratoire

	B	IC 95%	SE	*t*	*p*
Présomption de la criminalité					
1re génération	0,52	[-1,47; 2,51]	1,01	0,51	0,609
2e génération	0,32	[-1,56; 2,21]	0,96	0,34	0,737
3e génération +	-3,57	[-5,83; -1,31]	1,15	-3,10	0,002
Anticipation de la discrimination					
1re génération	-1,34	[-4,16; 1,47]	1,43	-0,94	0,348
2e génération	-1,96	[-4,66; 0,75]	1,37	-1,42	0,156
3e génération +	-7,80	[-13,41; -2,18]	2,85	-2,73	0,007

Note. IC 95% = intervalle de confiance à 95%. Les valeurs entre crochets indiquent les bornes inférieure et supérieure de l'intervalle.

Figure 1

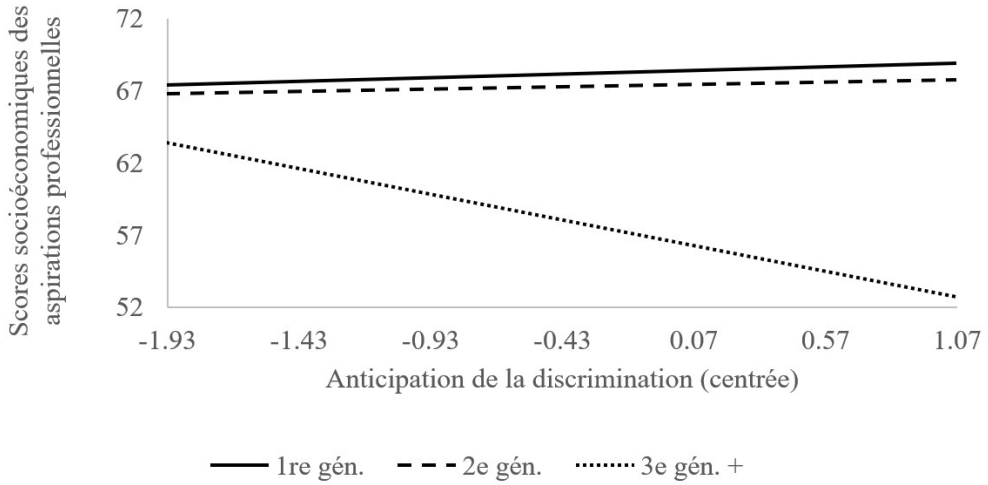
Variation de la relation entre la fréquence des perceptions liées à la présomption de criminalité et les scores socioéconomiques des aspirations professionnelles selon le statut migratoire



Note. Les valeurs de fréquence des perceptions liées à la présomption de criminalité sont centrées sur la moyenne.

Figure 2

Variation de la relation entre l'anticipation de la discrimination et les scores socioéconomiques des aspirations professionnelles selon le statut migratoire



Note. Les valeurs liées à l'anticipation de la discrimination sont centrées sur la moyenne.

Le tableau 8 présente les résultats des analyses de régression examinant la relation entre les perceptions de discrimination et les scores socioéconomiques (10 catégories de la CNP) des attentes professionnelles selon le statut migratoire. Les résultats révèlent encore une fois que les jeunes de la 3e génération ou plus ont des scores socioéconomiques plus faibles que ceux de la 1re génération pour l'ensemble des modèles ($p > 0{,}001$ pour tous les cas). À nouveau, aucune association directe significative n'a été observée entre les perceptions de discrimination et les scores socioéconomiques des attentes professionnelles (des valeurs de p variant entre 0,274 et 0,940). De même, les résultats ne révèlent aucune interaction significative entre les perceptions de discrimination et le statut migratoire en lien avec les scores socioéconomiques des attentes professionnelles : la présomption d'infériorité ($\Delta R^2 = 0{,}008$, $F(2{,}337) = 1{,}545$, $p = 0{,}215$), l'invisibilité et dévaluation ($\Delta R^2 = 0{,}004$, $F(2{,}338) = 0{,}694$, $p = 0{,}500$), les invalidations environnementales ($\Delta R^2 = 0{,}002$, $F(2{,}339) = 0{,}440$, $p = 0{,}644$), la présomption de criminalité ($\Delta R^2 = 0{,}000$, $F(2{,}338) = 0{,}086$, $p = 0{,}917$), la violence physique et verbale ($\Delta R^2 = 0{,}001$, $F(2{,}335) = 0{,}190$, $p = 0{,}827$), l'exclusion et injustice ($\Delta R^2 = 0{,}004$, $F(2{,}335) = 0{,}753$, $p = 0{,}472$), la stigmatisation ($\Delta R^2 = 0{,}004$, $F(2{,}335) = 0{,}814$, $p = 0{,}444$) et l'anticipation de la discrimination ($\Delta R^2 = 0{,}006$, $F(2{,}340) = 1{,}156$, $p = 0{,}316$). Les modèles globaux des perceptions de discrimination expliquent entre 6,4 % et 7,1 % de la variance des scores socioéconomiques (10 catégories de la CNP) des attentes professionnelles, ce qui correspond à des effets de petite taille.

Tableau 8

Association entre les perceptions de discrimination et les scores socioéconomiques (10 catégories de la CNP) des attentes professionnelles selon le statut migratoire

	B	IC 95%	SE	*t*	*p*	β	R^2	ΔR^2
Présomption d'infériorité (INF) (n = 369)							0,069	0,008
Constant	69,59	[62,43; 76,75]	3,64	19,12	< 0,001			
INF	0,86	[-1,83; 3,54]	1,37	0,63	0,532	0,037		
2e gén. vs 1re gén. (S1)	-2,54	[-6,25; 1,17]	1,89	-1,35	0,180			
3e gén. + vs 1re gén. (S2)	-10,21	[-14,74; -5,67]	2,31	-4,42	< 0,001			
INF * S1	0,23	[-3,36; 3,82]	1,83	0,13	0,900			

	B	IC 95%	SE	*t*	*p*	β	R^2	ΔR^2
INF * S2	-3,25	[-7,52; 1,03]	2,17	-1,49	0,136			
Invisibilité et dévaluation (INV-D) (n = 371)							0,065	0,004
Constant	70,03	[62,98; 77,08]	3,58	19,54	< 0,001			
INV-D	-2,14	[-5,99; 1,70]	1,96	-1,10	0,274	-0,078		
2e gén. vs 1re gén. (S1)	-2,62	[-6,29; 1,06]	1,87	-1,40	0,163			
3e gén. + vs 1re gén. (S2)	-9,93	[-14,36; -5,51]	2,25	-4,41	< 0,001			
INV-D * S1	2,03	[-2,95; 7,00]	2,53	0,80	0,423			
INV-D* S2	3,23	[-2,25; 8,72]	2,79	1,16	0,247			
Invalidations environnementales (INV-E) (n = 371)							0,071	0,002
Constant	70,15	[63,14; 77,15]	3,56	19,70	< 0,001			
INV-E	-0,13	[-3,45; 3,20]	1,69	-0,08	0,940	-0,005		
2e gén. vs 1re gén. (S1)	-2,69	[-6,35; 0,97]	1,86	-1,44	0,150			
3e gén. + vs 1re gén. (S2)	-10,17	[-14,57; -5,76]	2,24	-4,54	< 0,001			
INV-E * S1	-2,00	[-6,46; 2,47]	2,27	-0,88	0,380			
INV-E * S2	-1,72	[-6,17; 2,74]	2,27	-0,76	0,449			
Présomption de criminalité (CRIM) (n = 371)						-0,029	0,064	0,000
Constant	69,92	[62,88; 76,95]	3,58	19,55	< 0,001			
CRIM	-0,75	[-3,59; 2,20]	1,45	-0,52	0,605			
2e gén. vs 1re gén. (S1)	-2,68	[-6,38; 1,01]	1,88	-1,43	0,155			
3e gén. + vs 1re gén. (S2)	-10,06	[-14,72; -5,39]	2,37	-4,24	< 0,001			
CRIM * S1	-0,66	[-4,71; 3,38]	2,06	-0,32	0,747			
CRIM * S2	0,48	[-5,85; 6,81]	3,22	0,15	0,883			
Violence physique et verbale (VPV) (n = 368)							0,064	0,001
Constant	69,75	[62,58; 76,91]	3,64	19,14	< 0,001			
VPV	-2,09	[-6,31; 2,12]	2,14	-0,98	0,329	-0,068		
2e gén. vs 1re gén. (S1)	-2,54	[-6,25; 1,18]	1,89	-1,34	0,181			
3e gén. + vs 1re gén. (S2)	-9,88	[-14,39; -5,36]	2,29	-4,31	< 0,001			
VPV * S1	1,78	[-3,94; 7,51]	2,91	0,61	0,540			
VPV * S2	0,80	[-5,75; 7,34]	3,33	0,24	0,811			
Exclusion et injustice (E/I) (n = 368)							0,067	0,004
Constant	69,51	[62,35; 76,66]	3,64	19,11	< 0,001			
E/I	-0,86	[-4,48; 2,76]	1,84	-0,47	0,642	-0,031		
2e gén. vs 1re gén. (S1)	-2,69	[-6,40; 1,03]	1,89	-1,42	0,156			
3e gén. + vs 1re gén. (S2)	-9,77	[-14,29; -5,25]	2,30	-4,25	< 0,001			
E/I * S1	2,92	[-1,95; 7,80]	2,48	1,18	0,239			
E/I * S2	2,42	[-3,09; 7,92]	2,80	0,86	0,388			
Stigmatisation (STIG) (n = 369)							0,065	0,004
Constant	69,57	[62,40; 76,73]	3,64	19,10	< 0,001			
STIG	-1,68	[-4,81; 1,45]	1,59	-1,05	0,293	0,072		
2e gén. vs 1re gén. (S1)	-2,47	[-6,19; 1,25]	1,89	-1,31	0,193			
3e gén. + vs 1re gén. (S2)	-9,87	[-14,38; -5,92]	2,29	-4,31	< 0,001			

	B	IC 95%	SE	*t*	*p*	β	R^2	ΔR^2
STIG * S1	1,71	[-1,59; 7,34]	2,14	0,80	0,425			
STIG * S2	2,87	[1,20; 14,18]	2,27	1,26	0,207			
Anticipation de la discrimination (n = 373)							0,066	0,006
Constant	69,60	[62,58; 76,62]	3,57	19,50	< 0,001			
Anticipation	0,64	[-1,47; 2,75]	1,07	0,60	0,550	0,039		
2e gén. vs 1re gén. (S1)	-2,61	[-6,35; 1,12]	1,90	-1,38	0,169			
3e gén. + vs 1re gén. (S2)	-10,58	[-15,23; -5,94]	2,36	-4,48	< 0,001			
Anticipation * S1	-0,16	[-5,31; 0,94]	1,44	-0,11	0,911			
Anticipation * S2	-2,19	[0,21; 12,84]	1,59	-1,38	0,169			

Note. Les valeurs de n correspondent à la taille de l'échantillon pour chacune des analyses en fonction de la forme de perceptions de discrimination ciblée. IC 95% = intervalle de confiance à 95%. Les valeurs entre crochets indiquent les bornes inférieure et supérieure de l'intervalle. R^2 : 0,01 = effet de petite taille, 0,09 = effet de taille moyenne, 0,25 = effet de grande taille.

Les perceptions de discrimination au travail chez les personnes travailleuses québécoises

Yannic Gagnon et Sabruna Dorceus
Université de Sherbrooke

Résumé

Dans un contexte d'enjeux croissants en matière d'équité, de diversité et d'inclusion dans les organisations québécoises, cette étude vise à examiner les perceptions de discrimination au travail, leurs déterminants et leurs conséquences, en apportant notamment un éclairage sur les formes de discrimination, les groupes à risque et les liens avec la satisfaction au travail en contexte québécois. Quatre objectifs spécifiques sont visés : 1) décrire les formes de discrimination perçues, 2) identifier les caractéristiques démographiques (statut de minorité visible, statut d'immigration, genre) associées à ces perceptions, 3) identifier les contextes professionnels et géographiques (secteur d'activité, domaine d'emploi, région) associés à ces perceptions, et 4) examiner la relation entre les perceptions de discrimination au travail et la satisfaction au travail. Des analyses de fréquence et de régression logistique ont été réalisées à partir de données de l'Enquête sociale générale (2016) (Statistique Canada, 2017a) – Les Canadiens au travail et à la maison (n = 2 182 personnes travailleuses québécoises âgées de 18 à 65 ans). Les résultats indiquent d'abord que des formes de discrimination informelle sont plus fréquemment rapportées que des formes formelles. De plus, le statut de minorité visible est significativement associé aux perceptions de discrimination au travail. Enfin, ces perceptions sont associées négativement à la satisfaction au travail. La discussion propose des pistes d'explication des résultats et des implications pratiques ciblant les pratiques organisationnelles.

Mots clés : perceptions de discrimination au travail, satisfaction au travail, minorités visibles, Québec.

Contexte de l'étude

La main-d'œuvre québécoise s'est diversifiée au courant de la dernière décennie. À titre d'exemple, entre 2013 et 2023, le nombre de personnes immigrantes en emploi a augmenté de 57 % et le nombre de femmes en emploi a augmenté d'environ 11,4 % (Institut de la statistique du Québec, 2024). Il est aussi possible de constater que la proportion de personnes issues de minorités visibles dans la population québécoise en âge de travailler a plus que doublé entre 2001 et 2021 (6,9 % en 2001 contre 18 % en 2021) (Cloutier-Villeneuve, 2023). Ainsi, en 2025, les femmes (47,3 %), les personnes issues de minorités visibles (21,2 %) et les personnes immigrantes (20,1 %) constituaient une proportion significative de la population active québécoise (Statistique Canada, 2025a, 2025b, 2025c). Par ailleurs, on observe des disparités persistantes en matière de participation au marché du travail et de qualité d'emploi selon le genre, le statut d'immigration ou celui de minorité visible, ce qui se reflète selon différents indicateurs tels que la rémunération moyenne, le taux de chômage et le taux d'activité. En 2022, les femmes québécoises gagnaient en moyenne 3,25 $ de l'heure de moins que les hommes (Institut de la statistique du Québec, 2023), tandis qu'en 2024, elles affichaient un taux d'emploi moyen inférieur de 6,4 % à celui des hommes et un taux de chômage inférieur de 0,8 % (Institut de la statistique du Québec, 2026a). Les personnes immigrantes, pour leur part, touchaient en moyenne 40,05 $ de moins par semaine que l'ensemble de la population active en 2021 (Gouvernement du Québec, 2021), avaient un taux d'emploi 4,9 points de pourcentage plus élevé que celui des personnes nées au pays en 2024, mais affichaient aussi un taux de chômage 3,3 points de pourcentage plus élevé (Institut de la statistique du Québec, 2026b). Quant aux personnes issues de minorités visibles, elles gagnaient en moyenne 12 500 $ de moins par année que les personnes n'étant pas issues de minorités visibles (Cloutier-Villeneuve, 2023), affichaient un taux d'emploi supérieur de 4,3 points de pourcentage, mais un taux de chômage supérieur de 4,2 points de pourcentage (Statistique Canada, 2022). Ces écarts peuvent être en partie expliqués par une combinaison de facteurs comme le niveau de scolarité, l'expérience professionnelle, la reconnaissance des acquis et des compétences ou encore les réseaux d'accès à l'emploi. Pour certaines personnes immigrantes, la maîtrise de la langue française constitue également un facteur susceptible d'influencer l'accès à l'emploi et l'intégration professionnelle dans le contexte québécois (Dioh et al., 2020; Gagnon et Dion, 2018). Néanmoins, certains groupes, dont les femmes, personnes issues de minorités visibles et personnes immigrantes, restent reconnues, d'un point de

vue législatif, comme étant à risque de vivre de la discrimination sur le marché du travail. Ils sont d'ailleurs explicitement ciblés dans différentes politiques publiques.

Effectivement, historiquement parlant, les groupes les plus à risque de vivre de la discrimination sur le marché du travail canadien et québécois sont les femmes, les personnes issues des différentes nations autochtones, les personnes en situation de handicap et les personnes issues de minorités visibles (Gouvernement du Canada, 2022). En ce sens, des lois ont été créées afin de favoriser leur intégration sur le marché du travail, telles que la Loi canadienne sur l'équité en matière d'emploi qui vise l'égalité des chances et des avantages en milieu de travail seulement en fonction des compétences et la représentativité proportionnelle des divers groupes dans la population sur le marché du travail (Gouvernement du Canada, 2022). Au Québec, la Loi sur l'accès à l'égalité en emploi dans des organismes publics vise des objectifs comparables à la loi canadienne afin de « corriger la situation des personnes faisant partie de certains groupes victimes de discrimination en emploi » (Gouvernement du Québec, 2020, p. 4), soit les femmes, les personnes autochtones, les personnes issues de minorités visibles, les personnes issues de minorités ethniques et les personnes en situation de handicap (Gouvernement du Québec, 2020).

Cela soulève certains enjeux en matière de gestion de l'équité, de la diversité et de l'inclusion (GÉDI) dans les organisations québécoises, particulièrement en ce qui a trait au bien-être des personnes employées, à leur fidélisation et à leur satisfaction. Effectivement, il est possible de remarquer que même si la gestion de la discrimination au travail semble majoritairement reposer sur son encadrement par des lois et des politiques gouvernementales, les organisations mettent de l'avant des mesures supplémentaires afin de rester compétitives dans l'attraction et la rétention de clientèles et de la main-d'œuvre. À ce sujet, une enquête menée par l'Ordre des conseillers en ressources humaines agréés (CRHA) auprès de 710 personnes professionnelles des ressources humaines indique que 87 % d'entre elles disent que la GÉDI sera importante pour leur organisation dans les cinq prochaines années (Saba, 2019). Selon l'Observatoire québécois des inégalités (2023), ces pratiques favorisent l'engagement, la satisfaction au travail et la rétention des personnes employées, en plus de générer des retombées positives pour la société en général en la rendant plus juste et en contribuant à la croissance économique (St-Onge et al., 2021). Les pratiques de GÉDI peuvent aussi servir à pallier la discrimination au travail. En effet, des méta-analyses montrent que les perceptions de discrimination au travail impliquent des coûts tant pour les organisations que pour les personnes (p. ex. baisse de la santé psychologique et physique, augmentation des départs volontaires et de l'absentéisme, baisse de la productivité) (Triana et al., 2015; Triana et al., 2019). En ce sens, offrir un environnement de travail diversifié, équitable et inclusif devient un incontournable pour certaines organisations (Saba, 2019). Ainsi, il apparait pertinent d'examiner plus en profondeur les enjeux de discrimination sur le marché du travail, incluant les groupes les plus à risque de vivre ou de percevoir de la discrimination au travail, les formes de discrimination présentes sur le marché du travail, les contextes et les conséquences de la discrimination au travail. Les sections suivantes examinent en détail chacune de ces dimensions afin de documenter l'état des connaissances sur la discrimination sur le marché du travail québécois et canadien.

Les groupes visés par la discrimination sur le marché du travail québécois et canadien

La littérature scientifique permet de constater que certains groupes, tels que les personnes issues de minorités visibles, sont plus susceptibles que d'autres de vivre et/ou de percevoir de la discrimination sur le marché du travail québécois et canadien. Par ailleurs, les résultats divergent relativement au statut d'immigration et au genre. Concernant le statut de minorité visible, l'étude de Boulet et al. (2022), fondée sur l'Enquête sociale générale (ESG) de 2016 – Les Canadiens au travail et à la maison, indique que les personnes issues de minorités visibles sont 1,5 fois plus susceptibles de percevoir de la discrimination au travail que celles qui ne le sont pas ($p < 0,05$). L'étude canadienne de Labelle-Desraspe (2023) montre aussi que les personnes issues de minorités visibles sont davantage ciblées par des incivilités au travail, qu'elles proviennent de collègues ($b = 0,34$, $p < 0,01$) ou de supérieurs hiérarchiques ($b = 0,37$, $p < 0,01$). L'étude québécoise de Lardoux (2018) révèle également que chez les personnes immigrantes, celles issues de minorités visibles sont plus à risque de percevoir de la discrimination. Plus précisément, les résultats de cette étude montrent que 45,3 % des personnes immigrantes issues de minorités visibles percevaient de la discrimination en emploi,

comparativement à 29 % des personnes immigrantes non racisées et à 14,9 % de personnes natives non racisées. De plus, cette étude suggère aussi que les personnes immigrantes sont plus à risque de percevoir de la discrimination en emploi que les personnes natives. En contrepartie, l'étude de Boulet et al. (2022) indique que le statut d'immigration des personnes travailleuses canadiennes n'est pas associé aux perceptions de discrimination au travail.

Relativement au genre, certaines études suggèrent que les femmes sont désavantagées en matière de perceptions de discrimination. Par exemple, Boulet et al. (2022) rapportent que les femmes canadiennes seraient environ 2,1 fois plus à risque que les hommes canadiens de rapporter des perceptions de discrimination au travail ($p < 0{,}001$). De même, Cénat et al. (2022) montrent qu'au Canada, les femmes noires rapportent significativement plus de perceptions de discrimination que les hommes noirs (19,1 % contre 17 %, $d = 0{,}36$, $p < 0{,}001$). Néanmoins, aucune différence significative selon le genre n'est observée dans l'étude de Labelle-Desraspe (2023), ni dans les données de Statistique Canada (2024) qui révèlent qu'une proportion similaire d'hommes (40 %) et de femmes (41 %), qu'ils soient en emploi ou non, rapportent avoir vécu de la discrimination en lien avec l'emploi. Ces constats s'inscrivent dans une littérature nord-américaine plus large selon laquelle les femmes et les personnes issues de minorités visibles rapportent davantage de discrimination au travail que les hommes et les personnes blanches (McCord et al., 2018).

En complément, des études utilisant la méthode du testing permettent de mesurer objectivement une discrimination à l'embauche et de nuancer ces constats (Oreopoulos, 2011; Eid, 2012; Beauregard, 2020). Celles-ci révèlent une discrimination ethnique à l'embauche envers les personnes ayant des noms à consonance ethnique, particulièrement les hommes. Par exemple, Oreopoulos (2011), à partir de l'envoi de 12 910 CV fictifs à Toronto et Montréal, observe que les candidatures à consonance étrangère ont un taux de rappel de 6 %, contre 15,7 % pour celles à consonance native ($p < 0{,}001$), soit une probabilité 39 % inférieure d'obtenir une entrevue. L'étude d'Eid (2012), à Montréal, montre que les candidatures à consonance arabe, latino-américaine ou africaine sont 1,65 fois moins susceptibles d'être convoquées pour un emploi qualifié ($p < 0{,}05$), avec par exemple un écart de 16 points de pourcentage entre les candidatures avec des noms natifs (38,1 %) et africains (22,1 %). L'étude de Beauregard (2020), à Québec, appuie ces tendances en démontrant que les candidatures ayant des noms à consonance ethnique doivent envoyer de 1,40 à 1,98 fois plus de CV que leurs pairs pour décrocher une entrevue ($p < 0{,}001$). Sur le plan du genre, Oreopoulos (2011) observe que les candidatures masculines à consonance québécoise ont un taux de rappel inférieur de 4,9 % à leurs équivalents féminins. Les données de Beauregard (2020) vont dans le même sens, montrant un taux de rappel de 18,4 % pour les noms masculins à consonance ethnique, contre 26 % pour les noms féminins à consonance ethnique, et 30,1 % pour les noms féminins à consonance québécoise. Ces résultats mettent en lumière que le fait qu'en ce qui concerne la discrimination objective à l'embauche, les personnes ayant un nom à consonance ethnique, généralement issues de minorités visibles, et particulièrement les hommes seraient plus à risque d'être ciblées.

En somme, la littérature québécoise et canadienne sur la discrimination au travail révèle que les personnes issues de minorités visibles sont plus susceptibles de percevoir ou de vivre de la discrimination que celles qui ne le sont pas. Ces résultats convergent avec ceux observés dans la littérature nord-américaine. En revanche, les résultats demeurent divergents concernant le genre. Plus particulièrement, les constats varient selon que la discrimination est mesurée à partir d'indicateurs objectifs, comme les études de *testing*, ou d'indicateurs subjectifs, comme les perceptions de discrimination. Alors que les études de *testing* suggèrent que les femmes seraient moins à risque que les hommes de subir de la discrimination à l'embauche, les études fondées sur les perceptions rapportent soit une plus forte prévalence de discrimination chez les femmes, soit des proportions similaires entre les femmes et les hommes. Enfin, le rôle du statut d'immigration dans les probabilités de vivre ou de percevoir de la discrimination n'est pas significatif ou pris en compte dans les études retenues. Étant donné que plusieurs études ont été réalisées à l'échelle canadienne et que le contexte québécois présente certaines spécificités, notamment sur le plan linguistique et migratoire, il apparait pertinent de valider ces constats dans le contexte québécois.

Les formes de discrimination sur le marché du travail québécois et canadien

De manière générale, les études recensées indiquent l'existence de discrimination, tant au moment de l'insertion sur le marché du travail qu'en contexte d'emploi. Toutefois, les données disponibles sont plus nombreuses concernant la discrimination à l'embauche, comparativement à celle vécue en contexte de travail, encore relativement peu documentée. L'état des connaissances scientifiques offre un portrait plutôt limité des formes de discrimination sur le marché du travail québécois. D'abord, une enquête de Statistique Canada (2024) révèle des perceptions de discrimination au moment de l'embauche et en contexte de travail, mais sans les distinguer. Les études qualitatives d'Eddaimi (2012) et de Cénat et al. (2022) rapportent aussi des perceptions de discrimination à l'embauche, notamment liées au port du voile ou pour des raisons jugées injustes. Les recherches utilisant la méthode du *testing* (Beauregard, 2020; Eid, 2012; Oreopoulos, 2011) révèlent aussi une forme de discrimination à l'embauche à l'encontre de personnes candidates portant un nom à consonance étrangère, malgré des qualifications comparables. Concernant la discrimination en contexte de travail, un nombre limité d'études la documentent. L'étude de Labelle-Deraspe (2023) souligne la présence de formes plus subtiles, telles que les incivilités quotidiennes perçues par les personnes issues de groupes minorisés. L'étude de Cénat et al. (2022), quant à elle, rapporte que 56,7 % des répondants disent avoir été renvoyés ou écartés d'une promotion pour des raisons injustes. Parmi ceux-ci, plusieurs rapportent des expériences de manque de respect, de remise en question de leurs compétences, ou même de harcèlement (Cénat et al., 2022). Enfin, bien que l'étude de Boulet et al. (2022) rend compte de l'existence de perceptions de discrimination sur le marché du travail canadien, elle n'en précise pas les formes spécifiques.

En conclusion, les constats des études restent modestes en ce qui concerne les formes de discrimination, une lacune de l'état des connaissances qui mériterait d'être examinée davantage pour mieux comprendre l'ampleur et la diversité du phénomène. Par ailleurs, si certaines formes de discrimination sont flagrantes et documentées, notamment en ce qui concerne l'embauche, d'autres, plus informelles ou indirectes, demeurent moins visibles et moins étudiées dans le contexte québécois. Cette lacune est également notable lorsqu'on compare les travaux québécois à la littérature nord-américaine, où les recherches documentent davantage les formes subtiles de discrimination, notamment les microagressions au travail, dont la prévalence apparaît élevée dans les études recensées (Salari et al., 2024).

La discrimination au travail en fonction du contexte québécois et canadien

La littérature scientifique met aussi en évidence le fait que la discrimination au travail peut varier en fonction du contexte comme la région géographique, le secteur d'activité ou le type d'emploi et la taille de l'organisation. En ce qui concerne le contexte géographique, les personnes travailleuses des autres provinces canadiennes seraient 44 % plus susceptibles de rapporter des perceptions de discrimination au travail que leur contrepartie du Québec ou de la Colombie-Britannique (Boulet et al., 2022). De plus, l'étude de Boudarbat (2011) suggère que les personnes nouvellement immigrantes de 15 ans et plus sont plus nombreuses à rapporter la discrimination comme difficulté la plus sérieuse pour trouver un emploi au Québec (7,4 %) qu'en Ontario (3,2 %) ou qu'en Colombie-Britannique (3,1 %). En revanche, certaines études de *testing* ayant procédé à des analyses plus détaillées entre certaines villes canadiennes ne montrant pas de différences significatives entre celles-ci. En ce sens, l'étude d'Oreopoulos (2011) suggère une tendance relativement équivalente à la discrimination ciblant les candidatures avec un nom à consonance grecque à Toronto et Montréal. Aussi, l'étude de Beauregard (2020) indique que la discrimination ethnoraciale à l'embauche semble équivalente entre Montréal et Québec en fonction des résultats de l'étude d'Eid (2012). En revanche, aucune analyse comparative formelle n'a été faite. Pour ce qui est du secteur d'activité, l'étude de Boulet et al. (2022) rapporte que les personnes travailleuses du secteur de l'administration publique sont plus à risque de rapporter des perceptions de discrimination que leur contrepartie des autres secteurs ou industries excluant les services d'éducation ainsi que de la santé et des services sociaux. D'un autre côté, l'étude d'Eid (2012) a montré un taux net de discrimination plus élevé dans le secteur privé que dans le secteur public. En ce qui concerne les domaines et types d'emploi, l'étude d'Eid (2012) indique que le taux de discrimination à l'embauche est plus élevé dans les secteurs du secrétariat et des ressources humaines que dans les secteurs du marketing, du service

à la clientèle et des communications. L'étude de Beauregard (2020), pour sa part, a permis d'observer un taux de discrimination plus important dans les secteurs des ressources humaines et de la comptabilité que dans le secteur du marketing. Ainsi, ces résultats suggèrent que les personnes candidates avec des noms à consonances minoritaires seraient plus susceptibles d'être discriminées dans le domaine de l'administration. En résumé, la littérature scientifique documente des variations contextuelles concernant la discrimination à l'embauche et en contexte de travail. En effet, il semble exister des disparités en matière de discrimination en emploi en fonction de la province, du secteur d'activité et du type d'emploi. Les constats varient cependant selon le type de mesure de la discrimination. En l'absence d'analyses comparatives au niveau des villes et de différents types d'emplois, il apparait pertinent de réaliser des analyses plus fines à ce sujet.

Les conséquences potentielles de la discrimination au travail au Canada

Peu d'études canadiennes examinent les conséquences de la discrimination au travail sur les personnes touchées. L'étude de Boulet et al. (2022) indique que pour les personnes travailleuses canadiennes, les perceptions de discrimination au travail réduisent de 70 % les chances d'avoir une bonne santé psychologique et qu'elles augmentent les risques d'être stressé de 2,36 fois. Aussi, l'étude de Labelle-Desraspe (2023) indique que les personnes victimes d'incivilités au travail présentent un taux plus élevé de détresse psychologique au Canada. L'étude de Cénat et al. (2022) pour sa part montre une relation négative entre la discrimination ethnoraciale et la satisfaction de vie (b = -0,26, p = 0,003) ainsi qu'entre la discrimination ethnoraciale et l'estime de soi (b = -0,23, p = 0,009), ce qui reflète des effets de petite à moyenne taille. En plus des conséquences potentielles sur la santé psychologique, des études suggèrent des conséquences sur l'emploi. Ainsi, l'étude Eddaimi (2012) rapporte des témoignages de femmes québécoises qui ont cessé de chercher un emploi en conséquence de discriminations vécues. Une autre étude s'est intéressée aux conséquences légales du harcèlement psychologique à caractère discriminatoire par l'entremise de l'analyse de 20 décisions liées aux plaintes de 33 personnes rendues entre janvier 2016 et juin 2020 par le tribunal administratif du travail (Cox, 2020). L'étude relate les cas d'organisations qui ont dû payer des compensations monétaires à leurs personnes employées allant de 3000 $ à 30 000 $ pour des cas avérés de discrimination au travail. Cette étude recense aussi des conséquences pour les personnes victimes comme des pertes d'emploi, des dommages moraux et des épuisements professionnels.

En somme, les études canadiennes recensées montrent que la discrimination au travail et les autres comportements pouvant s'apparenter à la discrimination comme le harcèlement psychologique sont associés à des conséquences légales, à une moins bonne santé psychologique, au retrait du marché de l'emploi, à une diminution de l'estime de soi et de la satisfaction de vie. Toutefois, le nombre d'études reste limité et peu d'informations sont disponibles sur les conséquences potentielles de la discrimination sur des dimensions liées au travail au Québec. Or, des méta-analyses internationales indiquent que les perceptions de discrimination sont associées à une moins grande satisfaction au travail, à davantage de stress professionnel, à une plus forte intention de quitter son emploi ainsi qu'à une moins bonne santé psychologique et physique (Dhanani et al., 2018; Triana et al., 2015, 2019). Ces résultats suggèrent que plusieurs conséquences potentielles de la discrimination au travail demeurent encore peu documentées dans le contexte québécois.

En résumé, l'état des connaissances suggère que les personnes issues de minorités visibles constituent l'un des groupes les plus susceptibles de vivre ou de percevoir de la discrimination sur le marché du travail québécois et canadien. Toutefois, les résultats demeurent divergents concernant le rôle du genre et du statut migratoire. De plus, si les écrits recensés permettent de documenter certaines manifestations de la discrimination à l'embauche et en contexte de travail, les formes plus spécifiques que celle-ci peut prendre demeurent relativement peu étudiées au Québec. Des lacunes persistent également en ce qui concerne les contextes dans lesquels la discrimination survient, les études disponibles étant souvent limitées à certaines villes, certains secteurs ou certains types d'emplois et offrant peu d'informations sur les variations observées à l'échelle du Québec. Enfin, les conséquences de la discrimination au travail pour les personnes et les organisations demeurent encore peu documentées dans le contexte québécois, notamment en ce qui concerne la satisfaction au travail. Par conséquent, l'objectif général de la présente étude est d'examiner les perceptions

de discrimination des personnes travailleuses québécoises, leurs déterminants démographiques et contextuels, ainsi que leurs conséquences sur la satisfaction au travail.

Cadre conceptuel

La discrimination au travail selon la conception de Chung (2001)

Selon Chung (2001), la discrimination au travail peut se définir comme un traitement négatif ou injuste d'une personne employée ou d'une personne candidate en raison de caractéristiques personnelles qui ne sont pas liées à la performance en emploi. Chung (2001) propose un modèle tridimensionnel de la discrimination au travail. La première dimension distingue la discrimination formelle ou informelle (Chung, 2001). La discrimination formelle renvoie à des actions organisationnelles comme le congédiement ou les décisions salariales et la discrimination informelle renvoie aux dynamiques interpersonnelles comme l'hostilité et le manque de respect (Chung, 2001). La deuxième dimension oppose la discrimination potentielle à la discrimination rencontrée (Chung, 2001). La discrimination potentielle représente celle dont peut s'attendre une personne subjectivement (p. ex. selon ses croyances) ou objectivement (p. ex. selon des faits, tels que des cas documentés de discrimination dans le milieu de travail) (Chung, 2001). La discrimination rencontrée pour sa part peut aussi être subjective, c'est-à-dire un sentiment ou une perception d'être discriminée, ou objective, c'est-à-dire avoir été reconnue par des critères comme une plainte officielle acceptée ou la reconnaissance des pairs (Chung, 2001). La troisième dimension se divise entre la discrimination perçue et la discrimination réelle (Chung, 2001). Dans cette dimension, la discrimination perçue représente l'opinion d'une personne sur la discrimination dans son milieu, c'est-à-dire ses perceptions de discrimination (Chung, 2001). La discrimination réelle, pour sa part, représente le vrai potentiel de discrimination dans un milieu (Chung, 2001). Autrement dit, il s'agit de la discrimination qui a véritablement lieu nonobstant des perceptions ou des connaissances des personnes qui en sont victimes (Chung, 2001). En somme, cette conception permet d'examiner différentes formes (formelle et informelle) de discrimination au travail, la discrimination rencontrée par les travailleurs et travailleuses québécois d'un point de vue subjectif, et enfin la discrimination perçue au travail, soit les perceptions de discrimination au travail.

La satisfaction au travail

Castel (2019) explique que la satisfaction au travail comporte trois dimensions. La dimension cognitive représente le jugement évaluatif qu'une personne fait de son travail (Castel, 2019). La dimension affective représente l'émotion d'une personne liée au jugement qu'elle fait de son travail (Castel, 2019). La dimension conative représente l'intention d'agir pour augmenter la satisfaction ou pour diminuer l'insatisfaction (Castel, 2019). En somme, la satisfaction au travail serait purement subjective, mais motive des comportements et des intentions objectives des personnes travailleuses (Castel, 2019). En cohérence avec cette conception, Clark (1997) considère que la satisfaction au travail serait une évaluation qu'une personne travailleuse fait de son emploi en fonction de ses attentes. Selon l'Organisation de coopération et de développement économiques (OCDE, 2017), cela prédirait d'ailleurs les absences, les démissions et la performance en emploi selon l'organisation du commerce et du développement économique. D'un point de vue méthodologique, cette conception globale de la satisfaction au travail peut se mesurer à partir d'un indicateur unique soit, un item portant sur la satisfaction générale (OCDE, 2017). La conception de Clark (1997) mettant l'accent sur la dimension cognitive, mais associée à des éléments issus de la dimension conative (p. ex. démissions), semble plus adéquate pour la présente étude puisqu'il est possible de mesurer la satisfaction au travail dans sa globalité à l'aide d'un indicateur unique comme mobilisé par l'OCDE (2017).

Apport des théories du développement de carrière dans la relation entre les perceptions de discrimination et la satisfaction au travail

Dans le cadre de son modèle prédictif, la théorie de l'adaptation au travail (*Theory of Work Adjustment*) de Dawis et Lofquist (Dawis, 2005; Swanson et Schneider, 2020) postule que la satisfaction au travail d'une personne résulte de la correspondance entre ses besoins ou valeurs de travail, ainsi que les avantages offerts par son environnement de travail. Des études réalisées auprès de groupes minoritaires suggèrent qu'un climat perçu comme discriminatoire affaiblit cette correspondance et est associé à une satisfaction moindre (Lyons et O'Brien, 2006; Lyons et al., 2014). Cette théorie avance que lorsque l'environnement de travail ne répond pas aux besoins ou aux valeurs de travail des personnes travailleuses, leur satisfaction au travail tend à diminuer. Dans cette perspective, les perceptions de discrimination peuvent être considérées comme un facteur susceptible de compromettre la correspondance personne–environnement. Ainsi, la théorie de l'adaptation au travail fournit un cadre conceptuel permettant de comprendre pourquoi les personnes qui perçoivent davantage de discrimination au travail pourraient rapporter une satisfaction au travail plus faible.

Objectifs spécifiques et hypothèses de recherche

Quatre objectifs spécifiques découlent ainsi de l'objectif général présenté plus haut. Le premier objectif spécifique consiste à décrire les formes de discrimination formelle et informelle au travail les plus fréquemment perçues par les personnes travailleuses québécoises. L'état des connaissances ne permet pas de formuler d'hypothèse en lien avec cet objectif spécifique.

Le deuxième objectif spécifique vise à identifier les caractéristiques démographiques comme le genre, le statut migratoire et le statut de minorité visible, associées aux perceptions de discrimination au travail des personnes travailleuses québécoises. En fonction de la littérature scientifique et des résultats obtenus par Boulet et al. (2022) l'hypothèse selon laquelle le genre et le statut de minorité visible seront associés aux perceptions de discrimination est avancée.

H1 : Le risque de percevoir de la discrimination au travail sera plus élevé chez les femmes et les personnes issues de minorités visibles.

Le troisième objectif spécifique est d'identifier les contextes professionnels et géographiques comme le domaine d'emploi, le secteur d'activité et la région associés aux perceptions de discrimination au travail des personnes travailleuses québécoises. En prenant en considération les résultats de Boulet et al. (2022), d'Eid (2012), ainsi que ceux de Beauregard (2020), trois hypothèses en lien avec le domaine d'emploi, le secteur d'activité et la région sont avancées.

H2 : Le risque de percevoir de la discrimination sera plus élevé dans le domaine de l'administration.

H3 : Le risque de percevoir de la discrimination au travail sera plus élevé chez les personnes travailleuses du secteur de l'administration publique.

H4 : Le risque de percevoir de la discrimination au travail sera équivalente entre la région de Montréal et la région de Québec.

Le quatrième et dernier objectif spécifique consiste à examiner la relation entre les perceptions de discrimination au travail et la satisfaction au travail des personnes travailleuses québécoises. Compte tenu du fait que les perceptions de discrimination sont généralement associées à des conséquences négatives pour les personnes employées (Boulet et al., 2022; Triana et al., 2015, 2019), une hypothèse à cet effet est avancée.

H5 : Les perceptions de discrimination au travail sont associées négativement à la satisfaction au travail des personnes travailleuses québécoises.

Méthode

Données de l'ESG de 2016 : Les Canadiens au travail et à la maison

Les données utilisées dans cette présente étude proviennent de l'ESG de 2016 : Les Canadiens au travail et à la maison. Par l'entremise d'enquêtes indépendantes, annuelles et transversales, l'ESG vise globalement à traiter de sujets en profondeur, à recueillir des données sur les tendances sociales et à suivre l'évolution du bien-être et des conditions de vie des personnes canadiennes (Statistique Canada, 2017a). Elle permet au gouvernement d'évaluer ou d'implanter des programmes et offre aux chercheurs et institutions des données pour la recherche scientifique sur les thèmes abordés. Le volet de l'ESG s'intéressant aux personnes canadiennes au travail et à la maison a été retenu comme base de données pour cette étude puisqu'il contient des données probantes et officielles en ce qui a trait aux perceptions de discrimination au travail et à la satisfaction au travail, en plus de données sociodémographiques et contextuelles quant à la situation des personnes répondantes. Cette enquête permet donc de répondre aux objectifs spécifiques de recherche.

Échantillonnage et personnes participantes

L'échantillonnage de l'ESG repose sur la participation d'environ 20 000 personnes canadiennes de 15 ans ou plus vivant dans des ménages privés dans l'une des dix provinces canadiennes (Statistique Canada, 2017a). Ainsi, les territoires canadiens sont exclus de cet échantillon. Afin d'obtenir les données et d'interviewer les personnes canadiennes participantes, l'ESG emploie la méthode dite de composition aléatoire qui permet d'obtenir un échantillon dit probabiliste. Cette méthode consiste à générer aléatoirement des numéros de téléphone domiciliaire en fonction des indicatifs propres à chacune des dix provinces canadiennes. Cela permet un plan d'échantillonnage à deux degrés. En effet, les numéros de téléphone obtenus par composition aléatoire représentent un ménage. Ensuite, une personne volontaire par ménage a été soumise à une entrevue téléphonique et à un questionnaire électronique.

Dans le cadre du présent projet, un sous échantillon composé de travailleuses et travailleurs québécois âgés de 18 à 65 ans a été mobilisé. L'échantillon retenu pour la présente étude est composé de 2182 personnes travailleuses québécoises (52,3 % de femmes; 47,7 % d'hommes) de 18 à 65 ans (M = 45,1 ans; $ÉT$ = 13,2), dont 6,1 % ont rapporté des perceptions de discrimination. L'échantillon est représentatif des personnes québecoises en emploi au moment de l'enquête grâce à l'application d'une pondération fournie par Statistique Canada, permettant l'inférence des résultats à la population générale. De plus, les analyses ont été réalisées à l'aide du logiciel SAS en appliquant également des poids de type *Bootstrap* fournis par Statistique Canada.

Variables à l'étude et plan d'analyse

Pour le premier objectif spécifique, des analyses descriptives de fréquences ont été effectuées[1]. En cohérence avec la conception de Chung (2001), la variable DBH_Q04 présente différentes formes de discrimination au travail. Ainsi, la discrimination formelle de la première dimension de la conceptualisation de Chung (2001) est représentée par les catégories suivantes : 1) le refus d'une promotion ou formation, 2) l'attribution d'une charge de travail excessive et 3) la proposition de tâches moins intéressantes ou comportant moins de défis. La discrimination informelle de la conceptualisation de Chung (2001) est représentée par les catégories suivantes : 1) être ignoré par les autres, 2) être mis mal à l'aise et 3) faire l'objet de propos tenus dans son dos. Ensuite, la discrimination rencontrée et la discrimination perçue sont reflétées par l'ensemble des variables portant sur les perceptions de discrimination telle que vécue par les personnes répondantes. Cela s'applique à la variable DBH_Q04 qui s'intéresse aux formes spécifiques, mais aussi à la variable DBH_Q01

1 Un tableau détaillant les indicateurs des formes de discrimination au travail est présenté à l'Annexe 1 des matériaux supplémentaires.

qui demande aux personnes répondantes si elles ont perçu ou non de la discrimination au travail. En somme, les données disponibles sont en mesure de représenter en partie, les trois dimensions de la discrimination au travail proposées par Chung (2001), soit les formes formelles et informelles de discrimination, la discrimination rencontrée d'un point de vue subjectif, et enfin la discrimination perçue au travail, soit les perceptions de discrimination au travail. Il importe toutefois de noter que bien que les perceptions de discrimination au travail soient reconnues comme un indicateur pertinent pour examiner la discrimination en milieu de travail, notamment parce qu'elles permettent de saisir des situations qui échappent aux mesures objectives et d'éclairer les conséquences de la discrimination pour les personnes employées et les organisations (Lee, 2022), elles s'appuient sur des données auto-rapportées qui ne permettent pas d'inférer la discrimination objective et réelle au sens de Chung (2001).

Pour le deuxième objectif spécifique, une analyse de régression logistique binaire a été effectuée[2]. Les variables indépendantes du deuxième objectif spécifique regroupent les caractéristiques démographiques des personnes participantes, autrement dit, leur genre, leur statut migratoire et leur statut de minorité visible. La variable dépendante du deuxième objectif spécifique est la présence ou l'absence des perceptions de discrimination au travail qui est traitée comme une variable dichotomique. L'analyse de régression logistique binaire a été utilisée, car elle permet d'analyser la relation entre une variable dépendante dichotomique (présence ou absence de perceptions de discrimination au travail) ainsi que plusieurs variables indépendantes (genre, statut de minorité visible, statut d'immigration), tout en incluant des variables de contrôle (âge et niveau de scolarité) (Howell, 2024). De plus, ce type d'analyse permet l'obtention de rapports de cotes (RC) ainsi qu'un seuil de significativité permettant de prédire les probabilités qu'un évènement se produise (p. ex. perceptions de discrimination au travail) en fonction de certaines variables (p. ex. genre, statut d'immigration, statut de minorité visible).

Pour le troisième objectif spécifique, une analyse de régression logistique binaire a aussi été effectuée[3]. Les variables indépendantes pour cet objectif spécifique sont le domaine d'emploi, le secteur d'activité et la région. Tout comme le deuxième objectif spécifique, la variable dépendante est la présence ou l'absence des perceptions de discrimination au travail qui est traitée comme une variable dichotomique. Dans ce cas, la régression logistique binaire est aussi l'analyse appropriée pour les mêmes raisons nommées plus haut. En cohérence avec l'hypothèse de recherche H4, la région de Montréal a été choisie comme catégorie de référence[4], car il s'agit du principal centre urbain de la province et qu'elle est un point de référence dans les études québécoises portant sur les perceptions de discrimination sur le marché du travail (p. ex. Beauregard, 2020).

Pour le quatrième objectif, une analyse de régression logistique multinomiale a été réalisée. La présence ou l'absence des perceptions de discrimination au travail est la variable indépendante (dichotomique) et la variable dépendante est la satisfaction au travail (catégorielle)[5]. En cohérence avec la définition de Clark (1997), la satisfaction au travail est mesurée à l'aide d'un item unique. Le choix de procéder à une analyse de régression logistique multinomiale repose sur la nature catégorielle de la variable dépendante (satisfaction au travail) et de la nature dichotomique de la variable indépendante (perceptions de discrimination au travail) (Howell, 2024). De plus, tout comme l'analyse de régression logistique binaire, l'analyse de régression logistique multinomiale permet d'obtenir des RC et un seuil de significativité tout en générant un modèle permettant d'étudier l'association entre la variable indépendante et la variable dépendante.

Enfin, la littérature scientifique a déjà mis en évidence certains facteurs qui influencent les perceptions de discrimination comme l'âge et le niveau de scolarité (Boulet et al., 2022). Ainsi, les variables de contrôle retenues pour les analyses de régression logistique binaire et multinomiale (objectifs 2 à 4) sont l'âge et le

2 Un tableau détaillant les indicateurs des caractéristiques démographiques et des perceptions de discrimination au travail est présenté à l'Annexe 2 des matériaux supplémentaires.

3 Un tableau détaillant les indicateurs des contextes professionnels et géographiques est présenté à l'Annexe 3 des matériaux supplémentaires.

4 Afin de permettre des comparaisons nuancées entre les différentes régions et opposer les réalités régionales aux contextes métropolitains, la catégorie Non-RMR (régions hors régions métropolitaines de recensement [RMR]) a également été utilisée comme catégorie de référence de base dans le cadre d'analyses complémentaires. Un tableau présentant les résultats de cette analyse est présenté à l'Annexe 6 des matériaux supplémentaires.

5 Un tableau détaillant l'indicateur de la satisfaction au travail est présenté à l'Annexe 4 des matériaux supplémentaires.

niveau de scolarité des personnes ayant répondu à l'enquête[6]. Ces variables de contrôle sont insérées dans les modèles dans le but de modérer leur effet et de contrôler la partie de la variance qu'elles représentent.

Considérations éthiques

L'analyse secondaire des données recueillies par Statistique Canada dans le cadre de l'ESG est prévue dans le consentement fourni par les personnes répondantes lors de la collecte des données. De plus, la conformité éthique du projet a été vérifiée par Statistique Canada lors de l'approbation de la proposition de recherche et de l'analyse des demandes officielles de sortie des données. Enfin, plusieurs règles de contrôle ont été respectées afin de garantir l'anonymisation des données et éviter que ces dernières permettent d'identifier des personnes en particulier.

Résultats[7]

Objectif spécifique 1 : Formes de discrimination au travail perçues par les personnes travailleuses québécoises

Le tableau 1 indique les proportions des personnes travailleuses québécoises ayant perçu les différentes formes de discrimination. La forme de discrimination la plus fréquemment perçue est de se faire mettre mal à l'aise (discrimination informelle). En effet, 44,9 % (IC 95 % [31,2 % - 58,6 %]) des personnes répondantes ayant rapporté des perceptions de discrimination au travail indiquent s'être fait mettre mal à l'aise. D'autres formes de discrimination informelle sont aussi rapportées. Ainsi, un total de 28,6 % (IC 95 % [16,2 % - 41,0 %]) ont indiqué que d'autres personnes ont parlé dans leur dos (discrimination informelle). De plus, 23,6 % (IC 95 % [11,8 % - 35,4 %]) ont indiqué avoir été ignoré par les autres (discrimination informelle). Ensuite, il est possible de constater que des formes de discrimination formelle sont rapportées. Ainsi, 31 % (IC 95 % [17,4 % - 44,6 %]) ont indiqué s'être fait proposer moins de défis ou des tâches moins intéressantes (discrimination formelle). Aussi, 21 % (IC 95 % [8,3 % - 33,7 %]) ont indiqué s'être fait donner trop de travail (discrimination formelle). Également, 17,6 % (IC 95 % [7,7 % - 27,5 %]) ont indiqué s'être fait refuser une promotion ou une formation

6 Un tableau détaillant les indicateurs des variables de contrôle est présenté à l'Annexe 5 des matériaux supplémentaires.

7 Afin de respecter la confidentialité des données selon les règles de Statistique Canada, certaines données descriptives, telles que la proportion de perceptions de discrimination selon les différentes caractéristiques démographiques, ou contextes professionnels et géographiques, ne peuvent pas être diffusées.

Tableau 1

Les formes de discrimination au travail perçues par les personnes travailleuses québécoises (n =133 / 313828(pondéré))

Forme de discrimination	%	IC 95 %
Ignoré par les autres[I]	23,6 %	11,8 % - 35,4 %
Vous mettre mal à l'aise[I]	44,9 %	31,2 % - 58,6 %
Parler dans votre dos[I]	28,6 %	16,2 % - 41,0 %
Promotion ou formation refusée[F]	17,6 %	7,7 % - 27,5 %
On vous donnait trop de travail[F]	21,0 %	8,3 % - 33,7 %
On vous proposait moins de défis[F]	31,0 %	17,4 % - 44,6 %
Autre[a]	26,7 %	15,0 % - 38,4 %

Note. IC = intervalle de confiance. [I] = discrimination informelle. [F] = discrimination formelle. [a]= Il n'a pas été possible d'avoir accès aux réponses nominales précises, car ces dernières sont confidentielles.

(discrimination formelle). Finalement, 26,7 % (IC 95 % [15,0 % - 38,4 %]) ont indiqué avoir subi d'autres formes de discrimination[8].

Objectif spécifique 2 : Caractéristiques démographiques associées aux perceptions de discrimination au travail au Québec

Le tableau 2 indique les résultats des analyses de régressions logistiques binaires visant à mettre en lumière les caractéristiques démographiques associées aux perceptions de discrimination des personnes travailleuses québécoises. Les résultats indiquent d'abord que le statut de minorité visible est associé aux perceptions de discrimination au travail (RC = 4,82, p = 0,001). En ce sens, les personnes travailleuses québécoises issues de minorités visibles sont 4,82 fois (IC 95 % [1,9 – 12,3]) plus susceptibles de rapporter des perceptions de discrimination que les personnes qui ne sont pas issues de minorités visibles, ce qui reflète un effet de taille moyenne. Il est aussi possible de constater qu'aucune association significative n'a été observée entre les perceptions de discrimination et les deux autres caractéristiques sociodémographiques : le genre (RC = 0,66, p = 0,194) et le statut d'immigration (RC = 0,73, p = 0,547). En ce sens, les analyses révèlent que les femmes québécoises ne sont pas plus susceptibles que les hommes de rapporter des perceptions de discrimination au travail. De plus, les personnes immigrantes québécoises ne sont pas plus à risque que les personnes natives de rapporter des perceptions de discrimination au travail.

Tableau 2

Caractéristiques démographiques associées aux perceptions de discrimination au travail au Québec

Caractéristiques démographiques	*b*	*Erreur-type*	*p*	RC	IC 95 %
Genre	-0,41	0,32	0,194	0,66	[0,35 – 1,24]
Femme					
Homme[a]					
Statut de minorité visible	1,57	0,47	0,001	4,82	[1,90 – 12,26]
Minorité visible[a]					
Non-Minorité visible					
Statut d'immigration	-0,32	0,52	0,547	0,73	[0,26 – 2,04]
Immigrant[a]					
Non-Immigrant					

Note. L'âge et le niveau de scolarité ont été contrôlés dans le modèle. *b* = coefficient estimé. RC = rapport de cotes. IC = intervalle de confiance. [a] = catégorie de référence. Pseudo-R^2(*Mcfadden*) = 0,053, Wald test = 1,95 (p = 0,034), Pseudo-R^2 (Cox et Snell) = 0,011, Pseudo-R^2 (Nagelkerke) = 0,015.

Objectif spécifique 3 : Contextes professionnels et géographiques associés aux perceptions de discrimination au travail au Québec

Le tableau 3 présente les résultats des analyses de régressions logistiques binaires visant à identifier les différents contextes professionnels et géographiques associés aux perceptions de discrimination au travail. Aucune association significative n'a été observée entre les perceptions de discrimination et 1) les domaines d'emploi, 2) les secteurs d'activité et 3) les régions du Québec. Plus précisément, les personnes travailleuses québécoises œuvrant dans les domaines des affaires, des finances et de l'administration ne sont pas plus à risque que les personnes travailleuses des autres secteurs de rapporter des perceptions de discrimination. De plus, les personnes travailleuses québécoises des autres secteurs d'activité ne sont pas plus à risque de

8 Pour des raisons de confidentialité des données, ces réponses nominales ne sont pas disponibles.

rapporter des perceptions de discrimination que les personnes travailleuses du secteur de la santé et des services sociaux, de l'éducation ou de l'administration publique. En d'autres mots, le risque de rapporter des perceptions de discrimination n'est pas plus élevé dans le secteur de l'administration publique que dans les autres secteurs d'activités. Finalement, les personnes travailleuses québécoises de la région de Montréal ne sont pas plus à risque de rapporter des perceptions de discrimination que les personnes travailleuses des autres RMR (p. ex. Québec) ou des régions non RMR. Par ailleurs, il importe de noter que certaines estimations sont instables vu les faibles effectifs des catégories visées (Domaine des ressources naturelles, de l'agriculture et de la production connexe, régions de Saguenay, Trois-Rivières et Drummondville), rendant ainsi ces résultats difficilement interprétables.

Tableau 3

Contextes professionnels et géographiques associés aux perceptions de discrimination au travail au Québec

Contextes professionnels	*b*	*Erreur-type*	*p*	RC	IC 95 %
Domaines d'emploi de la CNP					
Affaires, finances et administration (1)[a]					
Gestion (0)	-0,291	0,779	0,709	0,75	[0,16 – 3,46]
Sciences naturelles et appliquées et domaines apparentés (2)	-0,608	0,690	0,379	0,55	[0,14 – 2,11]
Secteur de la santé (3)	0,119	0,723	0,869	1,13	[0,27 – 4,67]
Enseignement, droit et services sociaux, communautaires et gouvernementaux (4)	-0,383	0,644	0,552	0,68	[0,19 – 2,41]
Arts, culture, sports et loisirs (5)	0,021	1,289	0,987	1,02	[0,08 – 12,87]
Vente et services (6)	0,342	0,535	0,523	1,41	[0,49 – 4,03]
Métiers, transport, machinerie et domaines apparentés (7)	0,570	0,581	0,327	1,77	[0,57 – 5,54]
Ressources naturelles, agriculture et production connexe (8)	0,337	6,292	0,957	1,40	N/A[b]
Fabrication et services d'utilité publique (9)	0,603	0,929	0,517	1,83	[0,29 – 11,35]
Secteurs d'activité					
Autres industries[a]					
Santé et services sociaux	0,386	0,580	0,506	1,47	[0,47 – 4,60]
Éducation	0,280	0,729	0,427	1,79	[0,43 – 7,48]
Administration publique	0,538	0,540	0,319	1,71	[0,59 – 4,94]
Régions					
Montréal[a]					
Saguenay	0,128	6,396	0,984	1,14	N/A
Québec	-0,084	0,555	0,880	0,92	[0,31 – 2,74]
Sherbrooke	-0,346	1,707	0,839	0,71	[0,03 – 20,24]
Trois-Rivières	-0,258	7,040	0,971	0,77	N/A
Drummondville	-0,478	9,811	0,961	0,62	N/A

Contextes professionnels	*b*	*Erreur-type*	*p*	RC	IC 95 %
Gatineau	-0,337	0,393	0,392	0,71	[0,17 – 2,95]
Non-RMR	-0,350	0,728	0,631	0,71	[0,33 – 1,55]

Note. L'âge et le niveau de scolarité ont été contrôlés dans le modèle. CNP = Classification nationale des professions. *b* = coefficient estimé. RC = rapport de cotes. IC = intervalle de confiance. RMR = région métropolitaine de recensement. [a] = catégorie de référence. [b]= Pour certaines catégories, les faibles effectifs ont entraîné des estimations instables. Les intervalles de confiance à 95 % obtenus étaient extrêmement larges (< 0,001 à > 999,999), rendant ces estimations, ainsi que les pseudo-R^2 de Cox et Snell et de Nagelkerke difficilement interprétables. Pseudo-R2 (*Mcfadden*) = 0,021, Wald test = 0,27 (*p* = 0,999). Les pseudo-R^2 de Cox et Snell et de Nagelkerke n'ont pas été interprétés en raison de l'instabilité des estimations.

Objectif spécifique 4 : Association entre les perceptions de discrimination au travail et la satisfaction au travail au Québec

Le tableau 4 présente les résultats des analyses de régressions logistiques multinomiales visant à identifier une association entre les perceptions de discrimination au travail et la satisfaction au travail. Il est possible de remarquer que les perceptions de discrimination au travail sont significativement associées à une moins bonne satisfaction au travail. Plus précisément, les personnes qui rapportent des perceptions de discrimination au travail sont 6,57 fois (IC 95 % [2,0 – 21,6]) plus susceptibles de rapporter être insatisfaites ou très insatisfaites plutôt que satisfaites ou très satisfaites, ce qui représente un effet de grande taille. Enfin, aucune association significative n'a été observée entre les perceptions de discrimination au travail et le fait de rapporter être ni satisfaite ni insatisfait au travail plutôt que satisfait ou très satisfait (RC = 1,99, *p* = 0,347).

Tableau 4

Association entre les perceptions de discrimination et la satisfaction au travail

Niveau de satisfaction au travail	*b*	*Erreur-type*	*p*	RC	IC 95 %
Satisfait ou très satisfait[a]					
Insatisfait ou très insatisfait	1,883	0,605	0,002	6,57	[2,00 – 21,56]
Ni satisfait ni insatisfait	0,686	0,728	0,347	1,99	[0,48 – 8,29]

Note. Les variables âge et niveau de scolarité ont été ajoutées au modèle pour contrôler leur effet. *b* = coefficient estimé. RC = rapport de cotes. IC = intervalle de confiance. [a] = catégorie de référence. Pseudo-R^2 (Mcfadden) = 0,05, Wald test = 4,98 (*p* = 0,007), Pseudo-R^2 (Cox et Snell) = 0,07, Pseudo-R2 (Nagelkerke)= 0,10.

Discussion

Cet article avait comme objectif d'examiner les perceptions de discrimination des personnes travailleuses québécoises, leurs déterminants démographiques et contextuels, ainsi que leurs conséquences sur la satisfaction au travail. En ce qui concerne le premier objectif spécifique, les résultats indiquent que dans l'ensemble la forme de discrimination la plus rapportée représente de la discrimination informelle, mais que des formes de discriminations formelles sont aussi rapportées. Selon le modèle tridimensionnel de Chung (2001), les formes de discrimination informelle liées aux dynamiques interpersonnelles (p. ex. hostilité, manque de respect) seraient ainsi davantage perçues que les formes de discrimination formelle liées aux actions organisationnelles (p. ex. congédiement, décisions salariales).

En ce qui a trait au deuxième objectif spécifique, l'hypothèse 1 est partiellement confirmée. En effet, il est possible de constater que les personnes travailleuses québécoises issues de minorités visibles sont plus

susceptibles de rapporter des perceptions de discrimination au travail que leurs pairs. Ces résultats convergent avec ceux de Boulet et al. (2022) et Lardoux (2018). En revanche, bien que de façon générale, les perceptions de discrimination au travail sont moins fréquentes au Québec que dans le reste du Canada (Boulet et al., 2022), les résultats de la présente étude indiquent une taille d'effet plus marquée au Québec que celle observée au Canada par Boulet et al. (2022) concernant les personnes travailleuses issues de minorités visibles (4,82 fois plus à risque au Québec contre 1,5 fois plus à risque au Canada). En ce sens, la situation des personnes travailleuses issues de minorités visibles semble plus désavantageuse au Québec qu'au Canada. Cette situation pourrait s'expliquer en partie par le fait que 21,2 % de la population active québécoise s'identifie comme minorité visible contre près de 35,6 % de la population active canadienne (Statistique Canada, 2025b). Dans ce contexte, le sentiment de différence pourrait être amplifié au Québec pour les personnes issues de minorités visibles puisqu'elles sont moins représentées sur le marché du travail. De plus, considérant la portée plus étendue des lois en matière d'égalité et d'équité sur le marché du travail au Québec, comparativement à la majorité des autres provinces canadiennes, il est possible que les personnes québécoises issues de minorités visibles aient des attentes plus élevées, les rendant ainsi plus susceptibles de percevoir de la discrimination au travail que leurs homologues ailleurs au Canada. En ce qui concerne le genre, les résultats de la présente étude indiquent que les femmes québécoises ne sont pas plus à risque que les hommes de rapporter des perceptions de discrimination au travail. Ces résultats divergent de ceux de Boulet et al. (2022) qui indiquaient que les femmes canadiennes étaient plus à risque que les hommes canadiens de rapporter des perceptions de discrimination au travail. Cette divergence suggère que la situation des femmes en matière de perceptions de discrimination au travail est meilleure au Québec qu'au Canada. Cette situation pourrait notamment s'expliquer par des politiques québécoises plus proactives en matière d'égalité entre les genres, telles que la Loi sur l'accès à l'égalité en emploi dans des organismes publics, la Loi sur l'équité salariale et les politiques familiales plus généreuses que dans le reste du Canada (Boulet et al., 2022). De plus, les écarts entre les femmes et les hommes sur le marché du travail semblent moins marqués au Québec, notamment sur le plan salarial : au Québec, les femmes gagnent en moyenne 9 % de moins que les hommes contre 12 % de moins au Canada (CNESST, 2025; Statistique Canada, 2026). Ce contexte plus favorable pourrait atténuer les perceptions de discrimination au travail chez les femmes québécoises. Enfin, relativement au statut migratoire, les résultats de la présente étude montrent que les personnes travailleuses immigrantes ne sont pas plus à risque de rapporter des perceptions de discrimination que les personnes natives. Cela rejoint les conclusions de Boulet et al. (2022) et aussi les données préliminaires d'une autre étude québécoise toutefois menée auprès d'une population d'élèves du secondaire (Dorceus, 2024). Bien que le profil migratoire du Québec se distinguait de celui du reste du Canada au moment de l'ESG 2016, notamment par une plus grande proportion de personnes immigrantes ayant le français comme langue maternelle (Statistique Canada, 2017b), le statut migratoire demeure une caractéristique moins visible et moins déterminante pour les perceptions de discrimination que des caractéristiques plus visibles comme le statut de minorité visible tel qu'avancé par Boulet et al. (2022). Cela dit, il importe de rappeler que les explications avancées relativement aux différences observées ou non observées demeurent hypothétiques et méritent d'être examinées davantage dans le cadre de recherches futures.

Concernant le troisième objectif spécifique, il est possible de constater qu'aucun des contextes professionnels et géographiques ciblés n'est associé significativement aux perceptions de discrimination au travail. Ainsi, l'hypothèse 2 est infirmée : le risque de percevoir de la discrimination n'est pas plus élevé dans le domaine de l'administration que dans les autres domaines d'emploi. Ces résultats divergent de ceux observés par Beauregard (2020) et Eid (2012) qui indiquaient que la discrimination à l'embauche serait plus élevée dans les domaines liés à l'administration, tels que le secrétariat ou les ressources humaines. Cela pourrait s'expliquer par l'écart entre la mesure de perceptions de discrimination, telle que réalisée dans la présente étude, et celle de la discrimination objective dans les études de Beauregard (2020) et Eid (2012). En effet, cet écart est documenté dans les travaux de Chung (2001) qui distingue la discrimination objective (p. ex. mesurée par la méthode du *testing*) de la discrimination subjective (p. ex. les perceptions de discrimination). Toutefois, en ce qui concerne le secteur des ressources naturelles, de l'agriculture et de la production connexe, l'estimation instable ne permet ni de confirmer ni d'infirmer l'hypothèse formulée.

Dans un autre ordre d'idées, l'hypothèse 3 est également infirmée : les personnes travailleuses québécoises du secteur de l'administration publique ne sont pas plus à risque que les personnes travailleuses des autres secteurs d'activités à rapporter des perceptions de discrimination au travail. Ces résultats divergent de ceux obtenus par Boulet et al. (2022) selon lesquels les personnes travailleuses canadiennes du secteur de l'administration publique rapportent plus de perceptions de discrimination au travail que leur contrepartie des autres secteurs. Cette divergence pourrait être en partie expliquée par des différences structurelles et contextuelles. Il est possible que les politiques d'accès à l'égalité en emploi, plus développées au Québec dans le secteur public, contribuent à atténuer les perceptions de discrimination. De plus, comme les personnes travailleuses québécoises rapportent globalement moins de perceptions de discrimination que les personnes travailleuses canadiennes (Boulet et al., 2022), il se pourrait que cette tendance s'applique de façon transversale à tous les secteurs d'activité, y compris l'administration publique.

En ce qui concerne le contexte géographique, l'hypothèse 4 est confirmée : le risque de percevoir de la discrimination au travail est équivalent entre les régions de Montréal et de Québec. Ces résultats convergent avec les conclusions de Beauregard (2020) à l'effet que la discrimination à l'embauche serait équivalente entre Montréal et Québec. De plus, les perceptions de discrimination au travail au Québec seraient aussi équivalentes entre Montréal et les autres RMR (Sherbrooke, Gatineau) et les non-RMR testées pour lesquelles les résultats sont interprétables. À ce sujet, il est possible que l'application de politiques publiques soit relativement homogène au Québec, ce qui pourrait contribuer à une expérience similaire dans les milieux de travail, peu importe la région. Toutefois, il importe de rappeler qu'il n'est pas possible de confirmer ni d'infirmer l'hypothèse concernant les régions du Saguenay, de Trois-Rivières et de Drummondville, en raison de l'instabilité des estimations obtenues pour ces régions.

Finalement, relativement au quatrième objectif spécifique, l'hypothèse 5 est confirmée : les perceptions de discrimination au travail sont associées négativement à la satisfaction au travail des personnes travailleuses québécoises. En effet, les résultats indiquent que les personnes travailleuses québécoises qui rapportent des perceptions de discrimination sont plus susceptibles de rapporter être insatisfaites ou très insatisfaites au travail plutôt que satisfaites ou très satisfaites. Ces résultats convergent avec ceux d'études nord-américaines (Dhanani et al., 2018; Triana et al., 2015; Triana et al., 2019). Ils sont également cohérents avec la théorie de l'adaptation au travail (Dawis, 2005), selon laquelle la satisfaction au travail dépend de la correspondance entre les besoins et les valeurs des personnes travailleuses et les caractéristiques de leur environnement de travail. Dans cette perspective, les perceptions de discrimination peuvent indiquer que l'environnement de travail répond moins bien aux besoins et aux attentes des personnes travailleuses, ce qui contribuerait à expliquer leur plus faible satisfaction au travail.

Conclusion

L'objectif général de la présente étude était d'examiner les perceptions de discrimination des personnes travailleuses québécoises, leurs déterminants, ainsi que leurs conséquences sur la satisfaction au travail. Les résultats soulèvent quelques implications vis-à-vis la pratique de l'orientation en contexte organisationnel. Tout d'abord, les résultats soulignent la prédominance des formes informelles de discrimination dans les organisations québécoises. En conséquence, les personnes conseillères d'orientation peuvent accorder autant d'importance aux formes informelles qu'aux formes formelles comme décrite par Chung (2001) dans leurs considérations et interventions en lien avec la discrimination. De plus, considérant que les personnes travailleuses québécoises issues de minorités visibles sont plus susceptibles de rapporter des perceptions de discrimination au travail que leurs pairs, cela suggère que les personnes responsables de la GÉDI devraient porter une attention particulière à ce groupe. Aussi, dans la mesure où les perceptions de discrimination au travail sont associées à un risque plus élevé d'insatisfaction au travail et que les personnes conseillères d'orientation ont une expertise en matière de satisfaction et de bien-être au travail (Ordre des conseillers et conseillères d'orientation du Québec, 2025), ces dernières pourraient contribuer à l'identification et à l'analyse des enjeux liés à la discrimination au travail ainsi qu'à la réflexion sur les pratiques organisationnelles favorisant des milieux de travail plus équitables et inclusifs. Dans la perspective de la théorie de l'adaptation au travail, ces interventions pourraient favoriser une meilleure adéquation entre les besoins et les valeurs

des personnes travailleuses — notamment en matière d'équité et d'inclusion — et les caractéristiques de leur environnement de travail, ce qui est susceptible de favoriser leur satisfaction au travail. À titre exploratoire et en cohérence avec certaines recommandations formulées dans la littérature sur la GÉDI (Wickham et al., 2025), les organisations pourraient notamment envisager la mise en place de mécanismes de prévention et de traitement des situations de discrimination, ou encore le suivi systématique des mesures de GÉDI et de leurs effets sur les organisations et les personnes employées. Cela dit, l'effet de ces mesures d'adaptation sur les perceptions de discrimination et la satisfaction au travail serait à documenter empiriquement.

Cette étude comporte par ailleurs certaines limites. Premièrement, les données utilisées datent de 2016. Différents changements au cours des dernières années qui touchent le milieu de travail québécois (p. ex. pandémie, essor du télétravail et Loi sur la laïcité de l'État) pourraient faire en sorte que le portrait des perceptions de discrimination au travail soit différent près de 10 ans plus tard. Deuxièmement, la nature transversale des données de l'ESG de 2016 ne permet pas d'établir des liens de causalité concernant les associations significatives, par exemple entre les perceptions de discrimination et la satisfaction au travail. Troisièmement, bien que la mesure des perceptions de discrimination comporte certains avantages (p. ex. peu couteuse, accessible) (Lee, 2022), celle-ci peut toutefois être influencée par des biais de désirabilité sociale ou par les traits de personnalité (p. ex. niveau élevé de névrosisme), ce qui pourrait affecter l'ampleur des perceptions rapportées. Quatrièmement, le sous-échantillon plutôt limité de personnes ayant rapporté des perceptions de discrimination (6,1 % de l'échantillon de 2 182 personnes) pourrait expliquer une difficulté à détecter des résultats significatifs, notamment en ce qui concerne le troisième objectif spécifique. Enfin, plus largement, les faibles effectifs observés dans certaines catégories liées à cet objectif spécifique, notamment le domaine des ressources naturelles, de l'agriculture et de la production connexe ainsi que les régions du Saguenay, de Trois-Rivières et de Drummondville, ont entraîné des estimations instables. Cette situation a limité l'interprétation de ces résultats et empêché de confirmer ou d'infirmer entièrement deux des hypothèses formulées.

Ces limites ouvrent la voie à des recherches futures. D'abord, il pourrait être intéressant d'effectuer les mêmes analyses avec les données des prochaines ESG – Les Canadiens au travail et à la maison afin de voir s'il y a eu des changements au niveau des perceptions de discrimination au travail. Par la suite, des déterminants additionnels pourraient être testés tels que la taille de l'organisation vu que la littérature scientifique montre que la discrimination à l'embauche est plus présente dans les petites organisations (Banerjee et al., 2018). Dans un autre ordre d'idées, il pourrait être intéressant d'examiner l'effet de pratiques en matière de GÉDI sur les perceptions de discrimination des personnes travailleuses québécoises.

Références

Banerjee, R., Reitz, J. G. et Oreopoulos, P. (2018). Do large employers treat racial minorities more fairly? An analysis of canadian field experiment data. *Canadian Public Policy*, *44*(1), 1–12. https://utpjournals.press/doi/10.3138/cpp.2017-033

Beauregard, J.-P. (2020). *Les frontières invisibles de l'embauche des Québécois minoritaires : Hiérarchie ethnique, effet modérateur du genre féminin et discrimination systémique, Dévoiler la barrière à l'emploi par un testing à Québec* [thèse de doctorat inédite]. Université Laval. https://corpus.ulaval.ca/entities/publication/a339c964-38d5-480c-9793-211c9bc4459f

Boudarbat, B. (2011). *Les défis de l'intégration des immigrants dans le marché du travail au Québec : Enseignements tirés d'une comparaison avec l'Ontario et la Colombie-Britannique* (Rapport de projet no 2011RP-07). CIRANO. https://cirano.qc.ca/fr/sommaires/2011RP-07

Boulet, M., Lachapelle, M. et Keiff, S. (2022). Demographic diversity, perceived workplace discrimination and workers' well-being: Context matters. *Evidence-Based HRM: A Global Forum for Empirical Scholarship*, *11*(1), 35–51. https://doi.org/10.1108/EBHRM-08-2021-0179

Castel, D. (2019). Satisfaction au travail. Dans G. Valléry, M.-É. Bobillier-Chaumon, É. Brangier, et M. Dubois (dir.), *Psychologie du travail et des organisations : 110 notions clés* (2e éd., p. 390–393). Dunod.

Cénat, J. M., Hajizadeh, S., Dalexis, R. D., Ndengeyingoma, A., Guerrier, M. et Kogan, C. (2022). Prevalence and effects of daily and major experiences of racial discrimination and microaggressions among

black individuals in canada. *Journal of Interpersonal Violence*, *37*(17-18), 16750–16778. https://doi.org/10.1177/08862605211023493

Chung, Y. B. (2001). Work discrimination and coping strategies: conceptual frameworks for counseling lesbian, gay, and bisexual clients. The Career Development Quarterly, 50(1), 33–44. https://doi.org/10.1002/j.2161-0045.2001.tb00887.x

Clark, A. E. (1997). Job satisfaction and gender: Why are women so happy at work? *Labour Economics*, *4*(4), 341–372. https://doi.org/10.1016/S0927-5371(97)00010-9

Cloutier-Villeneuve, L. (2023). *Portrait des personnes issues de minorités visibles sur le marché du travail au Québec en 2021. Marché du travail et rémunération*. Institut de la statistique du Québec. https://statistique.quebec.ca/fr/fichier/portrait-minorites-visibles-travail-quebec-2021.pdf

CNESST. (2025, 6 octobre). Encore aujourd'hui, il existe un écart salarial réel entre les hommes et les femmes. https://www.cnesst.gouv.qc.ca/fr/salle-presse/communiques/ecart-salarial-reel-entre-hommes-femmes

Cox, R. (2020). Épiphénomène ou brique de l'édifice du racisme systémique ? Étude empirique des décisions en matière de harcèlement psychologique à caractère raciste (2004-2020). *Nouvelles pratiques sociales*, *31*(2), 101–125. https://doi.org/10.7202/1076647ar

Dawis, R. V. (2005). The Minnesota theory of work adjustment. Dans S. D. Brown et R. W. Lent (dir.), *Career development and counseling: Putting theory and research to work* (p. 3–23). John Wiley & Sons.

Dhanani, L. Y., Beus, J. M. et Joseph, D. L. (2018). Workplace discrimination: A meta-analytic extension, critique, and future research agenda. *Personnel Psychology*, *71*(2), 147–179. https://doi.org/10.1111/peps.12254

Dioh, M. L., Guilbert, L. et Racine, M. (2020). L'immigrant actif : étude du parcours de vie comme cadre d'analyse pour une compréhension globale du projet migratoire. *Alterstice*, *9*(1), 39–50. https://doi.org/10.7202/1075249ar

Dorceus, S. (2024). The association between perceived discrimination profiles and career aspirations and expectations of high school students. Dans M. Carmo (dir.), *Education and new developments 2024: Volume 1*. (pp. 51–55). inScience Press. https://end-educationconference.org/wp-content/uploads/2024/06/Education-and-New-Developments_2024_Vol_I.pdf

Eddaimi, F. (2012). *Les musulmanes face à la discrimination au Québec : Mythe ou réalité?* [mémoire de maîtrise inédit]. Université du Québec à Montréal. https://archipel.uqam.ca/5119

Eid, P. (2012). Les inégalités « ethnoraciales » dans l'accès à l'emploi à Montréal : le poids de la discrimination. *Recherches sociographiques*, *53*(2), 415–450. https://www.erudit.org/fr/revues/rs/2012-v53-n2-rs0287/1012407ar

Gagnon, C. et Dion, J. (2018). *La francisation et l'intégration professionnelle des personnes immigrantes*. Conseil supérieur de la langue française. https://numerique.banq.qc.ca/patrimoine/details/52327/3444424?utm_source=chatgpt.com

Gouvernement du Canada. (2022). *Loi sur l'équité en matière d'emploi : Rapport annuel de 2018*. Emploi et Développement social Canada. https://www.canada.ca/fr/emploi-developpement-social/ministere/portefeuille/travail/programmes/equite-emploi/rapports/2018-annuel.html

Gouvernement du Québec. (2020). Rapport sur la mise en œuvre de la Loi sur l'accès à l'égalité en emploi dans les organismes publics. Ministère de la Justice. https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/justice/publications-adm/rapports/RA_Mise_en_oeuvre_Egalite_Emploi_MJQ.pdf

Gouvernement du Québec. (2021). *Les personnes immigrantes et le marché du travail québécois : 2019*. Ministère de l'Immigration, de la Francisation et de l'Intégration. https://cdn-contenu.quebec.ca/cdn-contenu/immigration/publications/fr/recherches-statistiques/ImmigrantsMarcheTravail2019.pdf

Howell, D. C., Bestgen, Y., Yzerbyt, V., Lefèvre, N. et Bertrand, A. (dir.). (2024). Méthodes statistiques en sciences humaines (3e éd.). De Boeck Supérieur.

Institut de la statistique du Québec. (2023). *Annuaire québécois des statistiques du travail : Portrait des principaux indicateurs du marché et des conditions de travail, 2012-2022* (vol. 19). https://statistique.quebec.ca/fr/fichier/annuaire-quebecois-statistiques-travail-2012-2022.pdf

Institut de la statistique du Québec. (2024). *Bilan du marché du travail au Québec en 2023*. https://statistique.quebec.ca/fr/fichier/bilan-marche-travail-quebec-2023.pdf

Institut de la statistique du Québec. (2026a). *Indicateurs du marché du travail, résultats selon le groupe d'âge et le genre, Québec, Ontario et Canada, 1976-2025*. https://statistique.quebec.ca/fr/produit/tableau/indicateurs-du-marche-du-travail-resultats-selon-le-groupe-dage-et-le-sexe-quebec-ontario-et-canada

Institut de la statistique du Québec. (2026b). *Indicateurs du marché du travail chez les personnes immigrantes et celles nées au Canada, résultats selon le genre, Québec, Ontario et Canada, 2006-2025*. https://statistique.quebec.ca/fr/produit/tableau/indicateurs-du-marche-du-travail-chez-les-personnes-immigrantes-et-celles-nees-au-canada-resultats-selon-le-sexe-quebec-ontario-et-canada

Labelle-Deraspe, R. (2023). *Des incivilités à la discrimination moderne : Impacts sur le niveau de détresse psychologique des employés canadiens* [thèse de doctorat inédite]. Université du Québec à Trois-Rivières. https://depot-e.uqtr.ca/id/eprint/11000/

Lardoux, S. (2018). *Trajectoires individuelles et dynamiques de participation des femmes et hommes à la société québécoise (TrajIPaQ)*. Fonds de recherche du Québec – Société et culture (FRQSC). https://frq.gouv.qc.ca/app/uploads/2021/09/05_annexes_2018_pm_211579_lardoux.pdf

Lee, H. (2022). Perceived racial discrimination in the workplace: Considering minority supervisory representation and inter-minority relations. *Public Management Review*, *24*(4), 512–535. https://doi.org/10.1080/14719037.2020.1846368

Lyons, H. Z. et O'Brien, K. M. (2006). The role of person-environment fit in the job satisfaction and tenure intentions of African American employees. *Journal of Counseling Psychology*, *53*(4), 387–396. https://doi.org/10.1037/0022-0167.53.4.387

Lyons, H. Z., Velez, B. L., Mehta, M. et Neill, N. (2014). Tests of the theory of work adjustment with economically distressed African Americans. *Journal of Counseling Psychology*, *61*(3), 473–483. https://doi.org/10.1037/cou0000017

McCord, M. A., Joseph, D. L., Dhanani, L. Y. et Beus, J. M. (2018). A meta-analysis of sex and race differences in perceived workplace mistreatment. *Journal of Applied Psychology*, *103*(2), 137–163. https://doi.org/10.1037/apl0000250

OCDE. (2017). *OECD guidelines on measuring the quality of the working environment*. OECD Publishing. https://doi.org/10.1787/9789264278240-en

Ordre des conseillers et conseillères d'orientation du Québec. (2025). *Grand public - Conseiller d'orientation*. https://www.orientation.qc.ca/fr/conseiller-d-orientation

Oreopoulos, P. (2011). Why Do Skilled Immigrants Struggle in the Labor Market? A Field Experiment with Thirteen Thousand Resumes. *American Economic Journal: Economic Policy*, *3*(4), 148–171. https://doi.org/10.1257/pol.3.4.148

Saba, T. (2019). Gestion de la diversité, de l'équité et de l'inclusion (GÉDI). *Revue RH*, *22*(3). https://carrefourrh.org/ressources/revue-rh/volume-22-no-3/gestion-diversite-equite-inclusion-gedi

Salari, N., Fattah, A., Hosseinian-Far, A., Larti, M., Sharifi, S. et Massoud, M. (2024). The Prevalence of Workplace Microaggressions and Racial Discrimination: A Systematic Review and Meta-analysis. *Safety and Health at Work*, *15*(3), 245–254. https://doi.org/10.1016/j.shaw.2024.05.002

Statistique Canada. (2017a). E*nquête sociale générale – Les Canadiens au travail et à la maison (ESG) : Information détaillée pour 2016 (cycle 30)*. https://www23.statcan.gc.ca/imdb/p2SV_f.pl?Function=getSurvey&SDDS=5221#a1

Statistique Canada. (2017b). *Recensement en bref : L'intégration linguistique des immigrants et les populations de langue officielle au Canada* (Recensement de la population de 2016, no 98-200-X2016017 au catalogue). https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016017/98-200-x2016017-fra.cfm

Statistique Canada. (2022). *Tableau 98-10-0446-01. Situation d'activité selon les minorités visibles, le statut d'immigrant et la période d'immigration, le plus haut niveau de scolarité, l'âge et le genre : Canada, provinces et territoires, régions métropolitaines de recensement et agglomérations de recensement y compris les parties*. https://doi.org/10.25318/9810044601-fra

Statistique Canada. (2024). *La moitié des personnes racisées ont vécu de la discrimination ou ont été traitées de manière injuste au cours des cinq dernières années*. Le Quotidien. https://www150.statcan.gc.ca/n1/daily-quotidien/240516/dq240516b-fra.htm

Statistique Canada. (2025a). *Tableau 14-10-0287-01. Caractéristiques de la population active selon le groupe d'âge, données mensuelles désaisonnalisées.* https://doi.org/10.25318/1410028701-fra

Statistique Canada. (2025b). *Tableau 14-10-0373-01. Caractéristiques de la population active selon le groupe de minorités visibles, moyennes mobiles de trois mois, données mensuelles non désaisonnalisées.* https://doi.org/10.25318/1410037301-fra

Statistique Canada. (2025c). *Tableau 14-10-0471-01. Caractéristiques de la population active des immigrants, moyennes mobiles de trois mois, données non désaisonnalisées.* https://doi.org/10.25318/1410047101-fra

Statistique Canada. (2026, 5 mars). L'écart salarial entre les genres persiste. https://www.statcan.gc.ca/o1/fr/plus/9084-lecart-salarial-entre-les-genres-persiste

St-Onge, S., Guerrero, S., Haines, V., Dextras-Gauthier, J. et Chamberland, E. (2021). *Relever les défis de la gestion des ressources humaines* (6e éd.). Chenelière éducation.

Swanson, J. L. et Schneider, M. (2020). The theory of work adjustment. Dans S. D. Brown et R. W. Lent (dir.), *Career development and counseling: Putting theory and research to work* (3e éd., p. 33-60). John Wiley & Sons.

Triana, M. del C., Jayasinghe, M. et Pieper, J. R. (2015). Perceived workplace racial discrimination and its correlates: A meta-analysis. *Journal of Organizational Behavior*, *36*(4), 491–513. https://doi.org/10.1002/job.1988

Triana, M. del C., Jayasinghe, M., Pieper, J. R., Delgado, D. M. et Li, M. (2019). Perceived Workplace Gender Discrimination and Employee Consequences: A Meta-Analysis and Complementary Studies Considering Country Context. *Journal of Management*, *45*(6), 2419–2447. https://doi.org/10.1177/0149206318776772

Wickham, M. D., Fiedler, T. et Donnelly, T. I. (2025). Addressing the diversity paradox: A resource-based view of DEI best practices. *Sustainable Development*, *33*(4), 6260–6275. https://doi.org/10.1002/sd.3467

Annexe 1. Tableau 1

Le tableau 1 présente les indicateurs des formes de discrimination au travail qui ont été mesurées.

Tableau 1

Indicateurs des formes de discrimination au travail

Indicateur	Échelle	Question de l'ESG	Nom de la variable
Formes de discrimination	Nominale	De quelles formes de discrimination, parmi les suivantes, avez-vous été victime? Choix de réponse : 1. Ignoré par les autres; 2. On vous mettait mal à l'aise; 3. Les gens parlaient dans votre dos; 4. Promotion ou formation étant refusée; 5. On vous donnait trop de travail; 6. On vous proposait moins de défis ou des tâches moins intéressantes; 7. Autre (précisez); 8. Refus de répondre; 9. Ne sait pas	DBH_Q04

Annexe 2. Tableau 2

Le tableau 2 présente les indicateurs du genre, du statut migratoire, du statut de minorité visible et des perceptions de discrimination au travail.

Tableau 2

Indicateurs de genre, de statut migratoire, de statut de minorité visible et des perceptions de discrimination au travail

Indicateur	Échelle	Question de l'ESG	Nom de la variable
Genre	Dichotomique	Quel est votre genre? Choix de réponses : 1. Masculin; 2. Féminin; 3. Ou veuillez préciser;	RRS4_Q50
Statut de minorité visible	Dichotomique	Vous pouvez appartenir à un ou plusieurs groupes raciaux ou culturels sur la liste suivante. Êtes-vous…? 1. Blanc/Blanche; 2. Sud-Asiatique; 3. Chinois(e); 4. Noir(e); 5. Philippin(e); 6. Arabe; 7. Latino-Américain(e); 8. Asiatique du Sud-Est; 9. Asiatique occidental(e); 10. Coréen(ne); 11. Japonais(e); 12. Autre; Nb : Un recodage a été fait pour cette variable. Les réponses ont été recodées en deux catégories : 1 = minorité visible, 2 = non-minorité visible.	PG_Q01A à L
Statut migratoire	Dichotomique	Êtes-vous ou avez-vous déjà été un(e) immigrant(e) reçu(e) au Canada? Choix de réponse : 1. Oui 2. Non	BPR_Q16
Perceptions de discrimination au travail	Dichotomique	Au cours des 12 derniers mois, avez-vous été traité injustement ou été victime de discrimination au travail? Choix de réponse : 1. Oui 2. Non	DBH_Q01

Annexe 3. Tableau 3

Le tableau 3 présente les indicateurs du domaine d'emploi, du secteur d'activité et de la région.

Tableau 3

Indicateurs du domaine d'emploi, du secteur d'activité et de la région

Indicateur	Échelle	Question de l'ESG	Nom de la variable
Domaine d'emploi	Catégorielle	Quel [est/était] votre travail ou occupation? NB : Ces données ont été recodées en fonction des dix domaines d'emploi de la Classification nationale des professions (CNP) : 1. Membres des corps législatifs et cadres supérieurs/cadres supérieures 2. Affaires, finance et administration (catégorie de référence) 3. Sciences naturelles et appliquées et domaines apparentés 4. Secteur de la santé 5. Enseignement, droit et services sociaux, communautaires et gouvernementaux 6. Arts, culture, sports et loisirs 7. Vente et services 8. Métiers, transport, machinerie et domaines apparentés 9. Ressources naturelles, agriculture et production connexe 10. Fabrication et services d'utilité publique	WLY_Q130
Secteur d'activité	Catégorielle	De quel genre d'entreprise, d'industrie ou de service s'[agit/agissait]-il? NB : Ces données ont été recodées en quatre catégories : 1. Administration publique 2. Éducation 3. Santé et services sociaux 4. Autres industries (catégorie de référence)	WLY_Q120
Région	Catégorielle	Afin de déterminer dans quelle région géographique vous habitez, veuillez fournir votre code postal. NB : Ces données ont été recodées en fonction des régions métropolitaines de recensement (RMR) : 0. Non-RMR (catégorie de référence) 1. Saguenay 2. Québec 3. Sherbrooke 4. Trois-Rivières 5. Drummondville 6. Montréal (catégorie de référence) 7. Gatineau	RPC_Q01B

Annexe 4. Tableau 4

Le tableau 4 présente l'indicateur de la satisfaction au travail.

Tableau 4

Indicateur de la satisfaction au travail

Indicateur	Échelle	Question de l'ESG	Nom de la variable
Niveau de satisfaction globale au travail	Catégorielle	En général, dans quelle mesure êtes-vous satisfait de votre emploi ? Choix de réponse : 1. Très satisfait, 2. Satisfait 3. Ni satisfait, ni insatisfait 4. Insatisfait 5. Très insatisfait 6. Refus de répondre 7. Ne sait pas NB : Un recodage en trois catégories a été effectué afin de respecter les règles de contrôle concernant la sortie des données : 0. Satisfait et très satisfait (catégorie de référence) 1. Ni satisfait ni insatisfait 2. Insatisfait ou très insatisfait	JSR_Q02

Annexe 5. Tableau 5

Le tableau 5 présente les indicateurs de l'âge et du niveau de scolarité qui ont été utilisés comme variables de contrôle.

Tableau 5

Indicateurs de l'âge et du niveau de scolarité

Indicateur	Échelle	Item de l'ESG	Nom de la variable
Âge	Continue	Quel âge avez-vous?	ANCQ_Q03
Niveau de scolarité	Ordinale	Quel est le plus haut certificat, diplôme ou grade que vous avez obtenu? Choix de réponse : 1. Niveau inférieur à un diplôme d'études secondaires ou à son équivalent 2. Diplôme d'études secondaires ou une attestation d'équivalence d'études secondaires 3. Certificat ou diplôme d'une école de métiers 4. Certificat ou diplôme d'un collège, d'un cégep ou d'un autre établissement non universitaire (autre que les certificats ou diplômes de métiers) 5. Certificat ou diplôme universitaire inférieur au baccalauréat 6. Baccalauréat (p. ex. B.A.(Hon.), B.Sc., B.Ed., LL.B.) 7. Certificat, diplôme ou grade universitaire supérieur au baccalauréat	EHG1_Q01

Annexe 6. Tableau 6

Le tableau 6 présente une analyse complémentaire visant à cerner des contextes géographiques associés aux perceptions de discrimination au travail. Pour cette analyse, la catégorie Non-RMR a été utilisée comme catégorie de référence.

Tableau 6

Contextes géographiques associés aux perceptions de discrimination au travail au Québec

Régions	*b*	*Erreur-type*	*p*	RC	IC 95 %
Non-RMR[a]					
Saguenay	0,47	6,39	0,942	1,59	N/A[1]
Québec	0,25	0,59	0,664	1,29	[0,41 - 4,07]
Sherbrooke	-0,01	1,71	0,996	0,99	[0,03 - 28,76]
Trois-Rivières	0,08	7,03	0,991	1,08	N/A
Drummondville	-0,14	9,77	0,989	0,89	N/A
Montréal	0,34	0,39	0,392	1,40	[0,65 - 3,04]
Gatineau	-0,01	0,78	0,987	0,99	[0,21 - 4,58]

Note. L'âge et le niveau de scolarité ont été contrôlés dans le modèle. *b* = coefficient estimé. RC = rapport de cotes. IC = intervalle de confiance. Non-RMR = régions hors régions métropolitaines de recensement. a = catégorie de référence. Pseudo-R^2(*Mcfadden*) = 0,025, Wald test = 0,27 (*p* = 0,999). Les pseudo-R^2 de Cox et Snell et de Nagelkerke n'ont pas été interprétés en raison de l'instabilité des estimations.

[1] Pour certaines catégories, les faibles effectifs ont entraîné des estimations instables. Les intervalles de confiance à 95 % obtenus étaient extrêmement larges (< 0,001 à > 999,999), rendant ces estimations, ainsi que les pseudo-R^2 de Cox et Snell et de Nagelkerke difficilement interprétables.

CERIC

Advancing Career Development in Canada | Promouvoir le développement de carrière au Canada

CERIC champions career development to improve the economic and social well-being of people in Canada.
Le CERIC défend le développement de carrière pour améliorer le bien-être socioéconomique au Canada.

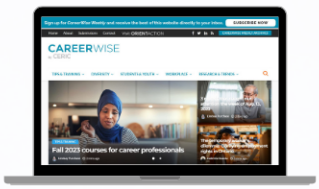
Innovative Programs, Resources, Publications and Events by CERIC
Programmes, ressources, publications et événements innovants du CERIC



CANNEXUS

Canada's Career Development Conference
Congrès canadien en développement de carrière

cannexus.ceric.ca





CAREERWISE
ORIENTACTION

Your Source for Career Development News & Views
Votre source d'information en développement de carrière

careerwise.ceric.ca
orientaction.ceric.ca





CANADIAN JOURNAL OF CAREER DEVELOPMENT | REVUE CANADIENNE DE DÉVELOPPEMENT DE CARRIÈRE

Career-related Academic Research and Best Practices
Recherche universitaire et meilleures pratiques liées à la carrière

cjcd-rcdc.ceric.ca

LEARNING APPRENTISSAGE

On-demand courses and webinars

Formations et webinaires à la demande

ceric.ca/learning
ceric.ca/apprentissage

SURVEYS SONDAGES

Surveys of employers, the Canadian public and career professionals

Sondages auprès des employeurs, des professionnels de la carrière et du public

ceric.ca/surveys
ceric.ca/sondages

ADVOCACY SENSIBILISATION

Advocacy resources and tools

Ressources et outils de sensibilisation

ceric.ca/advocacy
ceric.ca/sensibilisation

PUBLICATIONS

Research, reports and books on career development

Recherches, rapports et livres en développement de carrière

ceric.ca/publications
ceric.ca/fr/publications

Explore CERIC | Découvrez le CERIC

ceric.ca

CERIC funds projects to develop innovative programs, resources, publications and events in career counselling and development.
Le CERIC finance des projets visant à développer des programmes, des ressources, des publications, et des événements innovants en orientation professionnelle et en développement de carrière.

Charitable Registration | Numéro d'enregistrement d'organisme de bienfaisance 86093 7911 RR001
Foundation House, 2 St. Clair Avenue East, Suite 300, Toronto, Ontario, Canada M4T 2T5

CERIC Advancing Career Development in Canada | Promouvoir le développement de carrière au Canada

Graduate Student Engagement Program

Programme de mobilisation des étudiants aux cycles supérieurs



CERIC encourages the engagement of Canada's full-time and part-time graduate students whose academic focus is in career development or related fields. Faculty members are asked to help identify eligible graduate students.

Through this program, graduate students will be introduced to CERIC and invited to:

- **Compete for the CERIC GSEP Award**, which provides free registration and up to $1,000 to cover expenses to attend and present a poster at **Cannexus, Canada's Career Development Conference**
- **Join one of CERIC's committees**
- **Connect with other graduate students** through the GSEP Network
- **Write for the CareerWise website**, featuring the top career news and views, with a popular weekly newsletter curating the best of the site
- **Submit an article** to the peer-reviewed ***Canadian Journal of Career Development***

Ce programme du CERIC encourage la mobilisation des étudiants aux cycles supérieurs, à temps plein et à temps partiel, au Canada, dont les études portent sur le développement de carrière ou sur un domaine connexe. Nous invitons le corps enseignant à nous aider à repérer les étudiants admissibles.

Grâce à ce programme, les étudiants aux cycles supérieurs découvriront le CERIC et seront invités à :

- **Tenter de remporter le prix GSEP du CERIC,** qui permet aux étudiants d'obtenir une inscription gratuite à Cannexus, **le Congrès canadien en développement de carrière** ainsi que jusqu'à 1 000 $ pour couvrir les dépenses associées à la participation au congrès et à la présentation d'une affiche
- **Se joindre à un des comités du CERIC**
- **Créer des liens avec d'autres étudiants aux cycles supérieurs** via le réseau GSEP
- **Écrire pour le site Web OrientAction**, qui présente les dernières nouvelles et points de vue en matière de carrière, ainsi qu'un bulletin hebdomadaire populaire regroupant le meilleur du site
- **Soumettre un article à la *Revue canadienne de développement de carrière***, une revue évaluée par les pairs

CALL FOR APPLICATIONS
AUGUST 17 – OCTOBER 9, 2026

APPEL DE CANDIDATURES
DU 17 AOÛT AU 9 OCTOBRE 2026

For more information, contact **gsep@ceric.ca** or visit **ceric.ca/grad_program**

Pour de plus amples renseignements, envoyez un courriel à **gsep@ceric.ca** ou visitez le site **ceric.ca/programme_etudiants**

The Impact of Generative AI and BI on Generation Z Career Motivation and Construction Industry Transitions

F. Henry Abanda. *Ecole Nationale Supérieure des Travaux Publics, Cameroon*

Abstract

The construction industry is facing a critical transformation driven by the dual pressures of a widening skills gap and a generational disinterest among young professionals. This study investigates how Generative Artificial Intelligence (Gen AI) and Generative Business Intelligence (Gen BI) can serve as catalysts to modernize the sector and align it with the values and technological fluency of Generation Z (Gen Z). Through qualitative interviews with eleven participants, three key findings emerged from the study. First, both Gen AI and Gen BI were found to significantly enhance task efficiency and clarity in construction workflows—Gen AI automated cost and project planning tasks, while Gen BI transformed complex data into intuitive visualizations, improving communication across technical and non-technical stakeholders. Second, exposure to Gen AI and Gen BI elicited short-term enthusiasm and positive career-oriented perceptions. Most participants indicated that these technologies could strengthen their willingness to remain in the construction sector, particularly if employers and training providers offer sustained, structured digital upskilling. Nearly all respondents also expressed a desire to pursue further training in Gen AI/Gen BI to support their continued career development in the industry. More specifically, participants reported enhanced career self-efficacy, clearer perceptions of career pathways, and stronger intentions to remain in or re-enter the construction sector, suggesting that Gen AI and Gen BI influence not only task performance but also career decision-making and professional identity formation. Third, the study emphasized the necessity of educational reform and industry collaboration, advocating for updated curricula, hands-on learning experiences, and targeted rebranding efforts to reshape the public image of construction as a digital and purpose-driven field. The findings suggest that successful digital adoption requires a balanced approach that enhances, rather than replaces, traditional expertise. With thoughtful implementation and sustained commitment to digital transformation, Gen AI and Gen BI can help reposition construction as an attractive, future-ready career path for the next generation.

Keywords: BIM, Construction Projects, Gen AI, Gen BI, Gen Z, Skills gap

Over the past decades, both the United Kingdom and Canada have struggled to keep pace with the growing demand for infrastructure and housing. In the United Kingdom, housebuilding continues to fall behind that of European neighbours (Wind, 2024). A recent report highlights a severe shortfall, with Britain missing approximately 4.3 million homes from its national housing stock (Centre for Cities, 2024). Canada faces a similar crisis. Relative to its Organisation for Economic Co-operation and Development (OECD) peers, it underperforms in delivering affordable housing. Estimates show a need for an additional 575,000 social housing units to align with the OECD average (Laberge, 2025) and a staggering 3.5 million affordable housing units by 2030 to restore housing affordability (CMHC, 2022).

In addition to housing, infrastructure in both countries is in a state of decline. In Canada, nearly 40% of roads and bridges are rated in fair, poor, or very poor condition, with around 80% exceeding 20 years in age (FCM, 2019). Similarly, 30–35% of recreational and cultural facilities fall into these lower condition categories (FCM, 2019). Meanwhile, the U.S. construction sector also indicative of broader North American trends is predicted to need an additional 439,000 workers in 2025 alone to meet growing demands (National Institute of Building Sciences, 2025b).

The infrastructure and housing crises are compounded by a pressing labour shortage. The construction industry in both the United Kingdom and Canada faces a dual challenge: a shrinking workforce due to retirements and difficulty attracting new entrants (Ahmed, 2024). In Canada, BuildForce projects a need to recruit 309,000 new construction workers between 2021 and 2030, with 259,100, about 22% of the current workforce expected to retire during this period (Boscariol & Killam, 2024).

This labour shortfall is further aggravated by global geopolitical instability and a rise in protectionist policies that restrict immigration. Such policies limit the flow of migrant workers both documented and undocumented who could otherwise help fill these labour gaps (Turner & Townsend, 2024). Beyond economic

consequences, this shortage threatens national security. Vulnerabilities include dependency on foreign labour and technology, reduced disaster preparedness, compromised climate resilience, and risks to military and critical infrastructure (National Institute of Building Sciences, 2025b). Recognizing the urgency, the Elevate 2025 conference, scheduled for September 2025, aims to convene policymakers, industry leaders, and stakeholders to assess the full scale of the built environment workforce crisis and explore strategic interventions (National Institute of Building Sciences, 2025a).

Bridging the labour gap requires the construction sector to become more inclusive and appealing to younger generations, particularly Gen Z (born between 1997 and 2012). This generation is increasingly turning to trade careers, often seen as more secure than traditional academic paths. However, some trade professions such as building inspectors, electricians, and plumbers face some of the highest unemployment rates (Royle, 2025). Nevertheless, 78% of Americans have reported observing more young people taking up skilled trades like welding, electrical work, and carpentry (Royle, 2025). This trend aligns with global forecasts identifying frontline construction roles as among the fastest-growing job categories over the next five years (World Economic Forum, 2025).

Despite this positive trend, the construction industry lags in adopting emerging technologies, particularly Artificial Intelligence (AI) and Business Intelligence (BI). Yet, automation holds promise: approximately 50% of construction jobs could potentially be automated (Hoover et al., 2018). In the long term, this could enhance productivity and elevate wages for those with advanced skills (Chui & Mischke, 2019). During the transition, likely spanning over a decade demand for highly skilled workers will surge, while those performing repetitive tasks may face wage stagnation or displacement.

Interestingly, while Gen Z may be increasingly attracted to trade roles, the long-term viability of these positions may be undermined by automation and low wage trajectories unless paired with digital skillsets. The World Economic Forum (2016) forecasted that 65% of children entering primary school in 2016 would eventually work in jobs that do not yet exist. This dynamic labour landscape underscores the critical need to prepare Gen Z for future careers in construction through emerging technologies.

Motivating Gen Z to pursue careers in construction increasingly depends on leveraging advanced technologies. Recent grey literature points to this opportunity. Cure (2023) emphasized the potential of digital tools to entice younger generations into the industry. Burns (2025) argued for the modernization of training and upskilling programs to align with Gen Z preferences.

A key research question thus arises: To what extent can emerging technologies, particularly Gen AI and Gen BI, be used to attract and retain Gen Z talent in the construction industry? This question is echoed by BuildingTalk (2025), which provocatively asks, “Will AI bring younger people into construction?” This study seeks to investigate whether emerging technologies, specifically Gen AI and Gen BI, can motivate Gen Z to engage with careers in the construction sector. The following objectives guide the investigation:

1. Evaluate the Usability and Impact of Gen AI and Gen BI in Construction Workflows
    - Assess user perceptions of Gen AI’s effectiveness in automating tasks such as cost estimation and project planning.
    - Identify limitations of Gen AI in terms of accuracy and practical implementation.
    - Analyze the necessity and role of human oversight in refining AI-generated outputs.
    - Evaluate how Gen BI dashboards improve decision-making and stakeholder collaboration.

2. Investigate the Influence of Digital Tools on Career Motivation and Skills Development
    - Explore how exposure to Gen AI/BI tools influences Gen Z’s career interests in construction.
    - Assess current and projected demand for AI/BI training among students and young professionals.

- Determine the extent to which digital tools enhance retention and engagement in construction careers.

3. Propose Strategies for Industry and Education to Foster Digital Adoption
    - Identify best practices for construction firms to attract Gen Z through a technology-driven culture (e.g., purpose-driven roles, remote flexibility).
    - Recommend strategies for integrating AI/BI into construction education (e.g., hands-on labs, interdisciplinary projects).
    - Suggest methods to rebrand the construction industry using digital platforms (e.g., social media campaigns, tech showcases).

Construction Labour Gap and Gen Z's Characteristics and Work Expectations

The construction industry is among the most critical sectors worldwide. While statistics may vary, the general consensus underscores its substantial contribution to national and global economies. Domljan and Domljan (2024) report that construction accounts for 10–12% of the global economy, while McKinsey & Company (2020) estimates that construction-related expenditures comprise approximately 13% of global GDP. Looking ahead, the sector is expected to experience fundamental transformations driven by evolving market dynamics. These include the scarcity of skilled labour, sustained cost pressures linked to infrastructure and affordable housing, increasingly stringent sustainability and safety regulations, and the rising expectations of sophisticated clients and asset owners (McKinsey & Company, 2020). Chief among these challenges is the acute shortage of skilled labour, which continues to hinder contractors' ability to deliver timely and cost-effective infrastructure and housing solutions.

To address this, there is growing advocacy for greater inclusivity within the construction workforce specifically, the integration of Gen Z. Although definitions of Gen Z vary slightly, it generally includes individuals born between 1997 and 2012. This generation differs markedly from its predecessors. Gen Z are digital natives, characterized by their fluency in technology, desire for purpose-driven work, and demand for opportunities that foster continuous growth and development (Burns, 2025). Despite their enthusiasm for technology-driven industries such as communications, data suggest that Gen Z exhibits limited interest in the construction sector. A recent study by BDO Canada (2023) found that only 18% of Canadian youth expressed strong interest in construction careers, compared to 28% globally. Furthermore, 40% of Canadian respondents reported no interest at all, compared to 29% globally.

To understand this reluctance, it is important to consider the core values and preferences of Gen Z. They are the first generation to grow up entirely in the digital age, with constant access to smartphones and social media. Gen Z is highly tech-savvy, socially aware, entrepreneurial, and prefers flexible work settings. They are more engaged with short-form, visual content (e.g., TikTok, Instagram Reels) and value authenticity in brand messaging and leadership. These preferences explain why the construction sector is often perceived by Gen Z as outdated, viewed as "not tech-enough, not Instagram-able, not white-collar enough, not flexible enough, and not progressive enough" (Orbiz, 2023).

As Copsey (2024) emphasizes, Gen Z is seeking more than just a paycheque. They prioritize continuous skills development and clear, tangible pathways for career advancement. However, conventional training approaches passive PowerPoint presentations and static classroom sessions are unlikely to resonate. Instead, training and upskilling programs must be reimagined to reflect Gen Z's digital realities. AI-driven platforms offer significant potential in this regard, enabling personalized, on-demand learning experiences that cater to individual needs and learning paces.

Unfortunately, the current training landscape in the construction sector lags behind. A review of major industry training boards such as the UK's Construction Industry Training Board (CITB) and Workforce Skills Support reveals a lack of courses in emerging technology areas aligned with Gen Z's digital lifestyles. In Canada, a similar review of BuildForce and the Construction Industry Training Network found only one BIM-related course listed on the latter's website.

The gap between Gen Z's aspirations and the construction industry's offerings has not gone unnoticed. There is a growing body of literature urging the industry to design and implement training programs that reflect the expectations of this new generation (Maqbool et al., 2024). Cure (2023) contends that doing so is essential to attracting and retaining Gen Z talent. Similarly, Burns (2025) advocates for the modernization of training programs to cultivate the next generation of construction leaders.

To evaluate whether emerging technologies such as BIM, Gen AI, and Gen BI can help close this generational gap, it is critical to examine current peer-reviewed research. The subsequent sections will therefore explore the applications of these digital tools and their potential role in workforce transformation.

Career Development Theories Relevant to Gen Z and Construction Transitions

While prior sections highlight Gen Z's work expectations and the construction labour gap, career motivation and retention are best understood through established career development theories. To address this gap, this study draws primarily on Social Cognitive Career Theory (SCCT) and Career Construction Theory (CCT), supplemented by insights from protean and boundaryless career models.

Social Cognitive Career Theory (SCCT) (Lent et al., 1994) posits that career interests and persistence are shaped by the interaction of *career self-efficacy, outcome expectations*, and *perceived supports and barriers*. From an SCCT perspective, exposure to Gen AI and Gen BI tools may enhance individuals' confidence in their ability to perform construction-related tasks (self-efficacy), while also reshaping expectations about career outcomes, such as job satisfaction, flexibility, and professional growth.

Career Construction Theory (Savickas, 2005) emphasizes how individuals actively construct career meaning through adaptability, identity formation, and narrative sensemaking in response to changing labour markets. In technology-disrupted sectors such as construction, digital tools may serve as resources that support *career adaptability* by enabling exploration, experimentation, and re-imagining of professional roles.

In addition, protean and boundaryless career models (Hall, 2004; Arthur & Rousseau, 1996) are particularly relevant to Gen Z, whose career orientations are increasingly self-directed, values-driven, and less tied to traditional organizational hierarchies. These models help explain why Gen Z may respond positively to digital construction tools that signal transferable skills, cross-sector mobility, and continuous learning opportunities.

Together, these frameworks provide a theoretical lens for interpreting how Gen AI and Gen BI influence not only task performance, but also broader career development processes, including motivation, adaptability, and intentions to remain in or re-enter the construction sector.

BIM Applications in Construction

BIM is among the most recent and widely adopted technologies in the construction industry, yet significant efforts are still required to enhance its uptake across various regions and disciplines. As highlighted in the literature, BIM offers a robust digital framework that addresses numerous challenges in construction practice, including inefficiencies in design, cost control, scheduling, sustainability, and workforce productivity. A foundational application of BIM lies in 3D modelling—commonly referred to as 3D BIM—using authoring tools such as Autodesk Revit. Creating a 3D model is typically the first step in a BIM-enabled project, serving as the basis for more advanced applications. One such application is 4D BIM, which integrates time-related data into the 3D model to facilitate project scheduling and planning. Tools like Synchro and Vico enable the development of BIM-based construction programmes that incorporate risk variables, allowing for dynamic risk visualization and proactive mitigation (Musa et al., 2015; Musa et al., 2016).

Cost estimation represents another key dimension of BIM, known as 5D BIM. It involves the generation of cost plans linked to design elements through automated quantity takeoffs, typically aligned with standards such as the UK's New Rules of Measurement (NRM). This integration enables real-time cost tracking as designs evolve, leading to improved budgetary control and decision-making. Furthermore, the application of semantic web technologies and ontologies within BIM enhances consistency reduces human error and enables simultaneous evaluation of design alternatives in terms of cost and schedule (Abanda et al., 2015; Abanda et

al., 2017a). BIM is also extensively used to address sustainability challenges, typically referred to as 6D BIM. It supports lifecycle analysis, energy simulation, and carbon footprint assessment by integrating BIM models with sustainability databases like the Inventory of Carbon and Energy (ICE). Tools such as Green Building Studio allow professionals to test the environmental impacts of different design scenarios, from material selection to building orientation (Abanda & Byers, 2016; Abanda et al., 2017b). Moreover, 6D BIM enables post-construction applications like asset management and predictive maintenance planning, ensuring long-term performance optimization (Abanda et al., 2025).

Beyond these technical domains, BIM plays a significant role in enhancing labour productivity and workforce performance. While fewer in number, existing studies collectively underscore BIM's potential in reshaping organizational structures and workforce strategies. Wu and Issa (2013) reveal that BIM implementation necessitates a strategic overhaul of talent acquisition practices, emphasizing job profiling, skills gap analysis, and industry-academia collaboration. Despite the growing demand for roles such as BIM Coordinators and Managers, the industry still lacks standardized job descriptions and competency frameworks. Case studies from Patna and Malaysia further demonstrate that BIM adoption leads to improved labour productivity by minimizing rework, improving site supervision, and fostering better coordination (Mishra & Sakale, 2025; Hashim et al., 2024). These findings align with post-pandemic strategies that advocate for digital transformation, emphasizing BIM and related technologies such as AI and wearable devices to address labour shortages and safety concerns (Nwaogbe et al., 2025).

Additionally, social media has emerged as a complementary tool to support BIM workflows. Platforms like X (formerly Twitter) and YouTube facilitate informal knowledge exchange, professional networking, and real-time collaboration through hashtags, video tutorials, and interactive comment sections. Social media aids in closing BIM-related knowledge gaps and encourages stakeholder participation, especially among fragmented project teams or non-technical actors (Durmus et al., 2023; Hodorog et al., 2019). Its integration into BIM processes can enhance communication, foster innovation, and build a more inclusive and collaborative construction environment.

Gen AI Applications in Construction

Gen AI is increasingly being applied across multiple aspects of the construction industry, offering significant improvements in efficiency, creativity, sustainability, and decision-making. In civil and structural engineering, Gen AI tools like ChatGPT and Bard have been integrated into workflows to optimize design processes. These applications include design generation, structural simulation interpretation, material research, and the development of seismic-resistant infrastructure. Engineers are using Gen AI to explore diverse design options, automate documentation, and support collaborative project management, ultimately producing safer, more efficient, and cost-effective structures (Rane, 2024).

In transportation engineering, Gen AI has enabled smarter planning and operation of systems. It supports traffic management through real-time data analysis, optimizes public transport schedules using user feedback, and aids in the design of infrastructure with reduced environmental impact. The technology also contributes to the development of autonomous vehicles by simulating human-vehicle interactions, enhancing user safety and acceptance. Furthermore, it supports predictive maintenance and supply chain logistics, leading to more responsive and sustainable transportation systems (Rane, 2024).

Environmental and water resources engineering has also benefited from Gen AI applications. In climate science, AI models analyze vast environmental datasets to support climate modelling, scenario planning, and emissions forecasting. In water resource management, Gen AI tools are used to simulate hydrological systems, optimize water infrastructure, and predict water quality. Additionally, they support sustainable waste management, enabling material recycling and circular economy practices, while also aiding in the development and evaluation of environmental policies (Rane, 2024).

In architectural design, Gen AI contributes significantly to early-phase design visualization. By generating photorealistic renderings of building façades based on textual prompts or location-specific identity models, Gen AI enhances communication between architects, clients, and communities. This is particularly useful in remodelling projects and urban planning, where visual representations help capture the aesthetic

and cultural context of a location. These tools reduce the time and resources required to produce high-quality design alternatives, allowing for quicker iterations and broader stakeholder engagement (Rane et al., 2023).

Gen AI also plays a critical role in advancing sustainability in construction. Through integration with tools such as Digital Twins and simulation platforms, Gen AI can optimize energy use, reduce material waste, and support climate-resilient design. It helps identify low-carbon construction methods and encourages the use of renewable energy sources. Moreover, AI-driven monitoring systems improve site safety and efficiency by tracking performance in real time and alerting stakeholders to potential risks.

From a business and innovation standpoint, Gen AI enhances the innovation performance of construction enterprises by supporting knowledge-based dynamic capabilities (KDC) and enterprise AI capabilities (EAIC). It allows firms to rapidly prototype new ideas, access and integrate large volumes of technical knowledge, and develop more agile strategies. This leads to improved adaptability, creativity, and competitiveness in a rapidly digitalizing market. In project management, Gen AI tools like ChatGPT streamline the scheduling and planning of construction projects. They can generate logical sequences of tasks, assign resources, and suggest adjustments based on real-time feedback. These capabilities reduce the time spent on administrative work and improve communication across project teams. In simple to moderately complex projects, Gen AI provides rapid, reliable support that enhances overall project delivery.

Lastly, generative design (GD) tools powered by AI are transforming how architects and engineers approach design. By embedding performance, cost, and sustainability parameters into the design process, GD enables the creation of optimized design alternatives within BIM platforms. This integration allows stakeholders to visualize and evaluate options comprehensively, leading to smarter, data-informed decisions and a more sustainable built environment (Chew et al., 2024).

Implementation Pathways for Integrating GenAI in Construction: Systems, Processes, and Replicable Themes. Although the preceding section summarizes best-practice applications (e.g., design support, documentation, planning, sustainability analysis, and generative design), construction value is mostly realized when GenAI is embedded into organizational systems and delivery processes rather than used as isolated experiments. Recent AEC-focused reviews emphasize that implementation barriers cluster around data readiness, workflow integration, validation/assurance, governance, and skills and argue for structured implementation pathways that move from pilots to scalable adoption (Taiwo et al., 2025).

Evidence from AEC literature indicates that repeatable integration typically uses four mutually reinforcing mechanisms:

1. BIM–AI information backbone (data and interoperability): Construction organizations with stronger BIM and information management maturity can integrate AI/Gen AI more effectively because models, documents, schedules, and cost data become accessible for retrieval, traceability, and reuse. BIM-AI integration research increasingly frames implementation as a layered system (data layer → analytics layer → application layer), where information structures and interoperability determine whether AI outputs can be trusted and reused across projects (Alves et al., 2025).

2. Workflow integration via stage-gates (human verification and sign-off): Studies of LLM use in construction planning and management show that LLM outputs become practically usable when embedded into formal review and approval gates, for example, AI-drafted schedules, work breakdown structure (WBS), method statements, or risk registers are treated as “draft artefacts” that require discipline checks and benchmarking before entering contractual deliverables (Erfani and Mansouris., 2026). In schedule-oriented contexts, research also shows that LLM-generated or enhanced schedule data benefits from structured evaluation rubrics and domain checks, supporting a repeatable “generate → evaluate → correct” loop rather than one-shot automation (Singh and Hsieh, 2026).

3. Organizational implementation frameworks (capabilities & governance): Construction digital transformation research indicates that adoption is accelerated when organizations treat AI implementation as a capability-building programme, linking tools to roles, resourcing, and

routines rather than as ad hoc experimentation. For example, enterprise-level analyses of Gen AI in construction report that value is mediated through knowledge integration and knowledge absorption capabilities, implying that organizational learning processes are central to diffusion beyond early adopters (Shi et al., 2025). In parallel, Construction 4.0 and AI implementation frameworks grounded in institutional/resource-based perspectives emphasize leadership commitment, resource readiness, and institutional pressures as key levers shaping organization-wide adoption (Zhang and Wang, 2026).

4. Pilot-to-scale diffusion using adoption theory lenses: Construction adoption literature (often built around BIM) shows that diffusion is influenced by technology factors (e.g., relative advantage and complexity), organizational factors (e.g., readiness, training, and top management support), and environmental factors (e.g., clients, regulation, and competition). Scoping and conceptual studies on BIM diffusion and implementation in firms show that pilot projects including demonstrable performance gains and capability development are repeatable mechanisms for scaling digital innovations. More recent empirical work applying Unified Theory of Acceptance and Use of Technology 2/Technology-Organization-Environment (UTAUT2/TOE) to AI adoption by design engineers similarly finds that organizational readiness and perceived usefulness strongly condition uptake, reinforcing the need for structured implementation programmes rather than purely technical rollouts (Katebi & Tehrani, 2025).

The aforementioned mechanisms represent process patterns rather than one-off technological solutions and are therefore replicable across construction contexts. The AEC literature increasingly converges on four core implementation themes: (a) BIM-anchored information management to ensure traceable and reliable inputs, (b) workflow embedding with verification and approval gates to manage risk and liability, (c) capability development and knowledge management to extend adoption beyond individual champions, and (d) pilot-to-scale diffusion strategies aligned with organizational and environmental drivers (Taiwo et al., 2025).

This implementation-oriented framing directly advances the objectives of the present study by translating the preceding section catalogue of Gen AI best practices into an adoption pathway that can be systematically evaluated. Specifically, it enables analysis of (a) how Gen AI and Gen BI reshape workflows and decision-making, (b) how skills development and structured learning mechanisms influence Gen Z attraction and retention, and (c) which organizational levers facilitate scaling beyond pilot projects. In doing so, it provides a clear bridge from "what Gen AI can do" to "how firms institutionalize Gen AI and build workforce capability," consistent with research identifying capability development and knowledge integration as key mediators of Gen AI value in construction enterprises (Shi et al., 2025).

Gen BI in Construction Practice

Traditionally, model authoring and analysis tools have been the primary means of searching and querying information within BIM models. However, these tools often present significant challenges for professionals with limited BIM expertise. Their interfaces are typically not user-friendly, and they require a steep learning curve to operate effectively. As a result, there has been a growing interest in using data analytics tools within the construction industry, particularly in integrating these tools with BIM platforms (Abanda, 2022).

This shift has sparked a surge in research on the application of Business Intelligence (BI) in construction practice. For instance, Abanda (2022) proposed a reverse engineering approach for integrating digital construction technologies specifically BIM and Microsoft tools to simplify the management of increasingly complex and heterogeneous data associated with smart cities. Similarly, Harode, Ensafi and Thabet (2022) introduced the use of Power BI dashboards to enhance access to and visualization of lifecycle data embedded within BIM models. Valinejadshoubi, Moselhi, Iordanova, Valdivieso, and Bagchi (2024) developed an integrated framework that enables the automatic extraction and visualization of construction quantities directly from BIM models. Meanwhile, Rodrigues, Alves, and Matos (2022) proposed a methodology for managing construction data through the combined use of BIM and BI analysis tools. Additionally, Al-

Sulaiti, Mansour, Al-Yafei, Aseel, Kucukvar, and Onat (2021) designed a data analytics and visualization system that supports effective project progress reporting and performance monitoring, utilizing an Entity Relationship Diagram implemented in Microsoft Power BI for analytical and visualization purposes.

Literature Findings

Gaps in Integration of BIM, Gen AI and Gen BI in Education Curriculum

Although BIM has been utilized for some time, research has predominantly emphasized its practical applications in the construction industry. Key areas of focus include sustainability (Abanda et al., 2014; Abanda et al., 2017a), cost estimation (Abanda et al., 2017b), and other technical use cases. From a pedagogical standpoint, some research has explored the integration of BIM into academic programs. Naddeh, Maya, Mahfouz, and Youssef (2025), for instance, investigated barriers to BIM adoption in architectural curricula at Tartus University, identifying institutional resistance due to weak industry-academia collaboration, outdated teaching approaches, limited resources, and insufficient faculty expertise. Papuraj, Izadyar, and Vrcelj (2025) similarly reported systemic challenges, including inconsistent curricula and a lack of interdisciplinary collaboration opportunities, which hinder students' development of consistent BIM competencies. In contrast, studies such as Abouelkhier, Shafiq, Rauf, and Alsheikh (2024) demonstrated how immersive 4D-BIM-based virtual reality (VR) tools could enhance student learning in construction project management. During the COVID-19 pandemic, Abanda, Almukhtar, and Austin (2025) examined the virtual delivery of BIM education and found that well-designed remote instruction could sustain engagement and even boost motivation among learners. However, while such studies address aspects of teaching and learning, they do not directly explore BIM's role in motivating Gen Z students toward construction careers.

Similarly, research on Gen AI and Gen BI has largely focused on their practical implementation, emphasizing *how* to apply these technologies in practice rather than *how* to integrate them into educational curricula. For example, Chew, Wong, Tang, Yip, and Maul (2024) demonstrated Gen AI's role in visualizing and evaluating design options for sustainable construction. Rane (2024) highlighted its potential to promote circular economy practices and shape environmental policymaking. In the context of Gen BI, Harode, Ensafi, and Thabet (2022) emphasized the benefits of Power BI dashboards in improving access to lifecycle data embedded in BIM models, while Abanda (2022) illustrated how Gen BI can simplify the management of complex smart city data.

Despite these advances, literature exploring the pedagogical integration of Gen AI and Gen BI, particularly within construction-related disciplines remains sparse. Some cross-disciplinary studies, however, shed light on their broader educational implications. Alasadi and Baiz (2023) examined Gen AI's transformative role in learning environments. Meli, Taouki, and Pantazatos (2024) advocated increased Gen AI literacy among educators and raised awareness of ethical implications in classroom contexts. Întorsureanu, Oprea, Bâra, and Vespan (2025) conducted a bibliometric analysis of over 3,500 academic publications to map the educational uses of Gen AI, while Khlaif, Alkouk, Salama, and Abu Eideh (2025) developed a framework for rethinking assessments in the Gen AI era. On the Gen BI side, Sorour and Atkins (2024) explored the integration of AI transformers with BI tools to support the monitoring of learning outcomes in higher education.

While these contributions highlight educational opportunities, most are either conceptual or not specific to construction disciplines. Moreover, very few studies have investigated how Gen AI and Gen BI might serve as motivational tools to attract Gen Z students to the construction industry. Exceptions include Abanda, Almukhtar, and Austin (2025), who observed improved student engagement following virtual BIM instruction, and Khlaif, Alkouk, Salama, and Abu Eideh (2025), who identified pedagogical adaptations spurred by Gen AI innovations. However, these findings were part of broader inquiries and not focused specifically on student motivation.

Research Focus

In summary, the existing body of literature primarily concentrates on the technical and professional applications of BIM, Gen AI, and Gen BI, with limited emphasis on their educational integration, particularly in construction-related disciplines. An even more critical gap exists in understanding how these technologies might actively motivate Gen Z students to enrol in construction-related courses, join the construction profession, or pursue related career pathways.

Given this dual gap, the present study will focus specifically on the latter issue: how Gen AI and Gen BI can be leveraged to actively engage and motivate Gen Z students toward the construction sector. This focus is intentional and strategic, before exploring how Gen AI and Gen BI can be embedded into higher education curricula, it is essential to first determine whether their inclusion can genuinely stimulate interest and motivation among Gen Z learners. Establishing this foundation will ensure that any subsequent curriculum integration efforts are both relevant and impactful.

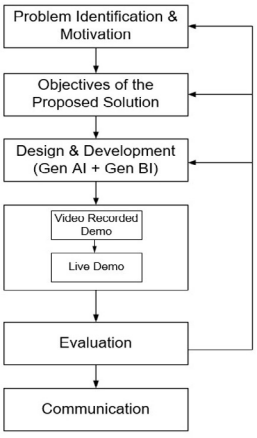
Accordingly, this study does not aim to explain technology adoption per se, nor does it claim to measure long-term career development outcomes. Rather, it examines how exposure to Gen AI and Gen BI functions as a career-relevant stimulus that shapes early career cognitions, including self-efficacy, outcome expectations, and perceived career fit. The paper therefore contributes to career development literature by illuminating how digital experiences intersect with career meaning-making during school-to-work and early-career transitions, rather than by advancing models of organizational technology adoption.

Method

According to Peffers, Tuunanen, Rothenberger, and Chatterjee (2008), the design science research methodology consists of six key stages: (1) problem identification, (2) definition of solution objectives, (3) design and development, (4) demonstration, (5) evaluation, and (6) communication (See Figure 1). The problem identification stage involves recognizing existing challenges and understanding their implications, thereby establishing a foundation for the research. This leads to the formulation of objectives aimed at addressing the identified problems. Next, the design and development phase involve creating a solution, in this case, an artefact comprising both graphical and non-graphical data that is intended to meet the specified objectives. The demonstration and evaluation phases ensure that the artefact functions as intended. The artefact is validated and rigorously tested to confirm that it aligns with the original objectives and provides measurable improvements over existing solutions. Throughout the process, data is collected and analyzed, not only to verify success but also to identify limitations, which can inform further refinements. Finally, the communication phase involves sharing the outcomes with relevant academic and professional audiences, ensuring that the knowledge generated can be tested, replicated, and applied more broadly.

Figure 1

Research Method Framework



Problem Identification and Motivation

Designing and estimating the cost of a building remains a time-intensive and fragmented process. Traditionally, the design must be completed manually or using CAD tools before it is transferred to a cost estimator, who calculates costs either manually or using tools such as Microsoft Excel. This linear, siloed approach is slow, labour-intensive, and prone to errors.

While BIM has streamlined some aspects of this workflow through 4D (time) and 5D (cost) integration, it still presents notable limitations. A typical BIM-based process begins with creating the 3D model using authoring tools such as Autodesk Revit. The model is then exported to a 5D BIM tool (e.g., iTWO CostX) for cost computation. This workflow presents several challenges:

- Client-designer communication: The process heavily relies on clients providing accurate requirements to architects. Due to clients' non-technical backgrounds, these requirements are often vague or incomplete, resulting in multiple iterations before a satisfactory design is achieved.
- Expertise shortage: BIM authoring tools and 5D BIM platforms require specialized knowledge, which is scarce in many organizations.
- Scalability issues: For multiple projects, each design must be completed and exported individually making batch processing for cost estimation time-consuming and inefficient.
- Comparative analysis limitations: Once models are developed, comparing them with similar past projects is difficult due to the lack of accessible data and standardization in assumptions and conditions.

Similarly, project scheduling (4D BIM) has traditionally relied on tools like MS Project or Primavera, often integrated manually with BIM models. To produce a 4D BIM model, the 3D design and project schedule must be developed separately and manually linked. This requires detailed technical expertise and results in a rigid model that is difficult to isolate for individual component analysis or modification. The end product is visually impressive but lacks flexibility for dynamic, scenario-based planning.

Objectives of the Solution

This study has two primary objectives:

- Automated design and estimation: To demonstrate how GenAI can be used to automate the design and cost estimation of construction projects, streamlining the process while reducing manual effort. This will serve as a foundation for investigating how such tools might increase Gen Z's engagement with construction technologies.
- Isolated and interactive 4D/5D models: To address the limitations of current 4D BIM models, this study also aims to develop a framework that allows for the isolation and independent analysis of specific building components, time-based activities, and cost data within an integrated model.

Results

Case 1: Design and Development Using Gen AI

The proposed solution addresses the identified challenges by leveraging Gen AI, implemented through ChatGPT, to automate the design and estimation process. The workflow includes the following steps:

- A well-structured prompt is submitted to ChatGPT to generate a conceptual design for a typical 3-bedroom house in the UK.
- A subsequent prompt refines the output to produce detailed 2D architectural plans.
- A final prompt is used to generate a comprehensive bill of quantities, suitable for use in competitive tender submissions.

It should be noted that outputs generated by ChatGPT are probabilistic rather than deterministic.

Consequently, the same prompt submitted by two different users, or by the same user on different days, may result in outputs that are similar in structure and intent but not identical in wording, assumptions, or numerical values. Variations may arise due to differences in prior conversational context, user-level personalization settings, and periodic system or model updates. For this reason, the outputs presented in this study are not intended to demonstrate exact reproducibility, but rather to illustrate the functional capability of Gen AI in supporting early-stage construction design, planning, and costing workflows.

Where user-specific personalization settings are enabled, ChatGPT may generate responses that are more consistent in tone, structure, or prioritization for a given user across sessions. However, such personalization does not guarantee identical outputs and may further differentiate results between users submitting the same prompt. As such, personalization enhances contextual relevance rather than output uniformity.

This AI-driven process eliminates the need for extensive client–designer back-and-forth. Clients can express their needs directly using natural language, which ChatGPT interprets and transforms into technical outputs. Moreover, unlike traditional BIM processes that require repeated modelling for multiple scenarios, prompts can be adapted once and reused, dramatically reducing development time. This approach partially assumes that clients are able to communicate their requirements using natural language; however, it does not presume perfect clarity or completeness of input. Where client requirements are vague, incomplete, or inconsistent, iterative clarification remains necessary and professional judgment is required to validate and refine AI-generated outputs. The proposed workflow therefore reduces, but does not eliminate, traditional requirement elicitation processes.

Finally, prompts can also be designed to retrieve data from similar past projects, enabling real-time benchmarking and comparative analysis, something that traditional BIM tools struggle to support.

In this study, four text prompts were utilized with DALL-E, an advanced AI system developed by OpenAI that generates images from textual descriptions within the ChatGPT environment. DALL-E merges natural language understanding with image generation capabilities, enabling users to create original, highly detailed visuals based solely on written input. The four prompts, used sequentially, are as follows:

1. Create one 3D model of a standard UK-style residential house as an image.
2. Generate the 2D floor plan with a blue floor colour.
3. Generate the cost estimate table with columns for WBS (main and sub-sections), Units, Quantity, Unit Rate, and Total Cost.
4. Create a Gantt chart to outline the work plan.

The selected prompts were intentionally designed to reflect a typical early-stage construction workflow, encompassing conceptual visualization, plan representation, cost estimation, and construction scheduling. The wording of each prompt was structured to constrain output type, format, and level of detail (e.g., specification of table columns or visual characteristics), thereby aligning the generated outputs with established construction practice. Prompt phrasing is recognized as a significant factor influencing Gen AI outputs; even minor changes in wording may affect assumptions, formatting, and scope. Accordingly, the prompts are treated as controlled inputs for methodological demonstration rather than as an exhaustive exploration of prompt engineering possibilities. The outputs from the implementation or editing of these prompts in DALL-E is presented in Figure 2.

Case 2: 4D/5D BIM with Revit and Power BI

In the second case, a BIM model is developed in Autodesk Revit and then exported to Power BI for enhanced 4D and 5D visualization. In this setup:

- The geometric model (3D) is linked to scheduling and cost data in Power BI.
- Dashboards are developed to interact with the BIM model, enabling dynamic exploration of construction sequences and cost breakdowns.
- Users can isolate and analyze specific components, making the model more versatile than traditional static BIM outputs.

As illustrated in Figure 3, the 4D and 5D BIM dimensions are integrated with the 3D model within Power BI. This integration enables dynamic interaction between various parameters such as time, cost, and geometry, allowing users to visualize and analyze how changes in one dimension affect the others in real

time. This integration of Revit with Power BI bridges the gap between design and data analytics, creating an interactive planning and estimation environment.

Figure 2

Design and Development of Cost and Building Project Planning in ChatGBT

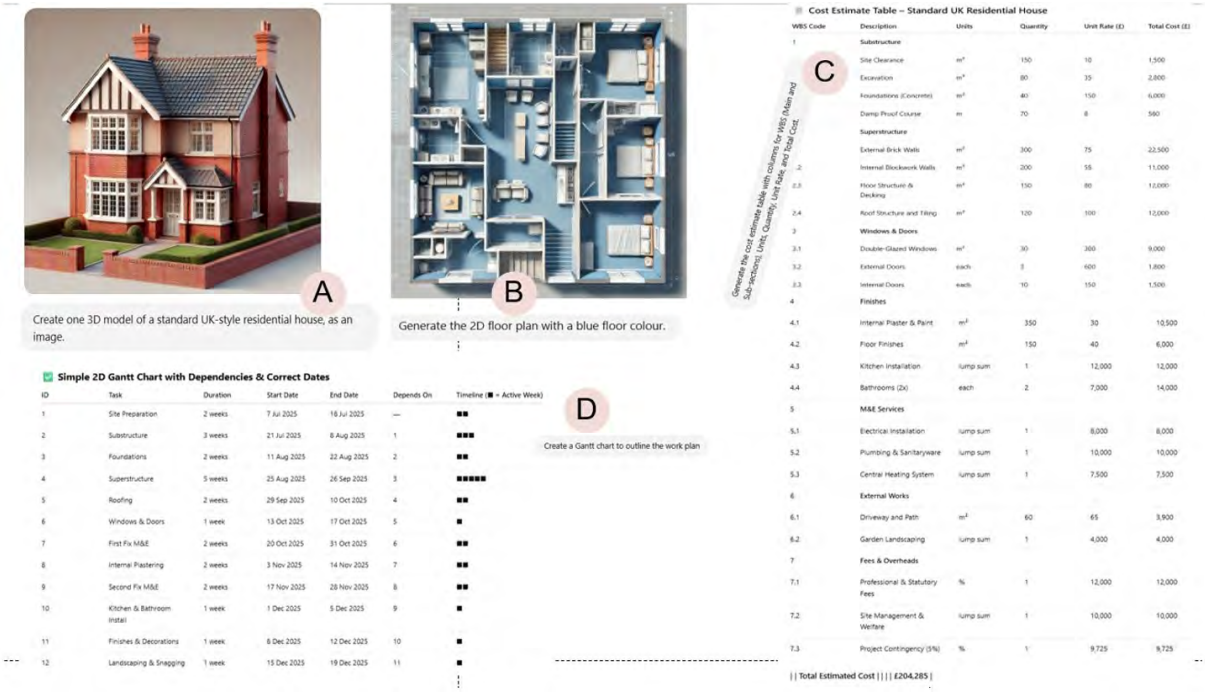
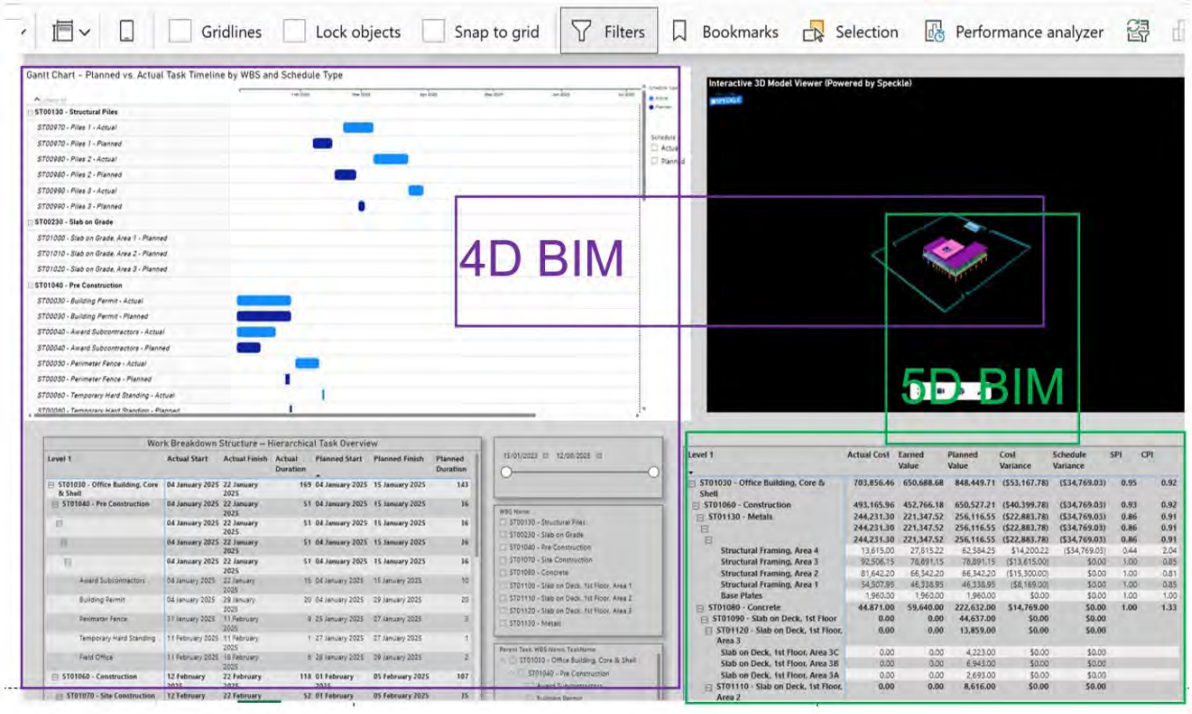


Figure 3

Design and development of cost and building project planning in Power BI (Source: Author's)



Demonstration of Both Cases

The demonstration of the ChatGPT-based workflow was implemented and documented through a step-by-step video and live demo. Due to the novelty of the process, video materials were shared with prospective interviewees to enable thorough review prior to interviews. The demonstration followed a two-phase approach:

- Pre-interview demonstration: Participants were provided with a recorded demonstration showing the use of ChatGPT for 3D design generation, 2D plan development, and cost estimation. Similarly, they were provided with a recorded demonstration of 4D and 5D BIM in Power BI to watch before the second, online live demonstration.
- Live demonstration: Immediately before the interview, a live walkthrough of the process was conducted to reinforce understanding and clarify any uncertainties.

A total of eleven participants were purposively selected for the qualitative interviews. The question of "how many interviews are enough" remains a persistent and debated issue among qualitative researchers in the social sciences (Bekele & Ago, 2022). Similarly, the adequacy of the eleven participants chosen for this study may be questioned. As noted by Bekele and Ago (2022), there is no universally agreed-upon minimum sample size for qualitative interviews. They argue that the appropriate number depends on various factors, including the point of data saturation and the homogeneity or heterogeneity of the sample. Nonetheless, some scholars have provided empirical guidance. Guest et al. (2006) suggest that between 6 and 12 interviews may be sufficient for a single qualitative study, especially when the sample is relatively homogenous. Hennink and Kaiser (2022) also found that saturation can often be reached within a narrow range, typically between nine and 17 individual interviews, or four to eight focus group discussions, particularly in studies involving homogenous populations and narrowly defined research objectives.

While the purposive sampling strategy enabled in-depth exploration of perceptions among a digitally literate cohort, the findings are not intended to be statistically generalizable to the entire construction industry. Instead, they provide analytical insights into attitudes and perceived impacts of GenAI within a specific context. Further studies involving a broader range of construction professionals, organizational types, and geographic settings are recommended to assess the transferability of these findings.

In this study, the sample of eleven participants can be considered relatively homogenous. Five participants were millennials and six were Gen Zs. Ten of the eleven had just completed an MSc in BIM and Management from the same university (hereafter referred to as X University). All ten had studied BIM and Power BI applications and completed at least two coursework assignments related to these technologies. While none had formally completed assignments in GenAI, all had practical experience using LLMs, such as ChatGPT. Notably, three had developed ChatGPT-based tools as part of their MSc dissertations. Of these ten, five were employed full-time in UK-based construction firms, while the other five were actively seeking employment. The eleventh participant, slightly more senior, was a second-year PhD candidate with an MSc in Construction Project Management and five years of industry experience as a BIM manager. While the purposive sampling strategy enabled in-depth exploration of perceptions among a digitally fluent cohort, the findings are not intended to be statistically generalizable to the construction industry as a whole. Instead, the study offers analytical insights into how Gen AI/Gen BI exposure may shape perceptions and early career-related cognitions within a specific subgroup of emerging professionals. Accordingly, claims are bounded to this context, and transferability to other segments of the workforce (e.g., apprenticeship pathways, non-digitalized firms, or regions with lower BIM maturity) should be treated as an empirical question requiring further study.

Interpretive Scope and Participant Pre-Exposure

Because most participants had substantial prior exposure to BIM, Power BI and AI-enabled workflows (including prior coursework and, for several, building ChatGPT-based tools), their perceptions are likely shaped by this pre-exposure. Prior experience can influence perceived usefulness and ease of use and can also

shape which risks users foreground, meaning themes reported here may reflect an "early-adopter" perspective rather than the views of Gen Z broadly (Davis, 1989; Venkatesh et al., 2003). Accordingly, references in this paper to "Gen Z" should be read as referring to digitally fluent emerging professionals in construction-related graduate education.

Transferability to Entry-Level and Apprenticeship Populations

The findings are therefore most transferable to emerging professionals (i.e., graduate trainees and early-career roles) and not necessarily to entry-level, apprenticeship, or earlier-stage learners whose training environments, task contexts, and access to digital tools can differ markedly (Lincoln & Guba, 1985). In less digitally privileged contexts, limited access to devices, licensed software and structured instruction may alter both the perceived benefits and barriers of Gen AI/Gen BI, consistent with evidence on digital inequality and the "second-level digital divide" (Hargittai, 2010; van Dijk, 2020).

Implications and Future Work

Readers should therefore interpret reported motivational effects as indicative of how Gen AI/Gen BI may be perceived by digitally literate, construction-focused graduates. Future research should extend sampling to: (a) apprenticeship and college-level trades programmes, (b) earlier-stage learners, and (c) organizations with lower BIM maturity, to assess whether similar motivation and retention mechanisms hold under different conditions (Patton, 2015; Succar, 2009).

Given the similarities in academic background, technological exposure, and professional orientation, the sample can reasonably be considered homogenous. Thus, the choice of eleven interviewees is justified and aligns well with recommendations from Guest, Bunce, and Johnson (2006) and Hennink and Kaiser (2022).

Evaluation of Both Cases. An evaluation was conducted immediately following the live demonstration. Participants were invited to share their perceptions of the workflow's usability, accuracy, and potential to improve design and project planning estimation processes in Gen AI and Gen BI. The approach building on recorded videos and just after a life demonstration ensured that feedback was grounded in a clear and recent understanding of the workflow, thereby enhancing the reliability and validity of the responses.

Communication of Findings. This manuscript serves as the primary vehicle for disseminating the findings of this study. It aims to inform both academic researchers and industry professionals about the potential of GenAI and BI tools to transform construction project planning and cost estimation while also exploring their role in inspiring the next generation of construction professionals.

Methodological Considerations and Limitations. This study is subject to several limitations First, GenAI outputs may vary due to non-deterministic model behaviour and system updates. Second, participant responses may reflect novelty effects associated with emerging technologies. Third, the relatively homogenous participant profile limits direct transferability to the wider construction industry. Despite these limitations, the study provides valuable exploratory insights into the perceived role of Gen AI and Gen BI in contemporary construction practice. Finally, the small and relatively homogenous sample limits generalizability; therefore, findings should be interpreted as exploratory and mechanism-oriented, serving as a foundation for subsequent studies with broader and more heterogeneous industry populations.

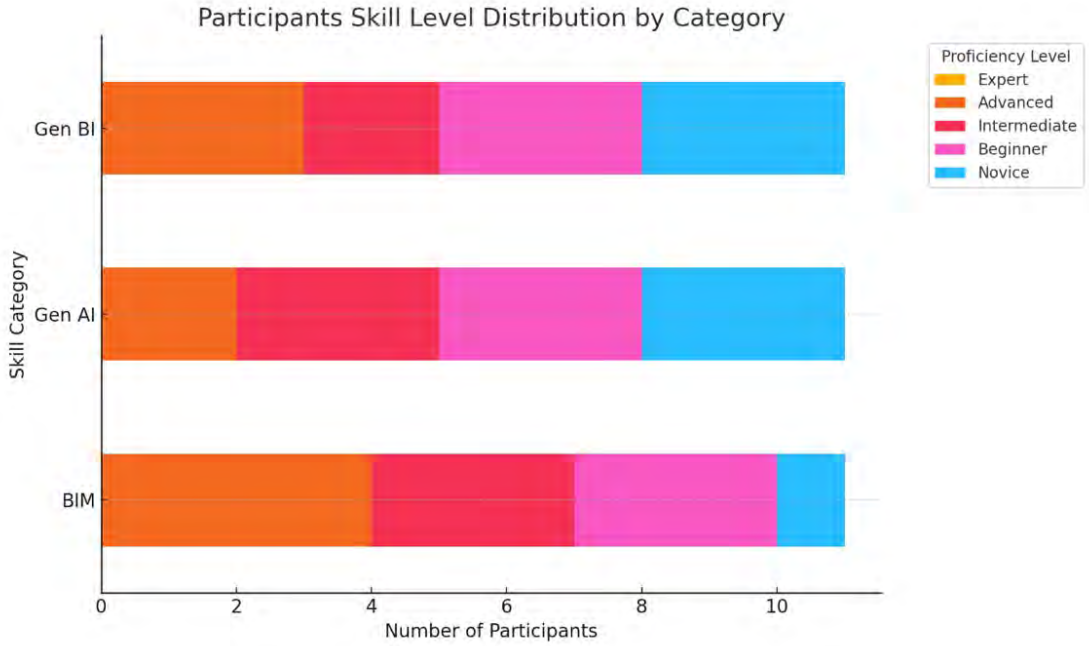
Discussion

As discussed in the Demonstration section, the eleven interviewees constituted a relatively homogenous group. Ten of them had recently completed an MSc in BIM and Management at the same university, while the eleventh participant was pursuing a PhD in Digital Twins at the same institution. Although his MSc was in Construction Project Management from a different university, he brought five years of industry experience

as a BIM manager, which further contributed to the group's overall relevance and coherence. The level of experience of the participants in BIM, Gen AI and Gen BI are presented in Figure 4.

Figure 4

Skill Levels of Interviewees



Despite their shared academic background and having completed coursework in both BIM and Gen BI, the participants tended to be conservative in their self-assessment of skill levels. As illustrated in Figure 4, none of them identified as experts. When probed further, two interviewees explained that, in their view, an "expert" is someone with extensive, hands-on industry experience in a specific domain over several years. According to the data shown in Figure 4, only one participant considered themselves a novice in BIM, while three identified as novices in Gen AI and Gen BI. This cautious self-evaluation reflects a level of humility and realism, which enhances the credibility and trustworthiness of their responses. A comprehensive breakdown of the analysis of their responses is presented in the ensuing section.

The Usability and Impact of Gen AI and Gen BI in Construction Workflows

This study examined the practical applications and perceived value of Gen AI and Gen BI tools in construction workflows, specifically focusing on their implementation in cost planning (5D BIM) and project planning (4D BIM) through ChatGPT and Power BI demonstrations. The findings reveal three key dimensions of user experience and technological impact.

Initial Reactions to Gen AI in Construction Planning

Participants reported overwhelmingly positive first impressions of Gen AI's capabilities in handling complex construction tasks. Nine of the eleven interviewees described the demonstrations as "impressive" or "amazing," particularly noting the speed and simplicity of generating cost estimates and project plans through simple prompts. Interviewee 5 marvelled at the ability to produce comprehensive outputs, including 3D models, 2D plans, and cost estimations from a single input, while Interviewee 6 emphasized the dramatic time savings compared to traditional methods.

The technology was widely perceived as a valuable support tool, with eight participants characterizing it as a "smart assistant" or "starting point." Participant 9 noted its particular usefulness for early-stage planning and less experienced professionals, where perfect accuracy is less critical. However, this enthusiasm was tempered by significant concerns about practical implementation. Seven participants questioned the absolute accuracy of outputs, with Interviewee 5 arguing that its accuracy was around 30%, emphasizing the need for training with real-world data. This aligns with a study by Aladağ (2023) that ChatGPT was less accurate in identifying construction risk.

All the 11 interviewees revealed four critical limitations affecting Gen AI's reliability:

- Need for human verification of automated outputs: With respect to the comparison between AI-generated (projected) outputs and real-world (actual) construction results, participants noted that the demonstrations provided indicative rather than validated outcomes. While Gen AI outputs were perceived as directionally plausible and useful for early-stage planning, cost approximation, and scenario exploration, interviewees emphasized that these results had not been benchmarked against completed projects or post-construction data. As such, the AI-generated outputs were understood as conceptual and exploratory rather than predictive or contractually reliable. This limitation highlights the need for future research that systematically compares Gen AI-assisted estimates and schedules with actual project performance data across multiple case studies.
- Inability to account for real-world complexities like lead times and site conditions.
- Potential to generate misleading information without proper oversight: Several participants further cautioned against over-reliance on Gen AI outputs, particularly given the technology's susceptibility to hallucinations, oversimplifications, and contextually inappropriate assumptions. Interviewees emphasized that while Gen AI can rapidly generate plausible construction-related outputs, these outputs cannot be treated as authoritative without professional validation. This reinforces the continued necessity of human oversight and domain expertise to interpret, verify, and contextualize AI-generated results, especially in safety-critical and cost-sensitive construction decision-making. Participants therefore viewed Gen AI not as a replacement for professional judgement, but as an augmentative tool whose value depends on informed human control.
- Data dependency—outputs heavily reliant on input quality ("garbage in, garbage out"): This limitation highlights a critical dependency between Gen AI performance and the quality, structure, and contextual richness of user prompts. While participants acknowledged the efficiency gains offered by Gen AI, they consistently emphasized that poorly defined or incomplete inputs could lead to inaccurate, misleading, or oversimplified outputs. This finding underscores a key reliability constraint of Gen AI in construction workflows and indicates a need for further empirical investigation into prompt engineering standards, domain-specific training datasets, and validation mechanisms. Future research should examine how structured prompting frameworks and hybrid human–AI verification models can mitigate these risks in real-world construction contexts.

In addition to interviewees' factors that affect reliability, updates to GenAI systems may influence response patterns over time. In this study, reliability is therefore interpreted at the level of task performance, namely, the model's continued ability to generate concept designs, planning artefacts, cost structures, and schedules, rather than at the level of exact textual or numerical equivalence across sessions.

Despite these limitations, participants reported a transformed perception of traditional construction tasks. Specifically, tasks such as cost estimation, scheduling, and sequencing, previously perceived as manual, time-intensive, and cognitively demanding were reframed as higher-level analytical and decision-support activities when assisted by Gen AI. Participants noted that automation reduced repetitive effort, allowing greater focus on interpretation, scenario evaluation, and strategic judgement. This shift altered how participants valued these tasks, positioning them as intellectually engaging rather than operationally burdensome. Eight interviewees described cost estimation and sequencing as significantly easier and less tedious when assisted by AI, allowing professionals to focus on higher-value decision-making rather than manual calculations.

The Transformative Potential of Gen BI in BIM Implementation

The integration of BIM data with Gen BI tools emerged as particularly impactful, with nine of eleven participants reporting enhanced clarity in project planning and cost management. The visualization capabilities of Power BI were universally praised for transforming complex data into accessible, interactive formats. These findings are consistent with the recent study by Mingsamorn and Singhuang (2024), which demonstrated that Power BI's interactive dashboards are not only user-friendly but also significantly enhance users' ability to comprehend and interpret complex project information. One of the interviewees characterized these tools as "empowering exploratory instruments," which captured the general sentiment. Key features that drove user engagement included:

- Dynamic linking between 3D models and dashboard data.
- Advanced scenario simulation and predictive analytics.
- Intuitive filtering and data slicing capabilities.
- Real-time KPI tracking and visualization.
- Efficient resource management interfaces.

The unanimous agreement on improved decision-making accessibility was particularly noteworthy. Professionals at all technical levels reported benefits, with non-technical stakeholders especially appreciating the ability to understand project status visually rather than through traditional reports. Interviewee 9 and Interviewee 2 highlighted the tools' value in improving meeting efficiency and team coordination.

The Professional Impact: Empowerment vs. Displacement Concerns

The study revealed a strong consensus (eight of eleven participants) that these technologies are fundamentally empowering for construction professionals. Interviewee 3's observation that "it's not taking jobs away; it's changing what those jobs look like" encapsulated this perspective. Participants emphasized how automation liberates professionals from repetitive tasks, enabling greater focus on innovation and strategic thinking. This perspective is supported by Zirar, Ali, and Islam (2023), who observed that automation enables individuals to engage more fully in the creative and strategic dimensions of their roles.

However, three interviewees raised concerns about potential job displacement, especially for professionals who are reluctant or slow to upskill. This concern is echoed by Willcocks (2020), who argued that a lack of continuous reskilling may lead to job losses as technological advancements reshape the workforce. Interviewee 2 warned of threats to those who fail to update their skills, while Interviewee 11speculated about possible role reductions in certain specialties. These concerns highlight the importance of continuous learning and adaptation in the evolving technological landscape.

While participants frequently described increased confidence after interacting with Gen AI and Gen BI tools, this confidence reflects task-level assurance and perceived competence with digital workflows, rather than established measures of career self-efficacy, which typically require longitudinal assessment and validated instruments. Accordingly, the findings are interpreted as indicative of perceived empowerment and reduced task anxiety, not as evidence of durable career self-efficacy.

The Influence of Gen AI and Gen BI on Career Motivation and Skills Development

In this study, career motivation refers to participants' self-reported interest and enthusiasm toward construction careers following exposure to Gen AI and Gen BI demonstrations. Engagement denotes immediate cognitive and emotional involvement during and after the demonstrations, reflected through expressed curiosity, excitement and perceived relevance. Retention intention is used cautiously to describe participants' stated willingness to remain in or return to the construction sector, rather than verified long-term

career commitment. The study pursued three key objectives to understand how exposure to Gen AI and Gen BI tools influence the career aspirations of Generation Z in the construction industry.

First, the research sought to examine how exposure to these advanced digital tools shapes career aspirations among Gen Z professionals. The findings revealed overwhelmingly positive attitudes, with all eleven interviewees expressing optimism about the industry's future. Participants consistently described construction as undergoing a "digital transformation," evolving into a more data-driven field that appeals to tech-savvy individuals. Interviewee 7 characterized the sector as being in a "stage of digital transformation," while Interviewee 8 emphasized that these tools "open a lot of possibilities" in professional practice. Interviewee 11 further noted that the rapid adoption of such innovations creates a sense of urgency, as "nobody wants to be left out." This reflects how digital tools are transforming perceptions of careers in construction, making the sector more appealing to a generation that prioritizes technological integration. This view aligns with Bolpagni, Gavina, Ribeiro, and Arnal (2022), who highlight the evolving image of the construction industry through digitalization, and is further supported by Ma & Fang (2024), who emphasize that technology-driven environments resonate strongly with younger professionals.

Second, the study investigated whether digital tool adoption strengthens retention intentions among Gen Z professionals. Interpreted through a SCCT lens, participants' reactions suggest that Gen AI and Gen BI primarily influence career self-efficacy and outcome expectations rather than long-term career commitment. Participants frequently described feeling more capable of engaging with complex construction tasks after exposure to these tools, indicating increased task-specific self-efficacy. At the same time, Gen AI and Gen BI reshaped outcome expectations by portraying construction careers as technologically advanced, intellectually engaging, and aligned with Gen Z's preferences for innovation and flexibility.

From a Career Construction Theory perspective, the findings also reflect early-stage processes of career adaptability, particularly concern (future orientation), curiosity (exploration of new roles), and confidence (belief in managing career challenges). Exposure to AI-enabled workflows enabled participants to reframe construction work from manual and rigid to adaptive and future-oriented, supporting identity reconstruction rather than mere task appreciation. Importantly, while participants expressed strong enthusiasm and intentions to remain in or return to the construction sector, these responses should be interpreted as proximal motivational indicators rather than evidence of stable career trajectories. Consistent with career development theory, durable career commitment typically emerges through repeated mastery experiences and institutional support over time.

Importantly, participants' narratives suggest that Gen AI and Gen BI exposure influences not only perceived competence but also career identity and perceived career viability. Several interviewees described feeling more "future-ready" and better aligned with emerging professional roles that combine construction expertise with data analytics and AI-supported decision-making. These perceptions reflect early identity alignment, whereby individuals begin to see their skills, interests, and values as compatible with a given occupational domain. However, consistent with career development theory, these effects should be interpreted as proximal motivational indicators rather than evidence of stable or long-term career trajectories, which typically require repeated mastery experiences and institutional reinforcement over time.

The responses indicated a clear trend: exposure to Gen AI and BI tools reinforced participants' commitment to the industry. All interviewees expressed a strong inclination toward roles involving AI or BI, with Interviewee 7 describing such specializations as a "natural extension" of their professional interests. Notably, nine out of eleven participants reported that the demonstrations strengthened their interest in remaining in or returning to the construction sector. Interviewee 3, for instance, viewed this shift as a "golden period" for the industry, while Interviewee 11highlighted how these tools lower barriers to entry by simplifying complex tasks for newcomers. These insights underscore the potential of digital tools to mitigate attrition rates by aligning career pathways with Gen Z's expectations for innovation and efficiency (Ling & Lew, 2024).

Finally, the study explored participants' willingness to pursue advanced training in AI and BI tools to enhance their professional capabilities. The results were unequivocal: all eleven interviewees expressed a strong desire for further training in digital construction technologies. Interviewee 6 deemed such upskilling "mandatory," framing it as an inevitable requirement for future relevance in the industry. Interviewee 7 similarly emphasized its importance for maintaining competitiveness and making meaningful contributions.

This unanimous interest in continuous learning reflects Gen Z's recognition of technological proficiency as a critical career enabler, as well as their proactive approach to adapting to industry advancements. This perspective is consistent with Ali (2023), who highlights Gen Z's strong inclination toward lifelong learning as a strategy for thriving in a rapidly transforming professional landscape.

The findings suggest that Gen AI and Gen BI serve as a powerful catalyst for career motivation primarily through experiential exposure rather than pre-existing perceptions. For most participants, the catalyst was not an abstract awareness of AI, but direct interaction with live demonstrations that revealed tangible, construction-specific applications. The results further indicate that optimal outcomes emerge from a socio-technical combination of three elements: (a) the technology's capabilities, (b) the user's domain knowledge and critical judgement, and (c) the quality of prompts used to translate intent into actionable outputs. This interaction underscores that Gen AI effectiveness is not technologically deterministic but co-produced through human—AI collaboration. By aligning the industry with digital innovation, these technologies not only reshape career aspirations but also foster a culture of continuous learning and professional growth. For industry stakeholders, these insights highlight the importance of integrating advanced digital tools into both workplace practices and educational frameworks to meet the expectations of the next-generation workforce.

Strategies for Industry and Higher Education to Foster Digital Adoption

This section's findings reveal critical insights into how higher education institutions and the construction industry can better prepare students, particularly Gen Z to embrace the sector by cultivating interest in Gen AI and Gen BI. The discussion is structured around three key areas of intervention.

First, the research examined how higher education institutions should adapt to prepare students for a digitally transformed construction industry. Participants emphasized the need for curricula that bridge theory and practice through hands-on experience with cutting-edge tools. Seven interviewees strongly advocated embedding real-world technologies like BIM, AI, and BI into coursework, complemented by project-based learning. As Interviewee 3 and Interviewee 5 noted, this requires annual curriculum updates to keep pace with technological advancements. Two participants emphasized the importance of interdisciplinary collaboration and industry partnerships, particularly through guest lectures and internship opportunities. This perspective is supported by Adekunle, Oyeyipo, Aigbavboa, Ebekozien, Aliu, and Ejohwomu (2026), who advocate for the involvement of industry professionals in delivering BIM-focused guest lectures. Similarly, Mohamed, Arabaine, Botchway, and Daoud (2025) highlight the value of internship experiences, noting that they play a vital role in helping students bridge the gap between theoretical knowledge acquired in the classroom and practical application in the industry. Notably, Interviewee 10 and Interviewee 6 called for greater emphasis on programming and Gen AI fundamentals, with Interviewee 2 suggesting such training should begin as early as primary school. However, as Interviewee 2 and Interviewee 11cautioned, these efforts depend on faculty development. Universities must prioritize training educators to ensure they can effectively teach these evolving technologies.

Second, the study identified best practices for construction firms to attract Gen Z talent through technology-driven workplace cultures. Nine participants stressed that companies must visibly champion digital adoption, whether through BIM implementation, drone use, or AI-powered chatbots. Flexible work arrangements and clear career progression paths emerged as crucial differentiators, mentioned by two interviewees. This aligns with Ling and Lew (2024) and Ayoobzadeh, et al (2024), who found that job flexibility is the most important motivator for Gen Z. Gen Zs (often called Zoomers) increasingly prefer hybrid work arrangements that combine fieldwork with desk-based tasks, offering a balance between autonomy and engagement. Four others emphasized that Gen Z prioritizes purpose-driven work, urging firms to highlight their commitments to sustainability, diversity, and social impact. Three participants specifically called for increased investment in emerging technologies and more transparent communication about innovation initiatives. As Interviewee 9 and Interviewee 2 observed, overcoming the industry's outdated "dirty and manual" reputation requires rebranding construction as a tech-forward field a shift that demands both internal changes and external messaging. Leadership plays a pivotal role in this transformation: six interviewees urged

executives to model openness to change, while four emphasized co-creation with young professionals to align workplace practices with Gen Z expectations.

Lastly, the findings explored methods to reshape public perceptions of construction through strategic showcasing of digital tools. Eight participants believed that highlighting technologies like Gen AI and BI could redefine the industry's image from "dirty and dangerous"to "digital and dynamic," as Interviewee 7 phrased it. Interviewee 10 noted that emphasizing the sector's overlap with data science and AI could attract talent from unrelated disciplines. For outreach, Interviewee 8 and Interviewee 2 recommended leveraging platforms like Instagram and TikTok to demonstrate innovation, while others advocated for open-door events to demystify the industry. These efforts, Interviewee 9 noted, must be sustained over time to counteract deep-seated stereotypes.

These findings reflect immediate post-demonstration perceptions and stated intentions. They should not be interpreted as evidence of long-term retention or career commitment. Future work could test whether early enthusiasm translates into sustained career outcomes using longitudinal designs and validated instruments.

Given that this study examined Gen Z experiences primarily within degree-based programmes, it is also important to consider what the findings imply for apprenticeship and other non-degree pathways. From a career development perspective, apprenticeship and non-degree pathways represent critical mechanisms for school-to-work transitions, particularly in applied sectors such as construction (OECD, 2010; Schoon & Heckhausen, 2019). Career Construction Theory emphasizes that learning-through-doing contexts support career adaptability and identity formation, especially when individuals develop career meaning through practical experiences and evolving work roles (Savickas, 2005; Savickas, 2013). Participants' enthusiasm for hands-on interaction with Gen AI and Gen BI tools suggests that digitally enriched apprenticeships may enhance both skill acquisition and career meaning by expanding opportunities for exploration and competence development in authentic work tasks (Fuller & Unwin, 2004; Savickas, 2013). Embedding AI-enabled planning, visualization, and data interpretation tasks into apprenticeships can support mastery experiences and strengthen career self-efficacy, a core mechanism in Social Cognitive Career Theory (SCCT) particularly for early entrants who may otherwise perceive construction as limiting or outdated (Lent et al., 1994; Bandura, 1997). Moreover, digitally augmented non-degree pathways align with protean and boundaryless career orientations by enabling individuals to accumulate portable, technology-enabled competencies that are transferable across employers and roles (Arthur & Rousseau, 1996; Hall, 2004). This reframing, positions apprenticeships not as secondary alternatives to university education, but as viable, future-oriented career pathways capable of attracting and retaining Gen Z talent in a digitalizing construction sector (OECD, 2010; Hall, 2004).

These strategic implications are further interpreted in the ensuing section through established career development theories, with particular attention to career mechanisms and equity considerations.

Career Development, Career Mechanisms, and Equity Implications of Gen AI and Gen BI

The findings indicate that Gen AI and Gen BI function as both career attractors and career scaffolding mechanisms, serving distinct but complementary roles in early career development. As career attractors, these technologies enhance the symbolic and experiential appeal of construction careers by aligning the sector with Gen Z's technological fluency, values, and expectations of modern work. Participants consistently described construction as becoming more innovative, data-driven, and intellectually stimulating following exposure to AI-enabled workflows, suggesting that technology plays a critical role in reshaping occupational image and initial career interest. At the same time, Gen AI and Gen BI operate as career scaffolding mechanisms by lowering perceived barriers to entry and reducing task-related cognitive load. By automating or simplifying complex planning, costing, and data interpretation tasks, these tools enable early mastery experiences that support confidence building and exploration. From an SCCT perspective, such mastery experiences strengthen self-efficacy, while from a Career Construction perspective, they support adaptability by enabling experimentation with emerging professional roles. The dual function of attraction and scaffolding helps explain

why participants expressed both heightened enthusiasm and stronger intentions to remain in or return to the construction sector following hands-on exposure.

While the findings highlight the motivational potential of Gen AI and Gen BI, they also raise important considerations related to equity and access. The participant group consisted primarily of digitally fluent graduates with prior exposure to BIM, BI, and AI-enabled tools, positioning them as early adopters. Consequently, the observed motivational and identity-related effects may not readily generalize to underrepresented or marginalized youth who lack similar access to advanced education, licensed software, or structured digital training. From a career development standpoint, unequal access to formative learning experiences may constrain self-efficacy development and limit perceived career viability, reinforcing existing inequalities in construction career pathways. These findings underscore the importance of inclusive strategies, such as digitally enriched apprenticeships, open-access learning platforms, and employer-supported upskilling to ensure that AI-enabled transformation serves as a democratizing force rather than a new form of career gatekeeping.

Conclusion

The construction industry stands at a critical juncture, facing the dual challenge of a widening skills gap and a persistent image problem. For decades, the sector has struggled to attract and retain young talent, and, with an increasing number of experienced professionals retiring, the urgency for transformation has become more pronounced. The rise of digital technologies, particularly Gen AI and Gen BI, presents a unique opportunity to reverse these trends. By strategically integrating these tools into education systems and workplace practices, the industry can reinvent itself to better align with the interests, values, and digital fluency of Gen Z.

This opportunity arises during a time of broader global disruption. As the adage goes, “Never let a good crisis go to waste.” Geopolitical tensions and a move toward isolationist policies have led to restricted labour mobility, exacerbating workforce shortages in construction. However, these constraints can also serve as a catalyst for transformation. Digital tools such as BIM, Gen AI, and Gen BI offer immense potential to increase productivity, bridge the skills gap, and improve efficiency. At the same time, the general reluctance of recent graduates to enter or stay in the construction industry raises the important question: can their strong affinity for technology be used as a “carrot” to engage and retain them?

This study set out to explore that very question through three main objectives. First, it evaluated the usability and impact of Gen AI and Gen BI within construction workflows. Second, it investigated how digital tools influence career motivation and skills development among young professionals. Third, it proposed actionable strategies for both educational institutions and industry leaders to foster digital adoption. The research revealed that Gen AI was perceived as highly effective in automating routine tasks such as cost estimation and project scheduling, while Gen BI improved data interpretation and supported more informed decision-making processes. Given the qualitative design and purposive sample of eleven digitally fluent, construction-related emerging professionals, the findings should not be interpreted as representing the construction industry at large. Rather, they provide a proof-of-concept indication of how technology exposure may shape perceptions, motivation, and career-related beliefs, warranting validation through larger and more diverse samples.

These conclusions are grounded in interviews with a small, purposively selected sample of digitally fluent, construction-related graduate participants, many of whom had prior exposure to BIM, BI, and AI-enabled tools. Accordingly, references to increased attraction or retention should be interpreted as context-specific perceptions rather than as evidence of broad Gen Z engagement or sustained career commitment across the construction workforce. The findings reflect immediate post-demonstration responses and should be understood as exploratory rather than generalizable to all Gen Z entrants, particularly those in apprenticeship or earlier-stage training pathways.

These conclusions are grounded in interviews with digitally fluent, construction-related graduate participants, many of whom had prior exposure to BIM/BI and practical experience with AI tools. As such, findings should be interpreted as reflecting perceptions of emerging professionals rather than the full diversity

of Gen Z entrants to construction, particularly apprenticeship or earlier-stage learners who may face different access constraints and training needs (Lincoln & Guba, 1985; Hargittai, 2010).

More importantly, this study should be understood as a proof-of-concept examination of how Gen AI and Gen BI may function as career-relevant stimuli within construction, rather than as a definitive assessment of long-term attraction or retention outcomes. This study captures immediate post-demonstration perceptions rather than longitudinal career outcomes. While participants articulated strong enthusiasm and anticipated career alignment with digitally enabled construction roles, such perceptions should not be interpreted as evidence of sustained career commitment or retention. Future research should employ longitudinal designs and validated career development instruments to examine whether early enthusiasm translates into long-term career trajectories.

To harness this potential, universities must modernize their curricula and prioritize faculty development to keep pace with digital innovation. The implications of these findings differ across higher education, apprenticeship pathways, and industry practice. For higher education, the findings highlight the importance of experiential exposure to AI- and BI-enabled construction workflows within curricula, supported by faculty development and interdisciplinary learning environments. Such exposure appears to shape early career self-efficacy and perceived career viability rather than technical competence alone. For apprenticeships and non-degree pathways, the findings suggest that digitally enriched learning-through-doing environments may play a critical role in supporting career adaptability and identity formation, particularly for learners who might otherwise perceive construction as outdated or limiting. Embedding AI-supported planning, visualization, and data interpretation tasks into apprenticeships could strengthen mastery experiences and confidence during early school-to-work transitions. For industry, the findings underscore the need for structured digital upskilling, visible commitment to human-AI complementarity, and career pathways that integrate technological capability development with professional progression, rather than treating digital tools as isolated productivity enhancements. These findings suggest that future construction education and industry adoption strategies should prioritize experiential AI exposure and prompt literacy alongside technical tool deployment. Incorporating hands-on labs, interdisciplinary projects, and real-world applications of AI and BI technologies will not only enrich the learning experience but also demonstrate the relevance of construction careers in a tech-driven world. For employers, success lies in adopting a culture of continuous learning, investing in staff training, and embedding smart technologies into day-to-day operations. Rebranding the construction industry through social media campaigns, virtual showcases, and strategic storytelling can help reshape public perception, making the sector more appealing to digitally inclined young people.

However, while the integration of Gen AI and Gen BI offers exciting possibilities, it must be approached with caution. Domain knowledge and traditional construction workflows should not be discarded in the rush to digitize. Instead, these innovations should complement conventional practices, ensuring that foundational principles are preserved for quality assurance and accountability. As highlighted by Mai, Doan, and Ghaffarian Hoseini (2025), multitasking and hybrid workflows are essential in modern construction settings. Over-reliance on AI systems, particularly those susceptible to hallucination or error, underscores the importance of human oversight and domain expertise.

From a career development perspective, this study contributes to research and practice in three key ways. First, it extends Social Cognitive Career Theory and Career Construction Theory into a digitally disrupted construction context, demonstrating how experiential exposure to emerging technologies shapes self-efficacy, outcome expectations, and early career identity. Second, it conceptualizes Gen AI and Gen BI not merely as productivity tools, but as career attractors and scaffolding mechanisms that support exploration, confidence-building, and perceived career viability. Third, it offers practical insight for educators, training providers, and employers seeking to design digitally inclusive career pathways that support early-career development while avoiding technology-driven gatekeeping.

The findings underscore the need for a balanced, human-centric approach to digital transformation. Gen AI and Gen BI should be viewed not as replacements for human skills but as powerful tools that augment expertise and enhance communication between technical and non-technical stakeholders. Their successful implementation requires careful change management, strong organizational support, and sustained investment in both data infrastructure and workforce capabilities. Ultimately, the construction industry's ability to

attract and retain the next generation will depend on how effectively it integrates technological innovation with cultural renewal, educational reform, and a compelling new narrative for the future of work. As Lingard, Turner, and Pirzadeh (2025) suggest, such alignment may inspire young people to view construction not merely as an option, but as the industry of choice. As such, the study provides an empirically grounded starting point for future longitudinal and comparative research examining how digitally mediated experiences influence career development trajectories across diverse construction education and training contexts.

References

Abanda, F. H. (2022). Reverse engineering for digital twinning of climate smart cities. In B. Barroca (Ed.), *BIM et enjeux climatiques* (EDUBIM 2022): Ingénierie et architecture/enseignement et recherche (pp. 5–15). Eyrolles.

Abanda, F. H. (2025). *Digital technologies for engineering construction information productivity*. Routledge. https://doi.org/10.1201/9781003476740

Abanda, F. H., Almukhtar, A., & Austin, M. (2025). Lessons from the virtual delivery of building information modelling modules in the COVID-19 era. *Buildings*, *15*(2), Article 215. https://doi.org/10.3390/buildings15020215

Abanda, F. H., & Byers, L. (2016). An investigation of the impact of building orientation on energy consumption in a domestic building using emerging BIM (Building Information Modelling). *Energy*, *97*, 517–527. https://doi.org/10.1016/j.energy.2015.12.135

Abanda, F. H., Kamsu-Foguem, B., & Tah, J. H. M. (2015). Towards an intelligent ontology construction cost estimation system: Using BIM and new rules of measurement techniques. *International Journal of Industrial and Manufacturing Engineering*, *9*(1), 294–299. https://doi.org/10.5281/zenodo.1099290

Abanda, F. H., Kamsu-Foguem, B., & Tah, J. H. M. (2017a). BIM – New rules of measurement ontology for construction cost estimation. *Engineering Science and Technology, an International Journal*, *20*(2), 443–459. https://doi.org/10.1016/j.jestch.2017.01.007

Abanda, F. H., Nkeng, G. E., Tah, J. H. M., Ohandja, E. N. F., & Manjia, M. B. (2014). Embodied energy and CO2 analyses of mud-brick and cement-block houses. *AIMS Energy*, *2*(1), 18–40. https://doi.org/10.3934/energy.2014.1.18

Abanda, F. H., Oti, A. H., & Tah, J. H. M. (2017b). Integrating BIM and new rules of measurement for embodied energy and CO_2 assessment. *Journal of Building Engineering*, *12*, 288–305. https://doi.org/10.1016/j.jobe.2017.06.017

Abouelkhier, N., Shafiq, M. T., Rauf, A., & Alsheikh, N. (2024). Enhancing construction management education through 4D BIM and VR: Insights and recommendations. *Buildings*, *14*(10), Article 3116. https://doi.org/10.3390/buildings14103116

Adekunle, S. A., Oyeyipo, O., Aigbavboa, C. O., Ebekozien, A., Aliu, J., & Ejohwomu, O. A. (2026). A practical approach to teaching emerging technologies: A case of BIM. *Engineering, Construction and Architectural Management*, *33*(4), 2827–2839. https://doi.org/10.1108/ECAM-10-2024-1366

Ahmed, A. (2024, February 27). *Fewer workers means fewer homes: Fixing the construction labour shortage*. Policy Magazine. https://www.policymagazine.ca/fewer-workers-means-fewer-homes-fixing-the-construction-labour-shortage

Aladağ, H. (2023). Assessing the accuracy of ChatGPT use for risk management in construction projects. *Sustainability*, *15*(22), Article 16071. https://doi.org/10.3390/su152216071

Alasadi, E. A., & Baiz, C. R. (2023). Generative AI in education and research: Opportunities, concerns, and solutions. *Journal of Chemical Education*, *100*(8), 2965–2971. https://doi.org/10.1021/acs.jchemed.3c00323

Ali, S. S. (2023). The future of work in the age of automation: Exploring new roles and opportunities. *Al-Behishat Research Archive, 1*(1), 55–62. https://al-behishat.com/index.php/20/article/view/8

Al-Sulaiti, A., Mansour, M., Al-Yafei, H., Aseel, S., Kucukvar, M., & Onat, N. C. (2021). Using data analytics and visualization dashboard for engineering, procurement, and construction project's performance assessment. In *2021 IEEE 8th International Conference on Industrial Engineering and Applications*

(ICIEA) (pp. 207–211). IEEE. https://doi.org/10.1109/ICIEA52957.2021.9436728
Alves, J. L., Palha, R. P., & Almeida Filho, A. T. de. (2025). Towards an integrative framework for BIM and artificial intelligence capabilities in smart architecture, engineering, construction, and operations projects. *Automation in Construction*, *174*, Article 106168. https://doi.org/10.1016/j.autcon.2025.106168
Arthur, M. B., & Rousseau, D. M. (Eds.). (1996). *The boundaryless career: A new employment principle for a new organizational era*. Oxford University Press.
Ayoobzadeh, M., Schweitzer, L., Lyons, S., & Ng, E. (2024). A tale of two generations: A time-lag study of career expectations. *Personnel Review*, *53*(7), 1649–1665. https://doi.org/10.1108/PR-02-2022-0101
Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
BDO Canada. (2023, September 21). *Reshaping the construction industry for Gen Z talent*. https://www.bdo.ca/insights/from-crisis-to-opportunity-reshaping-the-construction-industry-for-gen-z-talent
Bekele, W., & Ago, F. (2022). Sample size for interview in qualitative research in social sciences: A guide to novice researchers. *Research in Educational Policy and Management*, *4*(1), 42–50. https://doi.org/10.46303/repam.2022.3
Bolpagni, M., Gavina, R., Ribeiro, D., & Arnal, I. P. (2022). Shaping the future of construction professionals. In M. Bolpagni, R. Gavina, & D. Ribeiro (Eds.), *Industry 4.0 for the built environment* (pp. 1–26). Springer. https://doi.org/10.1007/978-3-030-82430-3_1
Boscariol, C., & Killam, D. (2024, July 24). *Addressing the shortage of construction workers in Canada: The role of LIMA based work permits in recruiting foreign talent*. Watson Goepel LLP. https://www.watsongoepel.com/insight/shortage-of-construction-workers-in-canada/
BuildingTalk. (2025, February 27). *Will AI bring younger people into construction?* https://buildingtalk.com/guest-article-will-ai-bring-younger-people-into-construction/
Burns, J. (2025, January 30). *Attracting Gen Z to construction: What works in 2025? Cornerstone Projects*. https://www.cornerstoneprojects.co.uk/blog/attracting-gen-z-to-construction-what-works-in-2025/
Canada Mortgage and Housing Corporation (CMHC). (2022). *Canada's housing supply shortage: Restoring affordability by 2030*. https://www.cmhc-schl.gc.ca/blog/2022/canadas-housing-supply-shortage-restoring-affordability-2030
Centre for Cities. (2024). *Restart housebuilding*. https://www.centreforcities.org/housing/
Chew, Z. X., Wong, J. Y., Tang, Y. H., Yip, C. C., & Maul, T. (2024). Generative design in the built environment. *Automation in Construction*, *166*, Article 105638. https://doi.org/10.1016/j.autcon.2024.105638
Chui, M., & Mischke, J. (2019). *The impact and opportunities of automation in construction*. McKinsey & Company. https://www.mckinsey.com/capabilities/operations/our-insights/the-impact-and-opportunities-of-automation-in-construction
Copsey, S. (2024, October 1). *How AI can attract Gen Z to address the US construction labor shortage*. Construction Today. https://construction-today.com/news/ai-is-bringing-gen-z-into-the-construction-industry-making-them-more-productive-engaged-and-sustainable/
Cure, L. (2023). *Leading the Gen Z construction workforce requires refreshed tactics*. Construction Management Association of America. https://www.cmaanet.org/sites/default/files/resource/Leading_GenZ_RWorkforce_CE.pdf
Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008
Domljan, I., & Domljan, V. (2024). Major challenges in the construction industry. In I. Karabegović, A. Kovačević, & S. Mandžuka (Eds.), *New technologies, development and application VII* (pp. 396–403). Springer. https://doi.org/10.1007/978-3-031-66271-3_43
Durmus, D., Klinc, R., & Turk, Ž. (2023). The role of social media in BIM-based projects. In *Proceedings of the 2023 European Conference on Computing in Construction: 40th International CIB W78 Conference* (pp. 807–813). European Council on Computing in Construction. https://doi.org/10.35490/EC3.2023.160
Erfani, A., & Mansouri, A. (2026). Applications of multimodal large language models in construction industry. *Advanced Engineering Informatics*, *69*, Article 103909. https://doi.org/10.1016/j.aei.2025.103909
Federation of Canadian Municipalities (FCM). (2019). *Canadian infrastructure report card 2019*. http://canadianinfrastructure.ca/downloads/canadian-infrastructure-report-card-2019.pdf

Fuller, A., & Unwin, L. (2004). Expansive learning environments: Integrating organizational and personal development. In H. Rainbird, A. Fuller, & A. Munro (Eds.), *Workplace learning in context* (pp. 126–144). Routledge.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59–82. https://doi.org/10.1177/1525822X05279903

Hall, D. T. (2004). The protean career: A quarter-century journey. *Journal of Vocational Behavior*, *65*(1), 1–13. https://doi.org/10.1016/j.jvb.2003.10.006

Hargittai, E. (2010). Digital na(t)ives? Variation in Internet skills and uses among members of the "Net Generation." *Sociological Inquiry*, *80*(1), 92–113. https://doi.org/10.1111/j.1475-682X.2009.00317.x

Harode, A., Ensafi, M., & Thabet, W. (2022). Linking BIM to Power BI and HoloLens 2 to support facility management: A case study approach. *Buildings*, *12*(6), Article 852. https://doi.org/10.3390/buildings12060852

Hashim, M. Z., Harun, N. A., Othman, I., Hassan, S. H., & Musa, M. K. (2024). The impact of building information modelling (BIM) on labor productivity. *International Journal of Academic Research in Business and Social Sciences*, *14*(9), 55–66. https://dx.doi.org/10.6007/IJARBSS/v14-i9/22787

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social Science & Medicine*, *292*, Article 114523. https://doi.org/10.1016/j.socscimed.2021.114523

Hodorog, A., Alhamami, A., Alhamami, S., Petri, I., Rezgui, Y., Kubicki, S., & Guerriero, A. (2019). Social media mining for BIM skills and roles for energy efficiency. In *2019 IEEE International Conference on Engineering, Technology and Innovation* (ICE/ITMC) (pp. 1–10). IEEE. https://doi.org/10.1109/ICE.2019.8792571

Hoover, S., Snyder, J., & Menard, A. (2018). *Automation and robotics: Rethinking engineering and construction jobs*. FMI Corporation. https://fmicorp.com/wp-content/uploads/2018/05/BuiltWorldsMachine_FINAL_0418.pdf

Întorsureanu, I., Oprea, S.-V., Bâra, A., & Vespan, D. (2025). Generative AI in education: Perspectives through an academic lens. *Electronics*, *14*(5), Article 1053. https://doi.org/10.3390/electronics14051053

Katebi, A., & Tehrani, M. (2025). Adoption of AI in construction design: Insights from UTAUT2 and TOE frameworks. *Results in Engineering*, *26*, Article 104981. https://doi.org/10.1016/j.rineng.2025.104981

Khlaif, Z. N., Alkouk, W. A., Salama, N., & Abu Eideh, B. (2025). Redesigning assessments for AI-enhanced learning: A framework for educators in the generative AI era. *Education Sciences*, *15*(2), Article 174. https://doi.org/10.3390/educsci15020174

Laberge, M. (2025, February 28). *Solving the housing crisis is a marathon not a sprint*. Canada Mortgage and Housing Corporation. https://www.cmhc-schl.gc.ca/blog/2025/solving-housing-crisis-marathon-not-sprint

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, *45*(1), 79–122. https://doi.org/10.1006/jvbe.1994.1027

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.

Ling, F. Y. Y., & Lew, E. J. Y. (2026). Strategies to recruit and retain Generation Z in the built environment sector. *Engineering, Construction and Architectural Management*, *33*(1), 713–731. https://doi.org/10.1108/ECAM-08-2024-1109

Lingard, H., Turner, M., & Pirzadeh, P. (2025). Is construction my industry of choice? Examining the factors affecting career choice decision-making of young workers. *Engineering, Construction and Architectural Management*, *33*(4), 3264–3283. https://doi.org/10.1108/ECAM-08-2024-1125

Ma, K., & Fang, B. (2024). Exploring Generation Z's expectations at future work: The impact of digital technology on job searching. *European Journal of Training and Development*, *48*(9), 933–953. https://doi.org/10.1108/EJTD-05-2023-0076

Mai, T. P. A., Doan, D. T., & Ghaffarian Hoseini, A. (2025). Utilizing multiskilled resources in addressing labor shortage issues in off-site construction: Benefits, challenges, and best practices. *Journal of Construction Engineering and Management*, *151*(4), Article 04025014. https://doi.org/10.1061/JCEMD4.COENG-15275

Maqbool, R., Rashid, Y., Altuwaim, A., Shafiq, M. T., & Oldfield, L. (2024). Coping with skill shortage within

the UK construction industry: Scaling up training and development systems. *Ain Shams Engineering Journal*, *15*(2), Article 102396. https://doi.org/10.1016/j.asej.2023.102396

McKinsey & Company. (2020). *The next normal in construction: How disruption is reshaping the world's largest ecosystem*. https://www.mckinsey.com/capabilities/operations/our-insights/the-next-normal-in-construction-how-disruption-is-reshaping-the-worlds-largest-ecosystem

Meli, K., Taouki, J., & Pantazatos, D. (2024). Empowering educators with generative AI: The GenAI Education Frontier Initiative. In *EDULEARN24 Proceedings* (pp. 4289–4299). IATED. https://doi.org/10.21125/edulearn.2024.1077

Mingsamorn, P., & Singhuang, N. (2024). An interactive dashboard system for budget allocation using Power BI. *Journal of Technology Management and Digital Innovation*, *1*(2), 51–67. https://ph05.tci-thaijo.org/index.php/TMDI/article/view/167

Mishra, S. K., & Sakale, R. (2025). A study on the effects of BIM on the labour productivity of building construction projects in Patna City. *International Journal of Advanced Research and Multidisciplinary Trends* (IJARMT), *2*(2), 486–491. https://www.ijarmt.com/index.php/j/article/view/241

Mohamed, A. G., Arabaine, O., Botchway, B., & Daoud, A. O. (2025). Visionary constructs: Revolutionizing students' internships through BIM and extended reality synergy. *Architectural Engineering and Design Management*, *21*(5), 889–915. https://doi.org/10.1080/17452007.2024.2415391

Musa, A. M., Abanda, F. H., & Oti, A. H. (2015). Assessment of BIM for managing scheduling risks in construction project management. In *Proceedings of the 32nd International Conference of CIB W78* (pp. 559–568). https://itc.scix.net/paper/w78-2015-paper-058

Musa, A. M., Abanda, F. H., Oti, A. H., Tah, J. H. M., & Boton, C. (2016). The potential of 4D modelling software systems for risk management in construction projects. In N. Achour (Ed.), *Proceedings of the 20th CIB World Building Congress 2016: Advancing products and services* (Vol. V, pp. 988–999). Tampere University of Technology. http://irepo.futminna.edu.ng:8080/jspui/bitstream/123456789/12031/1/The%20Potential%20of%204D%20Modelling%20Software%20Systems%20for%20Risk%20Management%20in%20Construction%20Projects.pdf

Naddeh, Z., Maya, R., Mahfouz, W., & Youssef, M. A. (2025). Integrating BIM into architectural education: Pedagogical challenges and future prospects–Case study: Tartus University. *International Journal of BIM and Engineering Science*, *10*(2), 20–37. https://doi.org/10.54216/IJBES.100202

National Institute of Building Sciences. (2025a). *Elevating the built environment workforce shortage threatening our nation*. https://www.buildinginnovation.org/elevate

National Institute of Building Sciences. (2025b). *Why the built environment workforce shortage is a threat to national security*. https://nibs.org/why-the-built-environment-workforce-shortage-is-a-threat-to-national-security/

Nwaogbe, G., Ekpenyong, E., & Urhoghide, O. (2025). Managing workforce productivity in the post-pandemic construction industry. *World Journal of Advanced Research and Reviews*, *25*(1), 572–588. https://doi.org/10.30574/wjarr.2025.25.1.0051

Orbiz. (2023). *The missing link: Why Gen Z is turning its back on the construction industry*. LinkedIn. https://www.linkedin.com/pulse/missing-link-why-gen-z-turning-its-back/

Organisation for Economic Co-operation and Development. (2010). *Learning for jobs*. OECD Publishing. https://doi.org/10.1787/9789264087460-en

Papuraj, X., Izadyar, N., & Vrcelj, Z. (2025). Integrating building information modelling into construction project management education in Australia: A comprehensive review of industry needs and academic gaps. *Buildings*, *15*(1), Article 130. https://doi.org/10.3390/buildings15010130

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Sage.

Peffers, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2008). A design science research methodology for information systems research. *Journal of Management Information Systems*, *24*(3), 45–77. https://doi.org/10.2753/MIS0742-1222240302

Rane, N. L. (2024). Potential role and challenges of ChatGPT and similar generative artificial intelligence in architectural engineering. *International Journal of Artificial Intelligence and Machine Learning*, *4*(1), 22–47. https://doi.org/10.51483/IJAIML.4.1.2024.22-47

Rane, N. L., Choudhary, S. P., & Rane, J. (2023). Integrating ChatGPT, Bard, and leading-edge generative artificial intelligence in architectural design and engineering: Applications, framework, and challenges. *International Journal of Architecture and Planning*, *3*(2), 92–124. https://dx.doi.org/10.2139/ssrn.4645595

Rodrigues, F., Alves, A. D., & Matos, R. (2022). Construction management supported by BIM and a business intelligence tool. *Energies*, *15*(9), Article 3412. https://doi.org/10.3390/en15093412

Royle, O. R. (2025, July 2). *Gen Z is ditching college for 'more secure' trade jobs–but building inspectors, electricians and plumbers actually have the worst unemployment*. Fortune. https://fortune.com/2025/07/02/gen-z-ditching-college-secure-trade-jobs-blue-collar-electricians-and-plumbers-worst-unemployment-rate-than-office-jobs/

Savickas, M. L. (2005). The theory and practice of career construction. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 42–70). John Wiley & Sons.

Savickas, M. L. (2013). Career construction theory and practice. In R. W. Lent & S. D. Brown (Eds.), *Career development and counseling: Putting theory and research to work* (2nd ed., pp. 147–183). John Wiley & Sons.

Schoon, I., & Heckhausen, J. (2019). Conceptualizing individual agency in the transition from school to work: A social-ecological developmental perspective. *Adolescent Research Review*, *4*(2), 135–148. https://doi.org/10.1007/s40894-019-00111-3

Shi, Q., Liu, Z., Wu, J., Guo, Z., & Wu, H. (2025). Generative AI on innovation performance of construction enterprises: A knowledge-based dynamic capabilities perspective. *Journal of Engineering and Technology Management*, *76*, Article 101871. https://doi.org/10.1016/j.jengtecman.2025.101871

Singh, A. K., & Hsieh, S.-H. (2026). Multi-LLM-based augmentation and synthetic data generation of construction schedules and task descriptions with SLM-as-a-judge assessment. *Advanced Engineering Informatics, 69*, Article 103825. https://doi.org/10.1016/j.aei.2025.103825

Sorour, A., & Atkins, A. S. (2024). Integrating artificial intelligence transformers with business intelligence systems for monitoring learning outcomes in higher education institutions. In F. Adedoyin & B. Christiansen (Eds.), *Generative AI and multifactor productivity in business* (pp. 36–54). IGI Global Scientific Publishing. https://doi.org/10.4018/979-8-3693-1198-1.ch003

Succar, B. (2009). Building information modelling framework: A research and delivery foundation for industry stakeholders. *Automation in Construction*, *18*(3), 357–375. https://doi.org/10.1016/j.autcon.2008.10.003

Taiwo, R., Bello, I. T., Abdulai, S. F., Yussif, A.-M., Salami, B. A., Saka, A., Ben Seghier, M. E. A., & Zayed, T. (2025). Generative artificial intelligence in construction: A Delphi approach, framework, and case study. *Alexandria Engineering Journal*, *116*, 672–698. https://doi.org/10.1016/j.aej.2024.12.079

Turner & Townsend. (2024). *International construction market survey 2024*. https://publications.turnerandtownsend.com/international-construction-market-survey-2024/

Valinejadshoubi, M., Moselhi, O., Iordanova, I., Valdivieso, F., & Bagchi, A. (2024). Automated system for high-accuracy quantity takeoff using BIM. *Automation in Construction*, *157*, Article 105155. https://doi.org/10.1016/j.autcon.2023.105155

van Dijk, J. A. G. M. (2020). *The digital divide* (2nd ed.). Polity.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Willcocks, L. (2020). Robo-apocalypse cancelled? Reframing the automation and future of work debate. *Journal of Information Technology*, *35*(4), 286–302. https://doi.org/10.1177/0268396220925830

Wind, S. (2024, June 25). *The UK needs 4.3 million homes to fix housing shortage: CityLab Daily*. Bloomberg. https://www.bloomberg.com/news/newsletters/2024-06-25/the-uk-needs-4-3-million-homes-to-fix-housing-shortage-citylab-daily

World Economic Forum. (2016). *The future of jobs: Employment, skills, and workforce strategy for the Fourth Industrial Revolution*. https://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

World Economic Forum. (2025). *The future of jobs report 2025*. https://reports.weforum.org/docs/WEF_Future_of_Jobs_Report_2025.pdf

Wu, W., & Issa, R. R. A. (2013). Impacts of BIM on talent acquisition in the construction industry. In S. D. Smith & D. D. Ahiaga-Dagbui (Eds.), *Proceedings of the 29th Annual ARCOM Conference* (pp. 35–45). Association of Researchers in Construction Management. https://www.arcom.ac.uk/-docs/proceedings/ar2013-0035-0045_Wu_Issa.pdf

Zhang, Q., & Wang, L. (2026). AI in smart buildings and construction 4.0: Implementation areas and influencing factors in construction organizations. *Automation in Construction*, *181*, Article 106623. https://doi.org/10.1016/j.autcon.2025.106623

Zirar, A., Ali, S. I., & Islam, N. (2023). Worker and workplace artificial intelligence (AI) coexistence: Emerging themes and research agenda. *Technovation*, *124*, Article 102747. https://doi.org/10.1016/j.technovation.2023.102747

What Drives Career Engagement? The Predictive Role of Socioemotional Skills and Career Adaptability

Amanda Espagolla Santos. *Universidade de São Paulo, Brazil*
Lucy Leal Melo-Silva. *Universidade de São Paulo, Brazil*
José Egídio Barbosa Oliveira. *University of Coimbra, Portugal*

Abstract

In contemporary labour markets characterized by uncertainty and rapid change, psychological resources that support proactive career behaviour are increasingly important. Drawing on Career Construction Theory, this study examined the relationships between socioemotional skills, career adaptability, and career engagement among university students. Participants were 204 interns who completed measures of socioemotional skills, career adaptability, and career engagement. Correlational analyses revealed positive associations among all major variables. Hierarchical regression showed that socioemotional skills significantly predicted career engagement after controlling for sociodemographic factors ($\Delta R^2 = .31$, $p < .001$). However, the inclusion of career adaptability substantially increased explained variance ($\Delta R^2 = .26$), with the final model accounting for 59.6% of the variance in engagement. Concern ($\beta = .301$, $p < .001$), Confidence ($\beta = .204$, $p = .018$), and Curiosity ($\beta = .193$, $p = .030$) emerged as the strongest predictors. These findings suggest that while socioemotional skills provide a foundational basis, career adaptability represents a more proximal predictor of proactive career behaviour. The study contributes to the literature by clarifying the complementary roles of these constructs in fostering career engagement among university students.

Keywords: socioemotional skills, career adaptability, career engagement, university students, career development

In contemporary labour markets characterized by rapid technological, economic, and social change, individuals are increasingly required to continuously update their competencies and actively manage their career development. These dynamics marked by instability, frequent transitions, and increasing demands for adaptability are particularly salient for university students who, upon completing higher education, must confront uncertainties and challenges associated with the transition from university to work (Mancaniello & Lavanga, 2024; OECD, 2025).

In response to these challenges, higher education institutions have expanded their focus beyond technical training to include the development of broader competencies that support adaptability and lifelong career management, including the capacity to manage career transitions and pursue professional development. Experiences such as internships, research activities, and academic projects provide important opportunities for students to develop not only domain-specific knowledge but also socioemotional and career-related competencies that are critical for functioning effectively in dynamic labour markets. Such experiences are considered essential for preparing graduates to function effectively in the context of the so-called Fourth Industrial Revolution, which requires professionals capable of continuous learning, flexibility, and proactive career management (Al-Abri et al., 2024; Ingusci et al., 2026; Spurk et al., 2020).

Within vocational psychology, increasing attention has been directed toward psychological resources that facilitate proactive career behaviour. Among these, socioemotional skills, career adaptability, and career engagement have emerged as key constructs for understanding how individuals prepare for and navigate career transitions (Chen et al., 2024; Öztemel & Yıldız Akyol, 2025; Spurk et al., 2020). Although these constructs have often been studied separately, they represent complementary aspects of individuals' capacity to regulate behaviour, cope with uncertainty, and actively shape their career trajectories.

Socioemotional Skills

In response to the need to prepare students for broader professional challenges, educational programs have increasingly moved beyond purely cognitive and technical training to incorporate the development of social, emotional, and interpersonal competencies. As a result, research on socioemotional skills has grown

substantially across disciplines such as economics, psychology, and education (Algan & Huillery, 2025; OECD, 2024).

Socioemotional skills refer to relatively stable yet malleable individual characteristics that involve the integration of emotional, social, and behavioural processes. These competencies develop over time through the interaction between individual predispositions and environmental influences and are expressed in patterns of thinking, feeling, and behaving (De Fruyt et al., 2015). They have been associated with a wide range of outcomes, including academic achievement, employability, well-being, and adaptive functioning (Almund et al., 2011; Soto et al., 2022).

From an economic perspective, socioemotional skills have been associated with a variety of important life outcomes, including employability, income, educational attainment, and reduced exposure to risky behaviours (Almund et al., 2011). In psychology, these competencies have been linked to well-being, mental health, social functioning, and adaptive behaviour across life domains (De Fruyt et al., 2015; Soto et al., 2022). In this sense, socioemotional skills represent the interaction between cognitive, emotional, and social processes that support effective functioning in complex environments. Because these competencies can be developed and strengthened over time, they are often referred to as "soft skills."

These skills are particularly relevant for individuals' long-term development, as they support the ability to cope with challenges, uncertainty, and complex life situations (Primi et al., 2016). From this perspective, socioemotional skills involve the capacity to respond adaptively and assertively to challenging situations through emotional regulation, responsible decision-making, and effective interpersonal functioning (Collaborative for Academic, Social, and Emotional Learning [CASEL], n.d.; OECD, 2021).

A widely adopted framework conceptualizes socioemotional skills based on the Big Five personality domains, organizing them into five broad dimensions: self-management, engaging with others, emotional resilience, amity, and open-mindedness (De Fruyt & Scheirlinckx, 2025; Walton et al., 2022). These competencies support goal-directed behaviour, interpersonal effectiveness, emotional regulation, and openness to new experiences, all of which are particularly relevant in contexts characterized by uncertainty and change.

Self-management refers to individuals' ability to regulate behaviour, set goals, and persist in achieving them. Individuals with strong self-management competencies tend to demonstrate discipline, organization, and perseverance in the pursuit of objectives. Engaging with others involves social initiative and interpersonal competence, including the ability to communicate effectively, interact confidently, and establish meaningful relationships. Amity reflects empathy, trust, and cooperation in interpersonal relationships. It encompasses individuals' ability to understand others' perspectives and act collaboratively (Primi et al., 2021). Emotional resilience refers to the capacity to cope with adversity, regulate emotional reactions, and maintain psychological stability in the face of stress and challenges. Finally, open-mindedness refers to openness to new ideas, experiences, and perspectives, which fosters curiosity, creativity, and cognitive flexibility (Primi et al., 2021).

In the context of career development, socioemotional skills can be understood as foundational resources that enable individuals to regulate their behaviour, persist in the pursuit of goals, and respond adaptively to challenges. As such, they may play an important role in preparing university students to navigate the transition from education to work and to engage in activities that support their career development (Primi et al., 2021; Soto et al., 2022).

Career Adaptability

Career adaptability is a central construct in Career Construction Theory (Savickas, 2013) and refers to the psychosocial resources individuals use to cope with vocational tasks, transitions, and uncertainties. According to the Career Construction Adaptation Model, career development involves a sequence of processes including adaptive readiness, adaptability resources, adaptive responses, and adaptation outcomes (Savickas & Porfeli, 2012; Hirschi et al., 2015). Within this framework, psychological traits and competencies predispose individuals to respond adaptively to career challenges, while adaptability resources facilitate proactive behaviours that support career development.

In this context, career adaptability represents a set of resources—Concern, Control, Curiosity, and

Confidence—that enable individuals to anticipate future career tasks, take responsibility for their development, explore opportunities, and persist in achieving their goals (Savickas, 2013). Concern refers to future orientation and planning for one's career. Control reflects individuals' sense of responsibility for shaping their professional future. Curiosity involves exploring possible career opportunities and environments. Finally, Confidence represents individuals' belief in their ability to overcome obstacles and successfully pursue career goals.

Research has consistently shown that higher levels of career adaptability are associated with more positive career outcomes, including greater employability, career satisfaction, and proactive career behaviour (Rudolph et al., 2017; Spurk et al., 2020). For university students, career adaptability is particularly important, as it supports their ability to manage the transition from education to work by fostering planning, exploration, and persistence in career-related activities.

Career Engagement

Career engagement refers to the proactive behaviours individuals undertake to develop and manage their careers, such as career planning, self-exploration, environmental exploration, networking, and skill development (Hirschi et al., 2014). Unlike related constructs such as work engagement (a motivational state associated with involvement in one's job) or career commitment (attachment to a particular career path), career engagement emphasizes behavioural involvement in activities that promote career development over time and across contexts (Hirschi et al., 2014).

These behaviours play a critical role in facilitating successful school-to-work transitions. Students who actively engage in career-related activities during their university years tend to be better prepared for labour market entry and more likely to achieve positive career outcomes (Okumoto et al., 2022; Spurk et al., 2020).

Relationships Between Socioemotional Skills and Career Development Variables

Although socioemotional skills and career development variables have been widely studied, research examining their joint relationships remains limited. Existing studies have primarily focused on personality traits or related constructs, showing that dispositional characteristics are associated with both career adaptability and proactive career behaviours (Nilforooshan & Salimi, 2016; Sou et al., 2022). In particular, career adaptability has been identified as an important mechanism linking individual characteristics to career engagement.

Previous research has consistently highlighted the central role of career adaptability in linking individual and contextual resources to proactive career behaviour. For instance, studies have shown that career adaptability is positively associated with both personality traits and career engagement, and may mediate these relationships (Nilforooshan & Salimi, 2016). Similarly, evidence suggests that career adaptability also mediates the association between contextual factors, such as social capital, and career engagement, reinforcing its function as a key mechanism underlying proactive career development (Sou et al., 2022).

However, fewer studies have directly examined the role of socioemotional skills in this process, especially in the context of university students. Understanding how these competencies relate to both adaptability resources and career engagement may provide important insights into the psychological mechanisms that support proactive career development.

Present Study

The present study aims to examine the relationships between socioemotional skills, career adaptability, and career engagement among university students engaged in internships. Drawing on Career Construction Theory, we adopt a hierarchical perspective in which socioemotional skills represent indicators of adaptive readiness, career adaptability reflects adaptability resources, and career engagement corresponds to an adapting response expressed through proactive career behaviours.

Based on this framework, three hypotheses were tested:

*H*1: Socioemotional skills will be positively associated with career adaptability and career engagement.

*H*2: Socioemotional skills will significantly predict career engagement after controlling for sociodemographic variables.

*H*3: Career adaptability will explain additional variance in career engagement beyond sociodemographic variables and socioemotional skills.

To test these hypotheses, correlational analyses and hierarchical regression models were conducted. This analytical strategy allows for the examination of the incremental contribution of socioemotional skills and career adaptability resources in explaining career engagement, consistent with the theoretical ordering proposed by the Career Construction Adaptation Model.

Method

This study is part of a broader research project on socioemotional and career skills and employed a cross-sectional survey design. Statistical analyses were conducted to examine relationships among the study variables.

Participants

This was a non-probabilistic and convenience sample, since the criteria used to recruit participants were their availability and ease of access (Etikan & Bala, 2017). Thus, the study consisted of 204 higher education interns from the municipality of Campinas, in the state of São Paulo, and within the region, between ages 18 and 45 (M = 23.61; SD = 4.75). There was a predominance of students in their first undergraduate program (80.39%), in their first internship (59.31%), and in the final half of their program (50.98%). Participants were predominantly women (58.82%), from private universities (71.07%), from humanities programs (58.33%), and from economic class B (52.45%).

Instruments

Sociodemographic Questionnaire

Data were also collected on participants' institutions, undergraduate programs, whether they were enrolled in their first undergraduate program, and their stage of internship at the time of the research. This questionnaire also included the 2018 Brazil Economic Classification Criteria from the Brazilian Association of Research Companies (ABEP).

Inventory for the Assessment of Social and Emotional Skills (Senna 2.0)

The Inventory for the Assessment of Social and Emotional Skills (Senna 2.0) is an instrument developed by Primi, Santos, John, and De Fruyt (2021). The Senna 2.0 is used in the educational field on a large scale, aiming to contribute to the development of public policies for education. This instrument is based on the five dimensions of the Big Five Personality Theory, or domains, which are macro skills in a broad model that organizes five core dimensions with 17 more specific concepts, called facets. In Senna 2.0 the domains/factors are: (a) Self-management [facets: determination, organization, focus, persistence, responsibility]; (b) Engaging with others [facets: social initiative, assertiveness, enthusiasm]; (c) Amity [facets: compassion/empathy, respect, trust]; (d) Emotional resilience [facets: stress modulation, self-confidence, frustration tolerance]; and (e) Open-mindedness [facets: curiosity to learn, creative imagination, artistic interest]. Each

facet is composed of items that address issues of identity and self-efficacy, such as "Trusting people," "Noticing when someone you know is upset," "I can't stop thinking about negative things," and "I am very cheerful and excited." There are two versions of Senna 2.0, one with 162 items (complete) and another with 54 items. In this study, the 54-item version was used, since it has the same psychometric values as the full version and because the study already uses other instruments to assess the other variables.

The internal consistency coefficients for each skill with samples over the age of 18 are as follows: open-mindedness, 0.91; self-management, 0.94; engaging with others, 0.86; amity, 0.86; and emotional resilience, 0.90 (Primi et al., 2021). All five domains scored very good levels of reliability ($r \geq .85$) (Primi et al., 2021). Scores are made individually from the categories: to be developed, emerging, capable, and very capable. The research group relies on technical assistance from the group of researchers who developed the aforementioned instrument, since the creation of SENNA 1.0. The Ayrton Senna Institute formally authorized the use of the instrument.

Career Adapt-abilities Scale (CAAS)

The Career Adapt-abilities Scale (CAAS) is an instrument developed by Savickas and Porfeli (2012), and which has been internationally validated. The adaptation of the items to Brazilian Portuguese was made by Teixeira et al. (2012). The present study used the latest version of the instrument by Audibert and Teixeira (2015), which consists of 24 items that respondents rate using a 5-point Likert scale, in which "1" indicates "I developed little or nothing" and "5" indicates "I developed extremely well". The scale aims to assess the career adaptability construct in university students. The items involve statements such as "Planning how to achieve my goals," "Believing in my ability to direct my own life," "Being curious about new opportunities," and "Learning new skills." The trustworthiness and reliability of the instrument showed excellent internal consistency both in the total scale and in the four subscales. Cronbach's alphas were 0.94 on the total scale, 0.88 on the concern subscale, 0.83 on the control scale, 0.88 on the curiosity scale, and 0.89 on the confidence subscale (Audibert & Teixeira, 2015). The values obtained were slightly higher than the first Brazilian version of the CAAS (Teixeira et al., 2012) and close to the best values of samples from other countries (Savickas & Porfeli, 2012).

Career Engagement Scale (CES)

The Career Engagement Scale (CES) is an instrument developed by Hirschi, Freund, and Hermann (2014), using the version validated for Brazil by Marques et al. (2019). The CES consists of a one-dimensional scale containing nine items, including "Solving problems," "Building plans and defined goals for a career," and "Assuming responsibilities or positions that could help career progress." Items 1 to 3 more generally assess *career engagement* behaviours, covering several categories. The other items (4 to 9) represent different categories of *career engagement* behaviour. They are: (a) Career Planning; (b) Career Self-Exploration; (c) Environmental Career Exploration; (d) Networking; (e) Voluntary Human Capital/Skill Development; and (f) Positioning Behaviour. The items are answered using a Likert scale, with ratings ranging from 1 to 5, where 1 corresponds to the answer "Not much" and 5 corresponds to the answer "Always." Participants rate each item on a scale from 1 to 5, with ratings of 1 or 2 indicating that the subject is minimally engaged, a rating of 3 indicating that the subject is reasonably engaged, and ratings of 4 or 5 indicating that the subject is well-engaged.

Both the original scale and the version adapted to Brazil provide support for construct validity. They are convergent and have positive relationships with other career constructs, such as identity, clarity of professional identity, and career exploration among university students. This scale can be used both in a university context and with adults working in the labour market (Hirschi et al., 2014). The Brazilian adapted scale has a Cronbach's alpha of 0.89, indicating a high level of scale reliability (Marques et al., 2019).

Data Collection Procedures

The larger project was submitted to and approved by the Research Ethics Committee of the University of São Paulo (CAAE no 15273119.0.0000.5407). The questionnaire and other assessment instruments were prepared and inserted into the Google Form platform. When accessing the form, participants had access and responded to the Informed Consent (IC) and, subsequently, to the complete survey. All data were collected during the SARS-CoV-2 virus pandemic and social isolation measures. Once the collection was completed, preparation for data analysis began.

Data Analysis

After collection, the form with the Senna 2.0 responses was sent to the team of the Ayrton Senna Institute. The team carried out the Item Response Theory (IRT) correlations of the instrument scores, polytomic (Likert scale), using the partial credits model and with individual scores for the dimensions (five), according to the categories: *to be developed, emerging, capable, and very capable*. After the Senna 2.0 analysis, data were transferred, along with the other instruments and sociodemographic data, to an Excel spreadsheet and coded for the IBM Statistical Package for the Social Sciences (SPSS) Software version 27 (Chicago, Illinois, USA). Reliability of the scales, descriptive statistics and Pearson correlations were initially calculated to explore the relationships between variables. To test the main research hypotheses, a three-stage hierarchical multiple regression was conducted with Career Engagement as the dependent variable. This method was chosen to determine the incremental variance (ΔR^2) explained by each successive set of predictors after controlling for the influence of previously entered variables. The analysis was organized into three distinct steps: Step 1 included sociodemographic variables (e.g., Age, Gender, and Academic Year) to control for individual background characteristics. Step 2 introduced five socioemotional skills—Openness, Self-management, Agreeableness, Engaging with others, and Emotional Resilience—to assess the impact of relatively stable individual characteristics. Step 3 added the specific career adaptability dimensions of Concern, Control, Curiosity, and Confidence. The primary objective of this hierarchical approach was to verify whether career-specific adaptability resources provide a significant unique contribution to career engagement over and above the influence of presumably more stable socioemotional conditions and demographic factors.

The assumptions for linear regression were verified prior to interpretation. Multicollinearity was assessed using Tolerance and the Variance Inflation Factor (VIF), with values below 5 generally indicating the absence of severe redundant information among predictors. Additionally, a Collinearity Diagnostic was performed, monitoring the Condition Index across the dimensions of the final model. The incremental contribution of each block of variables was evaluated based on the change in the coefficient of determination (ΔR^2) and the significance of the F-change statistic. Statistical significance for all analyses was set at $p < .05$.

This hierarchical approach was guided by the Career Construction Adaptation Model, which conceptualizes career development as a sequence from adaptive readiness (socioemotional skills) to adaptability resources (career adaptability), and finally to adaptive responses (career engagement). Accordingly, variables were entered in blocks reflecting this theoretical ordering. Hierarchical regression was selected to examine the incremental contribution of conceptually ordered predictors, consistent with the proposed theoretical model.

Results

Table 1 presents the descriptive statistics for the study variables, including socioemotional skills, career adaptability resources, and career engagement. The means and standard deviations provide an overview of the levels of these psychological resources within the sample and serve as a basis for the subsequent correlational and regression analyses.

Overall, the descriptive statistics indicate moderate to relatively high levels of socioemotional skills, career adaptability, and career engagement within the sample. Among socioemotional competencies, self-management and open-mindedness showed comparatively higher mean scores, suggesting that participants

Table 1

Descriptive Statistics

Variable	*N*	Minimum	Maximum	*M*	*SD*
Agreeableness	204	2	4	3.03	0.44
Self-management	204	2	4	3.34	0.56
Engagement with others	204	1	4	2.83	0.66
Emotional resilience	204	1	4	3.11	0.72
Openness	204	1	4	3.15	0.84
Concern	204	1	5	3.71	0.83
Control	204	1.17	5	3.81	0.77
Curiosity	204	1.67	5	3.63	0.82
Confidence	204	1.67	5	3.90	0.72
Career engagement	204	1.33	5	3.71	0.76

generally reported strong capacities for goal-directed behaviour and openness to new experiences. Similarly, career adaptability dimensions were rated above the midpoint, with Confidence and Control presenting the highest means, indicating a generally positive perception of personal resources for managing career-related tasks. Career engagement also displayed a relatively elevated mean, suggesting that participants were moderately to actively involved in behaviours supporting their career development. These patterns provide initial support for the presence of relevant psychological resources in the sample, which are further examined in the correlational and regression analyses.

In order to assess the relationships between the study variables, socioemotional skills, career adaptability, and career engagement, Pearson correlations were performed. Correlation values can be seen in Table 2. Correlation values were interpreted as follows, according to their level: r = 0.10 to 0.30 (weak); r = 0.40 to 0.60 (moderate); and r = 0.65 to 1 (strong).

Consistent with Hypothesis 1, most variables were positively correlated, supporting the expected pattern of associations (Table 2). An exception was amity, which showed no significant relationships with engaging with others, key dimensions of career adaptability (Concern and Curiosity), or career engagement, and generally exhibited weak associations with other variables. In contrast, correlations among career adaptability dimensions and between adaptability and career engagement were consistently positive and comparatively stronger. The strongest associations with career engagement were observed for Concern (r= .657, p < .001) and Curiosity (r = .659, p < .001), while Control showed a moderate correlation (r = .581, p < .001). Among socioemotional skills, self-management was moderately associated with Confidence (r = .573, p < .001).

Following the correlational analysis, a three-step hierarchical regression analysis was conducted to examine the incremental contribution of sociodemographic variables, socioemotional skills, and career adaptability in predicting career engagement (See Table 3).

In Step 1, sociodemographic variables (i.e., age, gender, type of institution, academic status, internship experience, area of study, and socioeconomic status) were entered as controls. This model was not statistically significant, $F(8, 195) = 0.65$, p = .733, explaining 2.6% of the variance in career engagement, indicating that these variables did not meaningfully contribute to the outcome.

In Step 2, socioemotional skills were added, resulting in a significant improvement in the model, ΔR^2 = .31, $\Delta F(5, 190) = 17.67$, p < .001. This model explained 33.5% of the variance in career engagement, $F(13, 190) = 7.37$, p < .001. At this stage, self-management (β = .236, p = .001), engaging with others (β = .202, p = .004), and open-mindedness (β = .262, p < .001) were significant positive predictors, supporting Hypothesis 2.

Table 2

Correlations Between Socioemotional Skills, Career Adaptability and Career Engagement

	1	2	3	4	5	6	7	8	9	10
1. Amity	_									
2. Self-management	0.237***	_								
3. Engaging with others	0.101	0.315***	_							
4. Emotional resilience	0.238***	0.393***	0.363***	_						
5. Open-mindedness	0.243***	0.196**	0.361***	0.315***	_					
6. Concern	0.126	0.447***	0.336***	0.349***	0.300***	_				
7. Control	0.175 *	0.392***	0.472***	0.459***	0.408***	0.642***	_			
8. Curiosity	0.114	0.419***	0.393***	0.411***	0.453***	0.684***	0.720***	_		
9. Confidence	0.159 *	0.573***	0.394***	0.425***	0.311***	0.657***	0.678***	0.756***	_	
10. Career engagement	0.128	0.392***	0.402***	0.345***	0.389***	0.657***	0.581***	0.659***	0.644***	_

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3

Hierarchical Regression Models Summary

Model	*R*	R^2	ΔR^2	*F* change	*P*
Sociodemographic variables (Model 1)	0.148	0.022	0.022	0.623	0.736
Socioemotional skills (Model 2)	0.579	0.335	0.313	18.002	< .001
Career adapt-abilities (Model 3)	0.772	0.596	0.261	30.186	< .001

In Step 3, career adaptability dimensions were introduced, leading to a further significant increase in explained variance, $\Delta R^2 = .26$, $\Delta F(4, 186) = 30.06$, $p < .001$. The final model accounted for 59.6% of the variance in career engagement, $F(17, 186) = 16.16$, $p < .001$, supporting Hypothesis 3. In this model, concern ($\beta = .301$, $p < .001$), confidence ($\beta = .204$, $p = .018$), and curiosity ($\beta = .193$, $p = .030$) emerged as significant positive predictors, while being in their first undergraduate degree was negatively associated with engagement ($\beta = -.118$, $p = .034$). Notably, the effects of socioemotional skills were no longer statistically significant after the inclusion of adaptability variables.

This pattern is consistent with the theoretical assumption that career adaptability may function as a proximal mechanism linking broader socioemotional competencies to career engagement. Collinearity diagnostics indicated no evidence of problematic multicollinearity among predictors.

Discussion

The present study aimed to examine the relationships between socioemotional skills, career adaptability, and career engagement among university students, adopting a hierarchical perspective grounded in Career Construction Theory. Overall, the findings support the proposed model and provide evidence that

career engagement is associated with a structured set of psychological resources operating at different levels of the career development process.

Integration of Findings Within the Theoretical Framework

Consistent with Hypothesis 1, the results revealed positive associations among socioemotional skills, career adaptability, and career engagement. These findings suggest that students with stronger socioemotional competencies are more likely to possess higher levels of adaptability resources and to engage in proactive career behaviours. This pattern aligns with previous research indicating that individual characteristics are linked to both adaptability and career engagement (Nilforooshan & Salimi, 2016; Sou et al., 2022).

More importantly, the hierarchical regression analysis provides insight into how these variables are related. Socioemotional skills significantly predicted career engagement when considered independently of career adaptability, supporting Hypothesis 2. However, their effects were no longer significant after the inclusion of career adaptability dimensions, while adaptability emerged as the strongest set of predictors. The addition of career adaptability substantially increased the explained variance, supporting Hypothesis 3 and highlighting its central role in explaining proactive career behaviour.

Taken together, this pattern is consistent with the theoretical assumption that socioemotional skills represent adaptive readiness, whereas career adaptability reflects more proximal regulatory resources that translate these competencies into behaviour. In this sense, career engagement can be understood as an adaptive response, expressed through proactive career-related activities.

Career Adaptability as a Proximal Predictor of Career Engagement

Among the predictors included in the final model, Concern, Confidence, and Curiosity emerged as significant contributors to career engagement. These findings underscore the importance of future orientation, exploratory behaviour, and self-efficacy in fostering proactive career development. Students who are oriented toward the future, actively explore opportunities, and believe in their ability to overcome challenges are more likely to engage in behaviours such as planning, networking, and skill development.

The strong associations between career adaptability dimensions and career engagement are consistent with prior research highlighting adaptability as a key driver of proactive career behaviour (Rudolph et al., 2017; Spurk et al., 2020). These results reinforce the view that adaptability resources play a central role in enabling individuals to navigate increasingly complex and uncertain career environments.

Role of Socioemotional Skills as Foundational Resources

Although socioemotional skills did not remain significant predictors in the final model, their role should not be interpreted as negligible. Rather, the results suggest that these competencies may operate indirectly by supporting the development of career adaptability resources. Skills such as self-management, emotional resilience, and openness to experience are likely to facilitate individuals' capacity to plan, explore, and persist in their career development.

This interpretation is consistent with the Career Construction Adaptation Model, which conceptualizes adaptive readiness as the foundation upon which adaptability resources are built. The observed pattern therefore supports a hierarchical understanding in which broader socioemotional competencies contribute to the development of more specific career-related resources, which in turn are more directly associated with behaviour.

Limited Role of Sociodemographic Characteristics

The hierarchical regression analysis confirmed that sociodemographic variables played only a minor role in explaining career engagement. Age, gender, and year of study did not significantly predict engagement in the final model. This result aligns with Life Designing (Savickas et al., 2009), a paradigm for career

construction in the 21st Century, which emphasizes that career development is fundamentally a process of active self-construction rather than demographic determination. According to this perspective, individuals continuously construct their careers by mobilizing psychological resources that enable them to navigate vocational tasks and transitions across their life span.

The only demographic variable that remained significant in the final model was *First Undergraduate Degree*. Students who followed non-linear educational pathways may display somewhat different engagement dynamics. Such trajectories may reflect processes of vocational reconsideration, identity exploration, or career redirection that influence how individuals invest in their current academic and professional development.

Implications for Research and Practice

The present study contributes to the literature by integrating socioemotional skills, career adaptability, and career engagement within a single theoretical framework. By adopting a hierarchical perspective, the findings clarify how these constructs are related and highlight the central role of career adaptability in translating individual competencies into proactive career behaviour.

From a practical standpoint, these results suggest that interventions aimed at fostering career engagement should address both foundational and proximal psychological resources. Programs designed to strengthen socioemotional skills may support the development of adaptability resources, while interventions focused on career planning, exploration, and self-efficacy may more directly promote engagement in career-related activities.

Limitations and Future Directions

This study has several limitations that should be considered. First, the cross-sectional design does not allow for causal inferences regarding the relationships among the variables. Longitudinal studies would be valuable in examining how socioemotional skills, career adaptability, and career engagement develop over time. Second, the use of self-report measures may introduce common method bias. Future research could incorporate behavioural indicators or multi-source data to strengthen the validity of the findings.

Finally, although the results are consistent with a hierarchical and potentially mediational process, the present study did not formally test mediation. Future studies should examine whether career adaptability mediates the relationship between socioemotional skills and career engagement using longitudinal or structural modelling approaches.

Conclusion

The present study examined the relationships between socioemotional skills, career adaptability, and career engagement among university students, contributing to a more integrated understanding of proactive career behaviour. The findings indicate that career engagement is primarily associated with career adaptability resources, particularly Concern, Curiosity, and Confidence, which emerged as the most consistent predictors of proactive career activities.

Although socioemotional skills were initially associated with career engagement, their effects were no longer significant after the inclusion of career adaptability, suggesting that their influence may operate through more proximal career-related resources. This pattern is consistent with a hierarchical perspective derived from Career Construction Theory, in which socioemotional competencies represent adaptive readiness, career adaptability reflects regulatory resources, and career engagement corresponds to the behavioural expression of these processes.

By clarifying the relationships among these constructs, the study highlights the central role of career adaptability in translating broader individual competencies into proactive career behaviour. These findings underscore the importance of fostering both socioemotional skills and career adaptability within higher education contexts as complementary resources that support students in navigating increasingly complex and uncertain career environments. In dynamic and uncertain labour markets, understanding how these

psychological resources interact provides a valuable foundation for supporting more proactive, adaptable, and self-directed career development.

References

Al-Abri, M., Denman, C., Al Alawi, M., & Al Ajmi, M. (2024). Enhancing employability through university-industry linkages: Omani engineering students' perspectives of the Eidaad internship programme. *Humanities and Social Sciences Communications*, *11*(1), Article 565. https://doi.org/10.1057/s41599-024-02779-y

Algan, Y., & Huillery, E. (2025). Socio-emotional skills and the future of education. *Annual Review of Economics*, *17*, 589–613. https://doi.org/10.1146/annurev-economics-081624-080702

Almund, M., Duckworth, A. L., Heckman, J., & Kautz, T. D. (2011). Personality psychology and economics. In E. A. Hanushek, S. Machin, & L. Weismann (Eds.), *Handbook of the Economics of Education* (Vol. 4, pp. 1–181). Elsevier. https://doi.org/10.1016/B978-0-444-53444-6.00001-8

Audibert, A., & Teixeira, M. A. P. (2015). Escala de adaptabilidade de carreira: evidências de validade em universitários brasileiros [Career adapt-abilities scale: Evidences of validity in Brazilian university students]. *Revista Brasileira de Orientação Profissional*, *16*(1), 83–93. https://pepsic.bvsalud.org/pdf/rbop/v16n1/09

Collaborative for Academic, Social, and Emotional Learning (CASEL). (n.d.). *What is the CASEL framework?* https://casel.org/what-is-sel

Chen, Q., Li, J., Shen, R., Wang, R., Xu, J., & Zhou, J. (2024). Career adaptability and work engagement: The roles of person–organization fit and job insecurity. *BMC Psychology*, *12*(1), Article 562. https://doi.org/10.1186/s40359-024-01907-2

De Fruyt, F., & Scheirlinckx, J. (2025). Challenges and opportunities for the assessment of social-emotional skills. *ECNU Review of Education*. https://doi.org/10.1177/20965311251319355

De Fruyt, F., Wille, B., & John, O. P. (2015). Employability in the 21st century: Complex (interactive) problem solving and other essential skills. *Industrial and Organizational Psychology*, *8*(2), 276–281. https://doi.org/10.1017/iop.2015.33

Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, *5*(6), 215–217. https://doi.org/10.15406/bbij.2017.05.00149

Hirschi, A., Freund, P. A., & Herrmann, A. (2014). The career engagement scale: Development and validation of a measure of proactive career behaviors. *Journal of Career Assessment*, *22*(4), 575–594. https://doi.org/10.1177/1069072713514813

Hirschi, A., Herrmann, A., & Keller, A. C. (2015). Career adaptivity, adaptability, and adapting: A conceptual and empirical investigation. *Journal of Vocational Behavior*, *87*, 1–10. https://doi.org/10.1016/j.jvb.2014.11.008

Ingusci, E., De Carlo, E., Catalano, A. A., Semeraro, C. G., & Signore, F. (2026). Are university students ready to work? The role of soft skills and psychological capital in building sustainable employability. *Education Sciences*, *16*(2), Article 181. https://doi.org/10.3390/educsci16020181

Mancaniello, M. R., & Lavanga, F. (2024). Adolescence in the Italian labour market: In search of an equilibrium among instability, uncertainty, and AI challenges. *Social Sciences*, *13*(12), Article 688. https://doi.org/10.3390/socsci13120688

Marques, B. C. S., Oliveira, M. C., & Melo-Silva, L. L. (2019). Escala de engajamento com a carreira (EEC) [The Career Engagement Scale (CES)]. In A. L. de Andrade, M. F. O. Nunes, M. Z. de Oliveira, R. A. M. Ambiel (Eds.), *Técnicas e medidas em orientação profissional e de carreira* [Techniques and Measures in Vocational and Career Guidance] (pp. 49–60). Vetor.

Nilforooshan, P., & Salimi, S. (2016). Career adaptability as a mediator between personality and career engagement. *Journal of Vocational Behavior*, *94*, 1–10. https://doi.org/10.1016/j.jvb.2016.02.010

OECD (2021). *Beyond academic learning: First results from the Survey of Social and Emotional Skills*. https://doi.org/10.1787/92a11084-en

OECD (2024). *Social and emotional skills for better lives: Findings from the OECD Survey on Social and*

Emotional Skills 2023. https://doi.org/10.1787/35ca7b7c-en
OECD (2025). *OECD skills outlook 2025: Building the skills of the 21st century for all*. https://doi.org/10.1787/26163cd3-en
Okumoto, A. Y. de P., Oliveira, M. C. de, Melo-Silva, L. L., & Taveira, M. do C. (2022). Engajamento e sucesso na transição para o trabalho: Estudo com medidas repetidas. [Engagement and success during transition to work: Repeated measures study]. *Psicologia: Ciência E Profissão*, *42*, e232824. https://doi.org/10.1590/1982-3703003232824
Öztemel, K., & Yıldız Akyol, E. (2025). Career engagement as proactive career behavior: The role of core self-evaluation, career adaptability, and negative career goal feedback. *Turkish Psychological Counseling and Guidance Journal*, *15*(76), 162–177. https://doi.org/10.17066/tpdrd.1492624
Primi, R., Santos, D., John, O. P., & De Fruyt, F. (2016). Development of an inventory assessing social and emotional skills in Brazilian youth. *European Journal of Psychological Assessment*, *32*(1), 5–16. https://doi.org/10.1027/1015-5759/a000343
Primi, R., Santos, D., John, O. P., & De Fruyt, F. (2021). *SENNA inventory for the assessment of social and emotional skills: Technical manual*. Instituto Ayrton Senna. https://doi.org/10.31234/osf.io/byvpr
Rudolph, C. W., Lavigne, K. N., & Zacher, H. (2017). Career adaptability: A meta-analysis of relationships with measures of adaptivity, adapting responses, and adaptation results. *Journal of Vocational Behavior*, *98*, 17–34. https://doi.org/10.1016/j.jvb.2016.09.002
Savickas, M. L. (2013). Career construction theory and practice. In R. W. Lent & S. D. Brown (Eds.), *Career development and counseling: Putting theory and research to work* (2nd ed., pp. 147–183). John Wiley & Sons.
Savickas, M. L., Nota, L., Rossier, J., Dauwalder, J.-P., Duarte, M. E., Guichard, J., Soresi, S., Van Esbroeck, R., & van Vianen, A. E. M. (2009). Life designing: A paradigm for career construction in the 21st century. *Journal of Vocational Behavior*, *75*(3), 239–250. https://doi.org/10.1016/j.jvb.2009.04.004
Savickas, M. L., & Porfeli, E. J. (2012). Career Adapt-Abilities Scale: Construction, reliability, and measurement equivalence across 13 countries. *Journal of Vocational Behavior*, *80*(3), 661–673. https://doi.org/10.1016/j.jvb.2012.01.011
Soto, C. J., Napolitano, C. M., Sewell, M. N., Yoon, H. J., & Roberts, B. W. (2022). An integrative framework for conceptualizing and assessing social, emotional, and behavioral skills: The BESSI. *Journal of Personality and Social Psychology*, *123*(1), 192–222. https://doi.org/10.1037/pspp0000401
Sou, E. K., Yuen, M., & Chen, G. (2022). Career adaptability as a mediator between social capital and career engagement. *The Career Development Quarterly*, *70*(1), 2–15. https://doi.org/10.1002/cdq.12289
Spurk, D., Volmer, J., Orth, M., & Göritz, A. S. (2020). How do career adaptability and proactive career behaviours interrelate over time? An inter- and intraindividual investigation. *Journal of Occupational and Organizational Psychology*, *93*(1), 158–186. https://doi.org/10.1111/joop.12288
Teixeira, M. A. P., Bardagi, M. P., Lassance, M. C. P., Magalhães, M. O., & Duarte, M. E. (2012). Career adapt-abilities scale—Brazilian form: Psychometric properties and relationships to personality. *Journal of Vocational Behavior*, *80*(3), 680–685. https://doi.org/10.1016/j.jvb.2012.01.007
Walton, K. E., Burrus, J., Murano, D., Anguiano-Carrasco, C., Way, J., & Roberts, R. D. (2022). A big five-based multimethod social and emotional skills assessment: The Mosaic™ by ACT® Social Emotional Learning Assessment. *Journal of Intelligence*, *10*(4), Article 72. https://doi.org/10.3390/jintelligence10040072

Characteristics of Sources of Career Decision-Making Self-Efficacy Based on the Personality Traits

Kousuke Maeba
J.F. Oberlin University Graduate Division, Atomi University, Japan

Abstract

Providing career decision-making self-efficacy (CDMSE) information sources tailored to personality traits and increasing self-confidence with respect to career decision-making may aid intervention strategies for career development. This study aimed to classify personality trait patterns using cluster analysis to clarify the characteristics of CDMSE and its information sources. Data were collected from 248 undergraduate Japanese college students using validated measures of CDMSE, its sources, and the five-factor model of personality traits. Cluster analysis revealed four distinct personality types: resilient, undercontrolled, overcontrolled, and reserved. Significant differences were observed across clusters, with the resilient group demonstrating the highest scores across all domains. These findings suggest that personality-based differences influence mastery experiences, vicarious experiences, verbal persuasion, and emotional arousal in shaping CDMSE, and highlight the potential of targeted interventions tailored to personality traits in enhancing confidence in career decision-making. These findings could improve understanding of the intersection of personality psychology and career development.

Keywords: career decision-making self-efficacy, career decision-making self-efficacy information sources, personality traits, five-factor model of personality traits, cluster analysis

Acknowledgments: The author thanks FORTE Science Communications (https://www.forte-science.co.jp) for English language editing. This work was supported by Atomi University Grant Numbers 25-001

Many young people have difficulty making decisions about their career path (Amir & Gati, 2006), and this can sometimes be a major challenge that leads to the worsening of mental health issues such as depression (Amaral et al., 2024; Walker & Peterson, 2012). A wide variety of factors can result in career indecision and, in a systematic review of the literature, Priyashantha, Dahanayake, and Maduwanthi (2022) identified the following four major determinants: (1) career-related decision-making difficulties, (2) adolescent differences, (3) individual and situational career decision-making profiles, and (4) level of individual readiness for career choice. Recent meta-analyses have shown that career decision-making self-efficacy (CDMSE), which refers to an individual's belief in their ability to apply various strategies to guide the career decision-making process successfully (Taylor & Betz, 1983), has a strong negative association with career indecision (Choi et al., 2012; Udayar et al., 2020). In Japan, the high short-term job turnover rate among young people and the increasing number of young people taking time off work because of poor mental health are becoming increasingly serious problems, and low CDMSE has been hypothesized as one possible factor.

CDMSE and Its Information Sources

Self-efficacy, a concept that was first put forward by Bandura (1977), refers to an individual's belief in their ability to execute behaviour aimed toward a specific goal successfully. In the domain of careers, CDMSE has been shown to be a powerful indicator of subsequent career decision-making behaviour, and individuals with higher CDMSE tend to aim for more complex and difficult career decisions (Tabernero & Wood, 2009). Moreover, CDMSE has been shown to act as a mediator linking various career-related factors (Santos et al., 2018; Wang & Jiao, 2023; Zhou et al., 2024). This may be seen, for example, in the association between career education skills and adaptability (Liu et al., 2023).

However, self-efficacy is not something that comes about spontaneously; rather, it is influenced by the following four major information sources (Bandura, 1977):

1. Mastery experiences (ME), which refer to an individual's experiences of success or failure in target behaviours. It has been suggested that ME have the strongest influence on self-efficacy.

2. Vicarious experiences (VE), which refer to observations of others' experiences of success or failure. The ability of VE to shape the observer's self-efficacy depends on the extent to which the model resembles the observer, as well as self-image.
3. Verbal persuasion (VP), which refers to verbal information (including audiovisual or print media) received from others that relates to target behaviours. It has been pointed out that while this is an information source that can be used relatively easily, self-efficacy that has been reinforced by this information source alone is easily lost.
4. Emotional arousal (EA), which refers to the physical and emotional changes that occur together with the target behaviours, such as fatigue, pleasure, or anxiety.

In the Social Cognitive Career Theory (SCCT) of Lent, Brown, and Hackett (1994), these information sources are treated as "learning experiences," and together with CDMSE, they form the core of this theory.

Interventional studies that have sought to increase CDMSE (e.g., Betz & Schifano, 2000; Uffelman et al., 2004) have generally involved the manipulation of these four information sources. However, these previous studies have not yielded consistent results on the effects of such interventions. One reason for this is the lack of an objective evaluation of whether the interventions actually manipulated the intended information sources (Betz, 2007). Similarly, Betz (2007) emphasizes that although investigating the information sources that have an effect on CDMSE in detail is of enormous importance, there has been surprisingly little work focusing on this area. It is therefore essential to accumulate basic research based on the quantification of information sources at the international level.

To resolve this issue, a number of attempts have been made to develop scales measuring information sources in CDMSE. In recent years, Bike (2013) developed the 40-item Career Decision Learning Experiences measure and confirmed its high internal consistency, retest reliability, and construct validity. Also, Lent, Ireland, Penn, Morris, and Sappington (2017) and Ireland and Lent (2018) developed and refined the Career Exploration and Decision Learning Experiences (CEDLE) scales. In Asia, Zhou and Xu (2022) developed a Chinese version of the CEDLE, and Maeba (2025a) developed the CDMSE Source Scale for Japanese undergraduates.

Relationship With Personality Traits

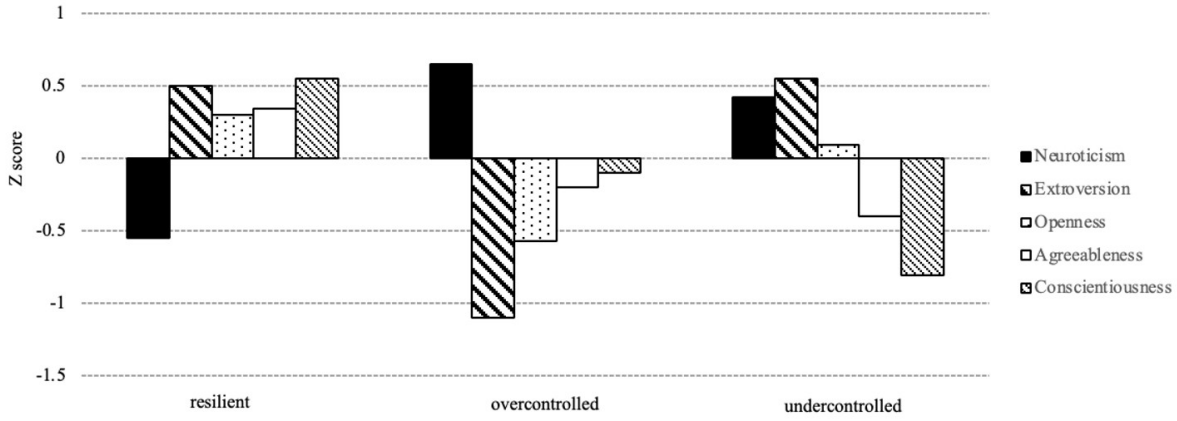
CDMSE has often been mentioned in relation to individual personality traits, particularly the five-factor model (FFM) proposed by Costa and McCrae (2009). The FFM classifies personality into the following five typical traits: extraversion, neuroticism, openness, agreeableness, and conscientiousness. Of these five traits, extraversion, neuroticism, and conscientiousness have shown fairly consistent associations with various career-related factors (e.g., Brown & Hirschi, 2013; Martincin & Stead, 2015). Penn and Lent (2019) hypothesized that these three personality traits and CDMSE affect career indecision through a similar mechanism, and examined this process in detail. Their results indicated that each of these personality traits is significantly linked to CDMSE, which, in turn, affects career decision-making. They showed that high extraversion strengthened self-efficacy with respect to better decision-making, and that high conscientiousness strengthened self-efficacy in relation to reduced discomfort in decision-making. The SCCT was later revised by Lent and Brown (2013), who developed the Social Cognitive Model of career self-management (CSM). The CSM suggests that specific personality trends may encourage or inhibit learning experiences, and in this way, are indirectly related to CDMSE. Based on this hypothesis, Ireland and Lent (2018) examined the association between the FFM personality traits and information sources. Their results indicated that conscientiousness has a significant positive association with ME, VE, VP, and positive affect (EA), extraversion has a significant positive association with positive affect, and neuroticism has a significant positive association with negative affect (EA). Furthermore, they found that neuroticism has a significant direct effect on career decision-making.

The origins of FFM can be traced back to the study by Norman (1963) or that by Tupes and Chirstal (1961), which identified personality traits similar to the present five factors. Based on these findings and Freud's ego theory, Block and Block (1980) uncovered three prototypic personality description patterns: resilient, overcontrolled, and undercontrolled. Asendorpf, Borkenau, Ostendorf, and Van Aken (2001)

conducted a cluster analysis of these prototypes and proposed personality types corresponding to each (see Figure 1). These three personality types have been applied in various studies (Mammadov et al., 2024; Rammstedt et al., 2004), including those with Japanese participants (e.g., Hagiwara et al., 2025). However, to our knowledge, few studies have been conducted on the association between these personality prototypes and career-related variables.

Figure 1

Personality Prototypes Based on the Five-Factor Model



Note: Adapted from "Carving personality description at its joints: Confirmation of three replicable personality prototypes for both children and adults," by J. B. Asendorpf, P. Borkenau, F. Ostendorf, and M. A. G. van Aken, 2001, European Journal of Personality, 15(3), 169–198. (https://doi.org/10.1002/per.408).

Purpose of This Study

Providing CDMSE information sources tailored to suit personality traits and increasing self-confidence with respect to career decision-making may be effective in intervention strategies for career development. This approach is called "targeting," which refers to the strategy of providing elements of determining factors that have a large impact on behaviour tailored to the traits and needs of the target subgroup, and is expected to have greater efficacy than the method of uniform provision of elements to all groups (Latimer et al., 2010). The approach may be particularly effective when targeting university students, such as when carrying out group-based career education. However, in this approach, it is necessary to classify the target groups in a similar manner to the personality prototypes mentioned earlier and to identify optimal information source patterns for each subgroup. To date, there have been few studies on personality traits and CDMSE information sources, and almost none that have focused on the Japanese population.

Given this background, the present study aimed to classify personality trait patterns by means of cluster analysis and clarify the characteristics of CDMSE and its information sources for each personality type, with a focus on Japanese undergraduates.

Method

Participants and Procedures

The study sample consisted of 248 (64.9% women; *M* age, 19.80 years, *SD* = 1.33 years) undergraduates from three universities in Japan. Data were collected from June to July 2025. An online questionnaire composed of items on demographic variables, CDMSE, sources of CDMSE, and FFM personality traits was created using Google Forms. Each survey was conducted during the last 20 minutes of a lecture. After the

purpose of this study was explained to the students, only those who provided informed consent responded to the questionnaire. The sample included participants who belonged to the faculty of engineering (32.7%), psychology (21.8%), letters (13.7%), tourism (10.9%), management (7.3%), sports (5.7%), pharmacy (4.0%), and others (4.0%). The university year levels were as follows: freshman (31.0%), sophomore (18.2%), junior (32.7%), and senior (18.2%).

Measures

CDMSE

The Japanese version of the Career Decision-Making Self-Efficacy Scale (Urakami, 1995) was used to assess CDMSE. On this measure, participants rate a total of 30 items on a four-point Likert-type scale ranging from 1 (*no confidence*) to 4 (*complete confidence*). Each item involves a specific career-related decision, such as "To assess my ability accurately" or "To imagine my ideal job." Urakami (1995) reported that this scale has high internal consistency (α = .88) and good two-week test-retest reliability (*r* = .81).

Sources of CDMSE

The CDMSE Source Scale developed by Maeba (2025a) was used in this study. This scale is composed of 29 items rated on a four-point Likert-type scale ranging from 1 (*completely disagree*) to 4 (*completely agree*). This scale has four subscales in accordance with the proposal of Bandura (1977). The ME subscale includes items such as, "I have clear motivation toward my career decision-making" and "I am able to express my strengths and weaknesses well." The VE subscale includes items such as "I can picture myself working at my desired job" and "I have someone who is a model for my desired career." The VP subscale includes items such as "People around me praise me for my career decision-making" and "I have someone who gives me appropriate advice about my career." Lastly, the EA subscale includes items such as "I feel anxious about my career decision-making" and "I get exhausted thinking about or actually carrying out specific behaviours, such as job-hunting activities." Each subscale has demonstrated high internal consistency (ME: α = .89; VE: α = .94, VP: α = .91; EA: α = .87).

Five-Factor Model (FFM) Personality Traits

The short form of the Big-Five Scale (Namikawa et al., 2012) was used to assess the FFM personality traits (extroversion, neuroticism, openness, agreeableness, and conscientiousness). This scale is composed of 29 personality adjectives rated on a seven-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Each factor has demonstrated relatively high internal consistency (extraversion: α = .87; neuroticism: α = .92; openness: α = .87; agreeableness: α = .78; and conscientiousness: α = .86).

Statistical Analysis

Hierarchical cluster analysis using the Ward method with Euclidean distance, which is suitable for small sample sizes, was conducted to classify the subgroups based on each score on the short form of the Big-Five Scale. Z-scores were used for the cluster analysis of each variable. The optimal number of clusters was determined using a dendrogram. Next, mean CDMSE scores and their sources among the obtained clusters were compared by performing a one-way analysis of variance (ANOVA) using the modified Welch method. To control the family-wise error rate appropriately, the Games-Howell method was used for multiple comparisons. Analysis was carried out using SPSS Statistics 25.0 (IBM Japan, Tokyo, Japan), with the level of statistical significance set at < 5%.

Ethical Considerations

A paper explaining the purpose of this study, ethical considerations, and a QR code for responding was distributed to all participants. Regarding ethical considerations, the participants were told that responding was voluntary, that no personally identifiable information would be included, and that withdrawal from the study was possible at any time. Responding to the questionnaire was considered to indicate consent. This study was approved by the Institutional Review Board of Atomi University (approval No: 25-001).

Results

The participants' descriptive statistics are shown in Table 1, and correlations among Big-Five Scale, CDMSE, and CDMSE Source Scale scores are shown in Table 2. Extroversion showed significant positive associations with CDMSE (r = .53, p < .01) and each CDMSE source (r_s = .31–.57, p_s < .01). Openness also showed significant positive relations with CDMSE (r = .57, p < .01) and each CDMSE source (r_s = .29 to .40, p_s < .01). By contrast, neuroticism showed significant negative associations with CDMSE (r = –.51, p < .01) and each CDMSE source (r_s = –.42 to –.21, p_s < .01).

Hierarchical cluster analysis revealed four clusters based on the characteristics of the personality trait patterns (see Figure 2). The first cluster was characterized by lower mean scores for agreeableness and conscientiousness (n = 57; 68.4% women). The second cluster was characterized by the highest mean neuroticism scores and lower mean scores for the other four traits (n = 58; 62.1% women). The third cluster was characterized by the lowest mean extroversion and openness scores (n = 53; 79.2% women). Lastly, the fourth cluster was characterized by the lowest mean neuroticism scores and higher mean scores for the other

Table 1

Descriptive Statistics for CDMSE, CDMSE Source Subscale and Five-Factor Personality Traits Scores

	n (%)	CDMSE *Mean (SD)*	ME *Mean (SD)*	VE *Mean (SD)*	VP *Mean (SD)*	EA *Mean (SD)*	Neuroticism *Mean (SD)*	Extroversion Mean (*SD*)	Openness *Mean (SD)*
Sex									
Male	89(35.89)	79.39(14.88)	23.76(4.97)	15.75(3.62)	16.10(2.93)	19.15(5.13)	22.78(6.96)	21.38(7.45)	24.91(6.60)
Female	161(64.92)	78.68(14.12)	24.36(5.06)	15.24(3.64)	16.55(3.59)	18.24(5.24)	24.98(7.11)	20.01(7.72)	23.22(7.28)
Faculty									
Engineering	81(32.66)	77.91(15.70)	23.65(5.13)	15.47(3.47)	15.68(3.02)	18.90(5.10)	23.16(7.15)	20.40(7.50)	24.91(6.60)
Psychology	54(21.77)	76.30(13.12)	23.91(4.78)	15.04(3.35)	16.94(3.46)	16.04(4.37)	27.37(5.93)	19.83(7.40)	23.91(6.89)
Letters	34(13.71)	78.18(14.01)	22.68(4.30)	15.68(4.20)	16.26(3.59)	19.53(6.18)	23.18(8.19)	21.35(6.30)	23.50(6.79)
Tourism	27(10.89)	78.70(15.10)	24.78(5.71)	14.74(3.88)	16.15(3.96)	19.93(4.80)	24.48(5.60)	18.44(8.46)	19.11(7.88)
Management	18(7.96)	84.72(11.52)	26.06(4.18)	14.67(3.96)	15.89(2.97)	19.56(4.44)	21.83(8.81)	19.00(9.75)	21.78(8.25)
Sports	14(5.65)	90.29(12.07)	28.86(4.35)	18.50(3.20)	18.71(2.52)	21.71(3.85)	23.50(5.85)	24.86(6.92)	28.29(5.38)
Pharmayc	10(4.03)	79.30(11.69)	23.70(5.01_	14.70(3.20)	17.30(3.83)	17.70(5.93)	24.20(7.71)	20.40(7.29)	26.40(6.17)
Others	10(4.03)	77.90(12.51)	23.20(4.78)	15.70(2.75)	17.10(3.21)	17.00(5.60)	23.60(7.06)	24.10(7.52)	23.00(6.41)
Years in University									
Freshman	77(31.05)	76.51(14.14)	23.51(5.10)	15.12(3.07)	15.91(3.43)	18.34(5.11)	24.42(6.77)	19.84(7.24)	23.52(6.10)
Sophomore	45(18.15)	84.24(14.97)	25.09(5.09)	16.89(3.76)	17.04(2.74)	19.84(5.09)	21.47(6.90)	23.84(7.12)	27.98(6.20)
Junior	81(32.66)	77.58(14.93)	23.90(5.31)	14.94(3.94)	16.12(3.37)	17.38(4.99)	25.59(7.10)	19.56(8.06)	22.54(7.28)
Senior	45(18.15)	80.20(11.80)	24.76(4.19)	15.31(3.55)	17.07(3.73)	19.76(5.50)	24.09(7.41)	19.93(7.33)	22.44(7.72)

Note. CDMSE= Career Decision Making Self-Efficacy; ME= Mastery Experiences; VE= Vicarious Experences; VP= Verbal Persuasion; EA= Emotional Arousal; SD= standard deviation

Table 2

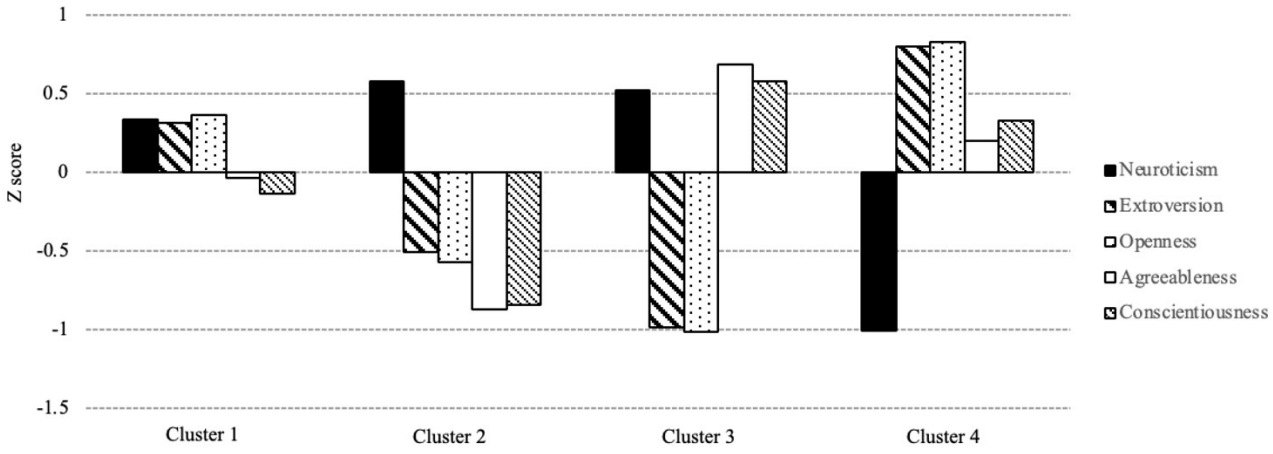
Correlations Between CDMSE, CDMSE Source Subscale and Five-Factor Personality Traits Scores

	1	2	3	4	5	6	7	8	9	10
1. CDMSE	-									
2. ME	.78**	-								
3. VE	.69**	.54**	-							
4. VP	.55**	.47**	.66**	-						
5. EA	.31**	.53**	.28**	.22**	-					
6. Neuroticism	-.51**	-.28**	-.34**	-.21**	-.42**	-				
7. Extroversion	.53**	.38**	.57**	.50**	.31**	-.42**	-			
8. Openness	.57**	.40**	.40**	.38**	.29**	-.40**	.58**	-		
9. Agreeableness	.08	-.02	.06	-.12	.12	-.10	.02	-.00	-	
10. Conscientiousness	.07	.01	-.03	-.07	.03	-.15*	.15*	.08	.23**	-

Note: *p< .05; **p< .01. CDMSE= Career Decision Making Self-Efficacy; ME= Mastery Experiences; VE= Vicarious Experences; VP= Verbal Persuasion; EA= Emotional Arousal

Figure 2

The Result of Hierarchical Cluster Analysis Using Ward Method



four traits (n = 80; 55.0% women). Based on the personality prototypes proposed by Asendorpf, Borkenau, Ostendorf, and Van Aken (2001), the first cluster was named "undercontrolled." Similarly, the second cluster was named "overcontrolled" and the fourth cluster "resilient." According to the characteristics of the third cluster, this was named "reserved."

The results of the ANOVA showed significant differences in CDMSE and CDMSE Source subscale scores among four clusters:

- CDMSE: F [3, 244] = 40.53, η^2_p = .33
- ME: F [3, 244] = 15.09, η^2_p = .16
- VE: F [3, 244] = 35.00, η^2_p = .30

- VP: F [3, 244] = 21.20, η^2_p = .21
- EA: F [3, 244] = 15.96, η^2_p = .16, p_s < .001)

The results regarding multiple comparisons are shown in Table 3. Participants classified as either "undercontrolled" or "resilient" showed significantly higher scores for almost all variables. Furthermore, participants classified as "resilient" showed the highest CDMSE and EA scores.

Table 3

One-way ANOVA and Multiple Comparison for CDMSE and CDMSE Source Subscale Scores Between the Four Clusters

	1: undercontrolled (n=57)	2: overcontrolled (n=58)	3: reserved (n=53)	4: resilient (n=80)	*F*- value	η^2_p	Multiple Comparison (Games-Howell)
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*			
CDMSE	80.39 (10.35)	71.4 (14.37)	69.64 (11.57)	89.51 (10.83)	40.53	.33	1> 2**; 1>3*** 4> 1, 2, 3***
ME	24.79 (4.51)	22.74 (5.93)	21.43 (4.68)	26.51 (3.52)	15.09	.16	1> 3** 4> 2, 3***
VE	16.56 (2.48)	14.05 (2.89)	12.51 (2.66)	17.51 (3.72)	35.00	.30	1> 2, 3*** 4> 2, 3***
VP	17.74 (2.81)	15.67 (3.49)	13.91 (3.05)	17.61 (2.77)	21.20	.21	1> 2**; 1> 3*** 4> 2**; 4> 3***
EA	18.51 (4.29)	16.29 (4.81)	16.81 (6.26)	21.39 (3.93)	15.96	.16	4> 1**; 4> 2, 3***

Note: *p< .05; **p< .01; ***p< .001. ME= Mastery Experiences; VE= Vicarious Experences; VP= Verbal Persuasion; EA= Emotional Arousal; *SD*= standard deviation

Discussion

The primary aims of this study were to classify personality trait patterns by means of a cluster analysis and clarify the characteristics of CDMSE and its information sources for each cluster, with a focus on Japanese undergraduates. As a result, personality traits based on the FFM were classified into four patterns. In addition to three types similar to the personality prototypes indicated by Asendorpf et al. (2001), the pattern of "reserved," with little extraversion or openness, was identified. The findings also indicated that the participants belonging to each type had distinct characteristics.

Characteristics of CDMSE and Its Information Sources in Each of the Four Personality Types

First, the "resilient" type showed high values for CDMSE and for all four information sources. It has been shown that subjects of this type are mentally healthy with a high level of satisfaction toward their lives and have high self-efficacy with respect to work (Fisher & Robie, 2019). In addition, a meta-analysis by Wang, Luan, Zhao, and Ma (2023) found that CDMSE had significant positive associations with extraversion (ρ = 0.41), openness (ρ = 0.35), agreeableness (ρ = 0.23), and conscientiousness (ρ = 0.48); only neuroticism had a significant negative association (ρ = -0.33). These findings lend support to the results of the present study. Subjects belonging to the "resilient" type show interest in a variety of areas because of their high openness and are likely to gain extensive experiences of the type that can boost their self-confidence as a result of their proactive behaviour (= ME). In addition, they are likely to be readily satisfied with the information sources they receive from others as a result of their high extraversion (= VE, VP). Moreover, EA in these

subjects was higher than that in subjects belonging to the other three personality types. It therefore appears that this personality type is able to manage anxiety and stress relating to career decision-making behaviour successfully and gain abundant positive emotions of accomplishment and satisfaction.

Next, regarding the "undercontrolled" personality type, CDMSE was second highest after "resilient." Looking at information sources for this type, ME was significantly higher compared with the "reserved" type, suggesting that subjects belonging to the "undercontrolled" type are able to obtain somewhat positive experiences from their career decision-making behaviours. As already noted, this is probably a result of their relatively high openness. Also, VE and VP were both as high as in the "resilient" type, suggesting that high extraversion is a factor shared by the two personality types. At the same time, EA was significantly lower for the "reserved" than for the "resilient" type. Subjects belonging to the "reserved" type are more prone to behavioural problems because of high impulsivity or extreme emotional expression (Eisenberg et al., 2000). This tendency may be expected in career-related behaviours, and as a result, negative physical and emotional experiences may readily occur. In addition, because appropriate emotional control has been shown to play an important role in career decision-making among college students (Chen, 2025), the provision of programs for increasing the ability for self-regulation in emotional and other areas may be effective in increasing CDMSE among subjects belonging to the "undercontrolled" type.

Along with "overcontrolled" and "reserved," CDMSE and its information sources were both low. Steca, Alessandri, Vecchio, and Caprata (2007) reported that people belonging to the "overcontrolled" type are prone to inner problems and have low social self-efficacy and self-regulation. The present results seem reasonable, as the "overcontrolled" type is the complete opposite of the "resilient" tendency. At the same time, although the "reserved" type has the characteristics of high agreeableness and conscientiousness, it showed the same trends as the "overcontrolled" type. Agreeableness also had a relatively small effect size in the meta-analysis of Wang et al. (2023), and Furnham (2017) showed that agreeableness does not predict occupational achievement. The findings of the present study also suggest the possibility that high agreeableness may not be related to CDMSE or its information sources. However, another characteristic of the "reserved" type is high conscientiousness, and a meta-analysis has shown that this has a large effect size on CDMSE and a significant positive association with career commitment (Turda, 2024). Furthermore, it has been suggested that conscientiousness contributes to variables such as satisfaction and success in life (Soto, 2019). Considering this, it seems likely that people belonging to the "reserved" type are more likely, for example, to persist in carrying out career-related behaviours, and as a result, make choices and decisions they feel happy with; they are also more likely to have higher feelings of achievement and satisfaction with their decisions. Thus, it can be conjectured that they are also more likely to have relatively high ME and EA. Nonetheless, in the present study, the scores for both of these information sources were low. A possible reason for this is the effect of a high tendency toward neuroticism. ME is an information source that consists of not only an individual's actual experiences of success or failure, but also their subjective perceptions of the results of their behaviours (Usher & Pajares, 2008). It has been shown that neuroticism is significantly associated with self-denying cognitive bias (Liu et al., 2024). In light of this, subjects belonging to the "reserved" type could be expected to have a strong tendency to consider experiences deemed successes when viewed objectively as failures, and consequently, these information sources have low scores. Thus, an approach that improves this nonfunctional causal attribution (Margolis & McCabe, 2006; Perry et al., 2010) may be effective. Luzzo, Funk, and Strang (1996) reported that CDMSE improved significantly as a result of retraining in causal attribution. Similarly, Lent, Brown, and Hackett (1994) demonstrated the effectiveness of cognitive restructuring through positive reappraisals of past experiences.

An intervention to strengthen CDMSE thorough the selective reinforcement of relatively deficient sources has demonstrated effectiveness in Japanese female undergraduates (Maeba, 2025b). However, while such individualized programs are highly effective, they are not realistically feasible for large groups and require significant costs (Kreuter et al.,1999). Thus, when conducting large-scale interventions at universities, the findings from this study may be useful. Specifically, the findings suggest a "targeting" approach: assessing participants' personality types beforehand to form subgroups and then providing each group with effective sources. Personality traits based on the FFM can be assessed more simply using scales such as the 10-item version, which is considered less burdensome (Gosling et al., 2003). Based on the present

findings, interventions focused on enhancing EA may be more effective for individuals who belong to the "undercontrolled" group, for example. Table 4 exemplifies particular intervention components for each source

Table 4

Examples of Interventional Components for Each Source

ME	Formulation and modification of an action plan Reviewing the accomplishment of actual perforamnce
VE	Identifying a relatable role model and organizing components to imitate Picturing oneself performing successfully in career-related behaviours
VP	Self-instructions to encourage performance of career-related behaviours Reframing negative messages to postive ones
EA	Re-evaluations of positive or negative emotions Mindfulness-based training for coping with career-related anxiety

Note: ME= Mastery Experiences; VE= Vicarious Experences; VP= Verbal Persuasion; EA= Emotional Arousal
Adapted from "Developing a scale to measure four sources of career decision-making self-efficacy among Japanese university students," by K. Maeba, 2025a, Journal of Health Psychology Research, 37(2), p. 89–97 (https://doi.org/10.11560/jhpr.230319156), and "Preliminary study of an intervention program to strengthen career decision-making self-efficacy among female university students," by K. Maeba, 2025b, Journal of Health Psychology Research, 38(1), p. 77–86 (https://doi.org/10.11560/jhpr.250401012). Copyright 2025 for both works by The Japanese Association of Health Psychology.

At the same time, approaches that focus on actually changing personality traits may also be a possibility. In a meta-analysis of the results of various clinical interventions, Roberts et al. (2017) alluded to the possibility of personality modification. They found that interventions aimed particularly at neuroticism had a sizeable effect (d = 0.57), but interventions for the other four traits had relatively minor effects (d_s = 0.13–0.23).

Moreover, specific personality traits in the FFM have been shown to predict job preferences among undergraduates (Culbertson et al., 2009), and accordingly, in the present study, conscientiousness and extraversion showed a significant positive correlation with "occupational prestige," while neuroticism showed a significant negative correlation. Moreover, agreeableness showed a significant negative correlation with "financial interests." These findings may provide assistance in guiding job search efforts among undergraduates.

Focusing on individual characteristics, including personality, can also provide a useful perspective for career support practitioners. Arthur, Borgen, and McMahon (2025) organized the 296 practice points presented in *Career theories and models at work: Ideas for practice* (Arthur et al., 2019) using functional thematic analysis. As one of the foundational themes, they identified "client characteristics," which were the personal characteristic most closely related to personality. Furthermore, they pointed out that when a client has low readiness for change, it is crucial to enhance their self-efficacy initially and help them gain a sense of expectation that positive outcomes are achievable.

Limitations and Future Directions

This study has some limitations. First, although prior studies targeting children with similar sample sizes (n = 163–181) have classified personality traits (Embacher et al., 2023; Smidt & Embacher, 2023), it is difficult to generalize these personality types because of the small sample size. This also leads to the associated problem of reproducibility of the personality prototypes. While the present study obtained cluster patterns that were broadly consistent with the three personality prototypes put forward by Asendorpf et al. (2001),

the Z-scores for each cluster were not the same. Noting the problem of reproducibility of the personality prototypes, Gerlach, Farb, Revelle, and Nunes Amaral (2018) carried out mixed normal distribution modelling analysis using four data sets comprising over 1.5 million persons. Their results revealed four new personality types, one of which has been named "reserved." The characteristics of this type resemble the "reserved" type uncovered in the present study, but differ in that neuroticism is low. At the same time, there is a lack of sufficient evidence for the reproducibility of these four types and whether they cover all subjects, along with a view that caution should be exercised when putting them into practical use (Freudenstein et al., 2019). Regardless, a study of how personality traits relate to CDMSE and its information sources with a larger and more diverse sample is needed.

Second, this study only carried out a cross-sectional analysis, so it is not possible to draw conclusions about causal relationships between the variables. The above-mentioned intervention strategy is no more than a proposal at this stage, and it is unclear whether such an intervention would, in fact, effectively increase CDMSE in college students. The effect of intervention strategies based on targeting the characteristics of each personality type needs to be verified by means of randomized controlled trials.

Conclusion

The present study aimed to classify personality trait patterns based on the FFM and clarify the characteristics of CDMSE and its information sources among Japanese undergraduates. Hierarchical cluster analysis identified four clusters with distinct characteristics, and the resilient group demonstrated the highest scores across all domains. These findings suggest that personality-based differences can be associated with the number of information sources in shaping CDMSE. Taking this issue into account, the "targeting" approach can be effective when conducting large-scale interventions at universities. Specifically, assessing undergraduates' personality types enables us to form adequate subgroups and provide each group with optimal sources. To strengthen CDMSE, future research should investigate the efficacy of interventions adapted to personality traits. Moreover, focusing on personality characteristics could also provide a useful perspective for career support practitioners. Therefore, considering personality traits and self-efficacy in future career-related studies could lead to refinement in both theory and practice.

References

Amaral, F., Henning, M., Moir, F., & Krägeloh, C. (2024). A structural equation model analysis of the relationships between career indecision, sense of control, self-efficacy, rumination and depression in high school students. *Discover Psychology*, *4*(1), Article 150. https://doi.org/10.1007/s44202-024-00257-9

Amir, T., & Gati, I. (2006). Facets of career decision-making difficulties. *British Journal of Guidance & Counselling*, *34*(4), 483–503. https://doi.org/10.1080/03069880600942608

Arthur, N., Borgen, R., & McMahon, M. (2025). Career development practices: What theories and models have to offer. *Canadian Journal of Career Development*, *24*(1), 85–105. https://doi.org/10.53379/cjcd.2025.431

Arthur, N., Neault, R. A., & McMahon, M. (Eds.). (2019). *Career theories and models at work: Ideas for practice*. CERIC.

Asendorpf, J. B., Borkenau, P., Ostendorf, F., & van Aken, M. A. G. (2001). Carving personality description at its joints: Confirmation of three replicable personality prototypes for both children and adults. *European Journal of Personality*, *15*(3), 169–198. https://doi.org/10.1002/per.408

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Betz, N. E. (2007). Career self-efficacy: Exemplary recent research and emerging directions. *Journal of Career Assessment*, *15*(4), 403–422. https://doi.org/10.1177/1069072707305759

Betz, N. E., & Schifano, R. (2000). Evaluation of an intervention to increase realistic self-efficacy in college women. *Journal of Vocational Behavior*, *56*(1), 35–52. https://doi.org/10.1006/jvbe.1999.1690

Bike, D. H. (2013). *Career decision learning experiences: Development and validation of a scale* [Doctoral dissertation, University of Missouri–Columbia]. MOspace. https://mospace.umsystem.edu/

items/1b74ec8d-1099-4f7e-b840-f9ee89b9c953
Block, J. H., & Block, J. (1980). The role of ego-control and ego-resiliency in the organization of behavior. In W. A. Collins (Ed.), *Development of cognition, affect, and social relations: The Minnesota symposia on child psychology* (Vol. 13, pp. 39–101). Lawrence Erlbaum Associates.
Brown, S. D., & Hirschi, A. (2013). Personality, career development, and occupational attainment. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (2nd ed., pp. 299–328). John Wiley & Sons.
Chen, C. P. (2025). Emotional intelligence and career wellbeing. *Canadian Journal of Career Development*, *24*(1), 73–82. https://doi.org/10.53379/cjcd.2025.421
Choi, B. Y., Park, H., Yang, E., Lee, S. K., Lee, Y., & Lee, S. M. (2012). Understanding career decision self-efficacy: A meta-analytic approach. *Journal of Career Development*, *39*(5), 443–460. https://doi.org/10.1177/0894845311398042
Costa, P. T., Jr., & McCrae, R. R. (2009). The five-factor model and the NEO Inventories. In J. N. Butcher (Ed.), *The Oxford handbook of personality assessment* (pp. 299–322). Oxford University Press.
Culbertson, S. S., Leiva, P. I., Henning, J. B., & Post-Priller, S. (2009). The role of personality and goal orientation in student preferences for job attributes. *Canadian Journal of Career Development*, *8*(1), 39–49. https://doi.org/10.82396/cjcd.v8i1.3022
Eisenberg, N., Fabes, R. A., Guthrie, K., & Reiser, M. (2000). Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *Journal of Personality and Social Psychology*, *78*(1), 136–157. https://doi.org/10.1037/0022-3514.78.1.136
Embacher, E., Zöggeler-Burkhardt, L., & Smidt, W. (2023). Closeness and conflict in teacher-child relationships in preschool: The role of child personality types. *Early Child Development and Care*, *193*(11–12), 1240–1256. https://doi.org/10.1080/03004430.2023.2236318
Fisher, P. A., & Robie, C. (2019). A latent profile analysis of the Five Factor Model of personality: A constructive replication and extension. *Personality and Individual Differences*, *139*, 343–348. https://doi.org/10.1016/j.paid.2018.12.002
Freudenstein, J., Strauch, C., Mussel, P., & Ziegler, M. (2019). Four personality types may be neither robust nor exhaustive. *Nature Human Behaviour*, *3*(10), 1045–1046. https://doi.org/10.1038/s41562-019-0721-4
Furnham, A. (2017). Personality traits, personality disorders, and creativity. In G. J. Feist, R. Reiter-Palmon, & J. C. Kaufman (Eds.), *The Cambridge handbook of creativity and personality research* (pp. 251–271). Cambridge University Press. https://doi.org/10.1017/9781316228036.014
Gerlach, M., Farb, B., Revelle, W., & Nunes Amaral, L. A. (2018). A robust data-driven approach identifies four personality types across four large data sets. *Nature Human Behaviour*, *2*(10), 735–742. https://doi.org/10.1038/s41562-018-0419-z
Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of Big-Five personality domains. *Journal of Research in Personality*, *37*(6), 504–528. https://doi.org/10.1016/S0092-6566(03)00046-1
Hagiwara, Y., Shimizu, K., Adachi, T., Kanai, M., & Miki, T. (2025). Impact of personality prototypes on app engagement and weight loss in a mobile app-based lifestyle modification support program for individuals with obesity and non-communicable diseases. *Digital Health*, *11*. https://doi.org/10.1177/20552076251347891
Ireland, G. W., & Lent, R. W. (2018). Career exploration and decision-making learning experiences: A test of the career self-management model. *Journal of Vocational Behavior*, *106*, 37–47. https://doi.org/10.1016/j.jvb.2017.11.004
Kreuter, M. W., Strecher, V. J., & Glassman, B. (1999). One size does not fit all: The case for tailoring print materials. *Annals of Behavioral Medicine*, *21*(4), 276–283. https://doi.org/10.1007/bf02895958
Latimer, A. E., Brawley, L. R., & Bassett, R. L. (2010). A systematic review of three approaches for constructing physical activity messages: What messages work and what improvements are needed? *International Journal of Behavioral Nutrition and Physical Activity*, *7*, Article 36. https://doi.org/10.1186/1479-5868-7-36
Lent, R. W., & Brown, S. D. (2013). Social cognitive model of career self-management: Toward a unifying view of adaptive career behavior across the life span. *Journal of Counseling Psychology*, *60*(4), 557–

568. https://doi.org/10.1037/a0033446
Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, *45*(1), 79–122. https://doi.org/10.1006/jvbe.1994.1027
Lent, R. W., Ireland, G. W., Penn, L. T., Morris, T. R., & Sappington, R. (2017). Sources of self-efficacy and outcome expectations for career exploration and decision-making: A test of the social cognitive model of career self-management. *Journal of Vocational Behavior*, *99*, 107–117. https://doi.org/10.1016/j.jvb.2017.01.002
Liu, B., Wang, M., Wang, H., Feng, Y., Ju, Y., Sun, J., Lu, X., Dong, Q., Zhang, L., Wan, P., Guo, H., Zhao, F., Liu, J., Zhang, Y., & Li, L. (2024). Association between personality and cognitive bias in adults with and without depression. *BMC Psychology*, *12*(1), Article 779. https://doi.org/10.1186/s40359-024-02293-5
Liu, X., Zhang, X., Dang, Y., & Gao, W. (2023). Career education skills and career adaptability among college students in China: The mediating role of career decision-making self-efficacy. *Behavioral Sciences*, *13*(9), Article 780. https://doi.org/10.3390/bs13090780
Luzzo, D. A., Funk, D. P., & Strang, J. (1996). Attributional retraining increases career decision-making self-efficacy. *The Career Development Quarterly*, *44*(4), 378–386. https://doi.org/10.1002/j.2161-0045.1996.tb00453.x
Maeba, K. (2025a). Developing a scale to measure four sources of career decision-making self-efficacy among Japanese university students. *Journal of Health Psychology Research*, *37*(2), 89–97. https://doi.org/10.11560/jhpr.230319156
Maeba, K. (2025b). Preliminary study of an intervention program to strengthen career decision-making self-efficacy among female university students. *Journal of Health Psychology Research*, *38*(1), 77–86. https://doi.org/10.11560/jhpr.250401012
Mammadov, S., Wang, S., & Lu, Z. (2024). Personality types and their associations with psychological resilience, coping with stress, and life satisfaction among undergraduate students: A latent profile analysis approach. *Personality and Individual Differences*, *222*, Article 112599. https://doi.org/10.1016/j.paid.2024.112599
Margolis, H., & McCabe, P. P. (2006). Improving self-efficacy and motivation: What to do, what to say. *Intervention in School and Clinic*, *41*(4), 218–227. https://doi.org/10.1177/10534512060410040401
Martincin, K. M., & Stead, G. B. (2015). Five-factor model and difficulties in career decision making: A meta-analysis. *Journal of Career Assessment*, *23*(1), 3–19. https://doi.org/10.1177/1069072714523081
Namikawa, T., Tani, I., Wakita, T., Kumagai, R., Nakane, A., & Noguchi, H. (2012). Development of a short form of the Japanese Big-Five Scale and a test of its reliability and validity. *The Japanese Journal of Psychology*, *83*(2), 91–99. https://doi.org/10.4992/jjpsy.83.91
Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structures in peer nomination personality ratings. *Journal of Abnormal and Social Psychology*, *66*, 574–583. https://doi.org/10.1037/h0040291
Penn, L. T., & Lent, R. W. (2019). The joint roles of career decision self-efficacy and personality traits in the prediction of career decidedness and decisional difficulty. *Journal of Career Assessment*, *27*(3), 457–470. https://doi.org/10.1177/1069072718758296
Perry, R. P., Stupinsky, R. H., Hall, N. C., Chipperfield, J. G., & Weiner, B. (2010). Bad starts and better finishes: Attributional retraining and initial performance in competitive achievement settings. *Journal of Social and Clinical Psychology*, *29*(6), 668–700. https://doi.org/10.1521/jscp.2010.29.6.668
Priyashantha, K. G., Dahanayake, W. E., & Maduwanthi, M. N. (2023). Career indecision: A systematic literature review. *Journal of Humanities and Applied Social Sciences*, *5*(2), 79–102. https://doi.org/10.1108/jhass-06-2022-0083
Rammstedt, B., Riemann, R., Angleitner, A., & Borkenau, P. (2004). Resilients, Overcontrollers, and Undercontrollers: The replicability of the three personality prototypes across informants. *European Journal of Personality*, *18*(1), 1–14. https://doi.org/10.1002/per.495
Roberts, B. W., Luo, L., Briley, D. A., Chow, P. I., Su, R., & Hill, P. L. (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin*, *143*(2), 117–141. https://doi.org/10.1037/

bul0000088
Santos, A., Wang, W., & Lewis, J. (2018). Emotional intelligence and career decision-making difficulties: The mediating role of career decision self-efficacy. *Journal of Vocational Behavior*, *107*, 295–309. https://doi.org/10.1016/j.jvb.2018.05.008
Smidt, W., & Embacher, E. (2023). Does personality matter? The relationship between child personality and interaction quality in preschools. *Research Papers in Education*, *38*(1), 45–68. https://doi.org/10.1080/02671522.2021.1941217
Soto, C. J. (2019). How replicable are links between personality traits and consequential life outcomes? The Life Outcomes of Personality Replication Project. *Psychological Science*, *30*(5), 711–727. https://doi.org/10.1177/0956797619831612
Steca, P., Alessandri, G., Vecchio, G. M., & Caprara, G. V. (2007). Being a successful adolescent at school and with peers. The discriminative power of a typological approach. *Emotional and Behavioural Difficulties*, *12*(2), 147–162. https://doi.org/10.1080/13632750701315698
Tabernero, C., & Wood, R. E. (2009). Interaction between self-efficacy and initial performance in predicting the complexity of task chosen. *Psychological Reports*, *105*(3), 1167–1180. https://doi.org/10.2466/PR0.105.F.1167-1180
Taylor, K. M., & Betz, N. E. (1983). Applications of self-efficacy theory to the understanding and treatment of career indecision. *Journal of Vocational Behavior*, *22*(1), 63–81. https://doi.org/10.1016/0001-8791(83)90006-4
Tupes, E. C., & Christal, R. E. (1961). *Recurrent personality factors based on trait ratings* (Technical Report ASD-TR-61-97). Personnel Laboratory, Aeronautical Systems Division, Air Force Systems Command, United States Air Force. https://doi.org/10.21236/AD0267778
Turda, E. S. (2024). The relationship between personality factors, vocational identity and career decision-making self-efficacy. *International Journal for Research in Vocational Education and Training*, *11*(1), 55–75. https://doi.org/10.13152/IJRVET.11.1.3
Udayar, S., Levin, N., Lipshits-Braziler, Y., Rochat, S., Di Fabio, A., Gati, I., Sovet, L., & Rossier, J. (2020). Difficulties in career decision making and self-evaluations: A meta-analysis. *Journal of Career Assessment*, *28*(4), 608–635. https://doi.org/10.1177/1069072720910089
Uffelman, R. A., Subich, L. M., Diegelman, N. M., Wagner, K. S., & Bardash, R. J. (2004). Effect of mode of interest assessment on clients' career decision self-efficacy. *Journal of Career Assessment*, *12*(4), 366–380. https://doi.org/10.1177/1069072704266651
Urakami, M. (1995). The study of college students' self-efficacy regarding career decision making. *Bulletin of the School of Education, Nagoya University (Educational Psychology)*, *42*, 115–126. https://doi.org/10.9749/JIN.134.36
Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of Educational Research*, *78*(4), 751–796. https://doi.org/10.3102/0034654308321456
Walker, J. V., III, & Peterson, G. W. (2012). Career thoughts, indecision, and depression: Implications for mental health assessment in career counseling. *Journal of Career Assessment*, *20*(4), 497–506. https://doi.org/10.1177/1069072712450010
Wang, H., & Jiao, R. (2023). The relationship between career social support and career management competency: The mediating role of career decision-making self-efficacy. *Current Psychology*, *42*(26), 23018–23027. https://doi.org/10.1007/s12144-022-03418-y
Wang, N., Luan, Y., Zhao, G., & Ma, R. (2023). The antecedents of career decision self-efficacy: A meta-analysis on 20 years of research. *Career Development International*, *28*(6–7), 633–648. https://doi.org/10.1108/CDI-04-2023-0092
Zhou, A., Liu, J., Xu, C., & Jobe, M. C. (2024). Effect of social support on career decision-making difficulties: The chain mediating roles of psychological capital and career decision-making self-efficacy. *Behavioral Sciences*, *14*(4), Article 318. https://doi.org/10.3390/bs14040318
Zhou, Y., & Xu, G. (2022). Career exploration and decision-making learning experiences (CEDLE) scales: Validation among Chinese vocational college students. *Journal of Career Development*, *49*(4), 846–861. https://doi.org/10.1177/0894845321998004

LEARNING HUB | PORTAIL D'APPRENTISSAGE

Elevate your skills, advance your career | Perfectionnez vos compétences, faites progresser votre carrière

By/Par CERIC



Featured course | Cours vedette

Learning Hub
Portail d'apprentissage

On-demand learning for career professionals

Formation à la demande pour les professionnel·le·s du développement de carrière

CERIC's Learning Hub offers a curated collection of free and paid on-demand learning opportunities. Track your progress, earn certificates and build your skills at your own pace.

Le portail d'apprentissage du CERIC propose une sélection de formations à la demande, gratuites et payantes. Suivez vos progrès, obtenez des certificats et développez vos compétences à votre rythme.

Ignite Motivation | Susciter la motivation

Empowering clients to achieve career success | Donner aux client·e·s les moyens de réussir leur carrière

Access practical, evidence-based strategies to boost client motivation and tackle disengagement or self-sabotage.

Accédez à des stratégies pratiques et fondées sur des données probantes pour accroître la motivation des client·e·s et relever les défis liés au désengagement ou à l'autosabotage.

- Assess motivation | Évaluer la motivation
- Sustain engagement | Favoriser un engagement durable
- Support progress through obstacles | Soutenir la progression malgré les obstacles

Only $49 | Seulement 49 $

6 interactive modules

6 modules interactifs

Learn from Dr. Jason Cressey

Apprenez avec le Dr Jason Cressey

Shareable certificate

Certificat partageable

> *Dr. Jason Cressey is of high calibre – great information, practical ways to apply what we learn and his presentation style is engaging.*
>
> – Kim Abram, Case Manager, Immigrant Services Society of BC (ISSofBC)

> *Le Dr Jason Cressey est un professionnel de haut calibre : des informations très pertinentes, des façons concrètes de mettre en pratique ce que nous apprenons et un style de présentation captivant.*
>
> – Kim Abram, Gestionnaire de cas | Immigrant Services Society of BC (ISSofBC)

Also featuring 25 on-demand webinars
Accédez également à 25 webinaires à la demande

Explore the Learning Hub and start building new skills today.
Découvrez le portail d'apprentissage et commencez à développer de nouvelles compétences dès aujourd'hui.

ceric.ca/learning **ceric.ca/apprentissage**

The Relationship between the Career Decision State and Ambiguity Tolerance: Implications for Career Decision-Making Readiness

V. Casey Dozier, Stephen J. Leierer, Qiong Li & Robert C. Reardon
Florida State University, United States of America

Abstract

We undertook an exploratory study of the career decision state and the state of ambiguity tolerance with 107 university students enrolled in a career development class. Our purpose was to examine ways in which the concept of ambiguity tolerance might inform our understanding of the career decision state and career decision-making readiness. More specifically, we wanted to examine the relationships among four measures in the Career State Inventory (CSI), a measure of readiness for career decision-making, and the Ambiguity Aversion Scale score on the Career Decision Ambiguity Tolerance Scale (CDATS). We found that measures of the career decision state (i.e., career certainty, satisfaction, and clarity) were significantly related to career decision ambiguity tolerance with respect to the emotional discomfort or anxiety individuals feel when focused with unclear, complex, or unpredictable choices. Implications for further research and practice are discussed.

Keywords: ambiguity, uncertainty, decision-making, career, readiness

This study explored the relationship between the career decision state (Leierer et al., 2025)—a subjective state of being or momentary consciousness—regarding one's career goals, and the tolerance of ambiguity (Xu & Tracey, 2014) in career decision-making. This matter has not been explored in previous research, and the authors have reason to believe that ambiguity tolerance can provide information about the nature of the career decision state of university students in a career planning class. In this section, we provide further information about the nature of career decisions, the career decision state, and the tolerance of ambiguity in career decision-making.

Reardon, Lenz, Dozier, Roark, and Hultman (2024) explained that career problems have common characteristics: (1) they can be defined in terms of a gap between what exists and what is wanted; (2) they are often complex and involve feelings; (3) they present ambiguous cues or signals; (4) the solution to career problems often involve multiple options, not just a single correct choice; (5) there is almost always some uncertainty about the outcome of the choice; and (6) a decision about a major career problem almost always leads to another set of problems that are not fully known beforehand. As a result, some people may become overwhelmed, confused, and anxious about career problems and making career decisions.

Sampson et al. (2023) described individual career decision-making readiness from a cognitive information processing theory perspective as removing the gap between a current career situation and a more desirable one. This gap may be complex and involve many factors: (a) self-knowledge, (b) the opinions of others, (c) the amount of information available, (d) rapid social and economic change, (e) multiple options for reaching a career goal, and (f) a choice that leads to future decisions. This study explores unexamined constructs of career decision state and ambiguity tolerance, leveraging a conceptually relevant and globally applicable sample to bridge career theory to practice.

Career Decision State (CDS)

The Career Decision State (CDS) may be thought of as a single continuum from being highly goal-directed, satisfied, and confident on the one hand to being immobile or frozen, dissatisfied, and confused on the other (Leierer et al., 2025; Leierer et al., 2016). The career decision state is a person's state of being or consciousness at any time during the decision-making process. When individuals seek career services or are about to engage in a career intervention, a key issue may be whether the person is *ready* to make an important career decision. Readiness is a component of cognitive information processing (CIP) theory (Sampson et al., 2023) that alludes to the extent of one's preparation for deliberate and effortful career problem-solving and decision-making (Bullock-Yowell et al., 2015).

The concept of career decision state is tangentially related to the work of Spielberger et al. (1983) and the development of the State-Trait Anxiety Inventory. They conceptualized two different but related aspects of

the anxiety condition, state, and trait anxiety. State anxiety could be defined as fear, nervousness, or discomfort induced by different situations, demands, objects, or events perceived as uncomfortable in the moment. This type of anxiety refers more to how a person is feeling at the time and is considered temporary. In contrast to state anxiety, trait anxiety is characterized by ongoing feelings of stress, worry, and discomfort experienced on a daily basis, and it is more like a personality characteristic rather than a temporary feeling. We view the career decision state as a state condition, a temporary condition, and not a trait condition.

Leierer et al. (2025) reviewed 14 studies examining the career decision state in relation to other career measures of interventions. In general, these findings revealed that when group Career State Inventory (CSI) mean scores were used as a measure of the career decision state, the scores were correlated with career thinking as measured by the Career Thoughts Inventory (CTI)(Sampson et al., 1996). For example, Bullock-Yowell et al. (2011) found that life/career stress was related to higher negative career thoughts and less to career certainty and satisfaction, and Chason et al. (2013) found negative career thoughts accounted for lower career certainty and satisfaction scores. In addition, the CSI as a state measure is highly sensitive to the effects of career interventions. For example, Osborn et al. (2020) found that students taking a career course had gains in career certainty, satisfaction, and clarity, while students in a human relations course did not. Miller et al. (2018) found that students in a career course improved their career decision state gaining more career certainty, satisfaction and clarity, and Dozier et al. (2019) found an improved career decision state for students taking the online Self-Directed Search (Holland & Messer, 2013).

Ambiguity Tolerance (AT)

The notion of Ambiguity Tolerance (AT) has a long history of research in psychology. For example, one of the first references to AT was published by Frenkel-Brunswik (1949) in the *American Psychologist*. Furnham and Ribchester (1995) noted that AT has attracted a steady stream of research since the early 1950s. They reviewed the literature on AT in psychology over a 40-year period and described it as the way an individual processes information about ambiguous situations when confronted by unfamiliar, complex, or incongruent clues. On the one hand, a person with low tolerance for ambiguity experiences stress, reacts prematurely, and avoids ambiguous stimuli. On the other hand, a person with high tolerance for ambiguity perceives ambiguous situations/stimuli as desirable, challenging, and interesting and neither denies nor distorts their complexity of incongruity.

The scattered and diffused AT literature described by Furnham and Ribchester (1995) now includes career decision-making after Xu and Tracey (2014) reported how AT could affect it. Xu and Tracey, in their study of 275 university students, proposed that people with lower ambiguity tolerance would have more anxiety in the career decision-making process because ambiguity or uncertainty is an inevitable and crucial part of career decision-making. As a result, such students would tend to have more career indecision or be undecided. The research results supported the significance of ambiguity tolerance with respect to career indecision, finding that it directly predicted general indecisiveness, dysfunctional beliefs, lack of information, and inconsistent information.

This brief review of the literature on the career decision state and ambiguity tolerance reveals that both address the matter of career decision-making with university students. Two instruments developed to measure these concepts, the CSI (Leierer et al., 2025) and the Career Decision Ambiguity Tolerance Scale (CDATS) (Xu & Tracey, 2014), were used in this study. Previous literature has not examined the relationship between career decision state and ambiguity tolerance, so this study provides new insights.

Purpose of the Study

Based on our literature review, we posed four research questions to examine the matter of the career decision state and ambiguity tolerance in career decision-making with university students in a career class: (1) What is the relationship between CSI-Total scores and CDATS-Aversion scores among students? (2) What is the relationship between CSI-Career Certainty scores and CDATS-Aversion scores among students? (3) What is

the relationship between CSI-Career Satisfaction scores and CDATS-Aversion scores among students? (4) What is the relationship between CSI-Career Clarity scores and CDATS-Aversion scores among students?

Method

Participants

A total of 107 undergraduate students enrolled in an undergraduate career development course at a large southeastern university participated in this study in the United States. Participants most often reported enrolling in the course to choose a major, select an occupation, or learn how to get a job after graduation (Reardon & Lenz, 2018). We suggest that these are typical issues in career decision-making for many university students. Participants were commonly referred to this course by faculty or academic and career advisors to assist in making decisions regarding career direction, selecting a major, and determining post-graduation plans.

Of the 107 participants, 50 identified as men (47%), 55 identified as women (51%), 1 identified as non-binary (1%), and 1 participant preferred not to answer (1%). Their ages ranged from 18 to 61 (M = 21). The racial/ethnic composition of the study showed that Caucasian/White participants made up the majority (53%), followed by African American/Black (15%), Hispanic (12%), and Asian (8%). The remaining participants represent various multiracial identities or other racial/ethnic groups, with a small percentage choosing "Prefer Not to Answer" (2%). Two individuals did not respond to this question. For class affiliation, students were distributed accordingly: 9% were first-year students, 20% were second-year students, 17% were third-year students, and 53% were fourth year students. (One participant [1%] identified as "Other.")

The distribution of majors in the class reflected a diverse academic cross section of university enrolment, with students from social sciences, business, STEM, and exploratory majors. The seven largest groups came from Psychology (13%), Sports Management (8%), Political Science (6%), Criminology (5%), Finance (5%), International Affairs (4%), and Interdisciplinary Social Science (4%). Additionally, two majors with three students each (6%), eight majors with two students each (15%), and 31 majors with only one student (29%), further highlight the wide range of academic backgrounds represented in the course, underscoring its interdisciplinary appeal. Moreover, several students in the course were Undecided/Exploratory students (7%).

Measures

Career State Inventory (CSI)

The Career State Inventory (CSI) (Leierer et al., 2025) is a unique measure designed to provide information about career decision state. The Career State Inventory is a brief questionnaire that measures the career decision state (CDS) and assesses one's readiness at a moment in time to undertake career decision-making with respect to three constructs: (a) certainty about a career goal, (b) satisfaction with that goal, and (c) vocational clarity or confidence in making a career decision. It is composed of three dimensions alluding to career certainty, satisfaction, and clarity. The CSI can be presented on a single page and typically takes no more than five minutes to complete and score. The instrument may be used at no charge by researchers and practitioners to study career behaviour and improve career services (Leierer et al., 2025).

Four scores are derived from administering the CSI—three component scores and a total score. The three components or dimensions of the career decision state include: (a) the degree of certainty with respect to a career choice as measured by the Occupational Alternatives Question (OAQ); (b) the extent of satisfaction with the choice(s) as measured by the Satisfaction Item; and (c) career clarity, an indicator of one's vocational self-confidence in pursuing a career goal as measured by three items from the MVS Vocational Identity Scale (Holland et al., 1993). Scores from the three dimensions are summed to provide a total CSI score ranging from 2 to 12. All three components of the CSI stem from early work by Holland and his associates in developing the Self-Directed Search (SDS) (Holland & Messer, 2013) and the My Vocational Situation (MVS) (Holland et al., 1993).

OAQ. The OAQ consists of two parts. Part 1 asks participants to list all the occupations they are considering right now. Part 2 asks participants to circle (or write in the space provided) the occupation that is their first choice (and if undecided, write "undecided"). The OAQ produces four scores:

- Score 1: A first occupational choice is listed with no alternatives.
- Score 2: A first occupational choice is listed with alternatives.
- Score 3: No first choice is listed, just alternatives.
- Score 4: Neither a first choice nor alternatives are listed.

Additional details about advanced CSI scoring for the OAQ and its use in career counselling are provided in the *Manual* (Leierer et al., 2025).

Satisfaction Item. This measure asks the single question, "How well satisfied are you with your first choice?" and response scores on the Satisfaction Item are: 1 (*very satisfied*), 2 (*satisfied*), 3 (*not sure*), 4 (*dissatisfied*), and 5 (*very dissatisfied*).

Career Clarity. Three true-false items, drawn from the My Vocational Situation (MVS; Holland et al., 1993) measure the CSI's career clarity dimension:

- (a) "If I had to make an occupational choice right now, I'm afraid I would make a bad choice" (#6).
- (b) "Making up my mind about a career has been a long and difficult problem for me" (#8).
- (c) "I am confused about the whole problem of deciding on a career" (#9).

These items were selected *a priori* by reason and consensus among the CSI authors as having content validity for the career decision state with respect to vocational clarity regarding a career goal. A false response to one of the items is scored "0" and a true response is scored "1." The range of scores on vocational clarity is 0 to 3, with a low score indicating a high degree of clarity and confidence in career decision-making, and a higher score indicating decision-making difficulty and confusion.

Total Score

The continuum of the CSI profile ranges from being highly certain, satisfied, clear, and confident in one's choice at one end (i.e., score 2–3), to being completely frozen, dissatisfied, confused, and lacking confidence in making a choice at the other end (i.e., score 11–12). Mid-range scores (i.e., score 6–8) may be described as having one or more options, but still being uncertain about them, having doubts about one's capability to make an appropriate career decision, and tentativeness in approaching one's career choice.

Reliability and Validity. Stability or test-retest coefficients are not reported for the CSI because it is designed as a *state measure* rather than a *trait measure*, and provides a snapshot of one's current state of consciousness regarding career goals along three dimensions (i.e., certainty, satisfaction, and clarity) and a total score. Further, as an aspect of stability, we believe the CSI is very sensitive to developmental events in a short period of time (e.g., an hour) that might alter the assessed career decision state.

The CSI's reliability alludes to internal consistency or the precision of scores associated with the overall career decision state at the time the measure is administered. Combining data across several studies, Leierer et al. (2025) reported that this 3-item scale (uncertainty, satisfaction, and clarity) possessed a Cronbach's alpha of .74 and inter-item correlations of .63 (OAQ/SAT), .36 (OAQ/Clarity), and .59 (SAT/Clarity). Thus, this scale possesses an acceptable level of commonality across the items and independence among them.

With respect to validity, multiple regression analysis revealed that the three dimensions of the CSI significantly predicted scores on the Career Thoughts Inventory (CTI) (Sampson et al, 1996) total score, $R^2 = .34$, $p < .001$ (Leierer et al., 2016). In terms of concurrent or convergent validity, Leierer et al. (2025)

reported that all three CSI dimensions, certainty, satisfaction, and clarity, were significantly associated with CTI scores.

For this study, the reliability of the CSI Total score scale was .72. The total score across the sample appears to conform to a normal distribution with M = 5.45, Mdn = 5.00, SD = 2.33, skewness = .54, kurtosis = -.68, and SE = 0.23. The bivariate correlations of the scale were all significant at $p < .001$: Certainty/Satisfaction, r = .44. Certainty/Clarity, r = .40, and Satisfaction/Clarity, r = .61.

Career Decision Ambiguity Tolerance Scale (CDATS)

Xu and Tracey (2015) constructed the CDATS based on Budner's (1962) tripartite model of ambiguity tolerance (i.e., tolerance for unfamiliar, complex, or inconsistent information). The career decision-ambiguity tolerance construct was defined as people's evaluations of and responses to unfamiliar, complex, or inconsistent information in career decision-making. Accordingly, individuals with high levels of career decision ambiguity tolerance tend to be comfortable with some of the unknown risks about the probability of an outcome encountered during the process of career decision-making and would find it interesting and even desirable. In contrast, individuals with low levels of career decision ambiguity tolerance tend to find the uncertain information in career decision-making to be anxiety-provoking. They would choose to avoid it or react prematurely.

The final 18-item CDATS developed by Xu and Tracey (2015) was used in this study. Item examples of the three factors include the following: Preference (e.g., "I am open to careers that I have never heard of or thought about"); Tolerance (e.g., "I am able to make a choice when multiple options seem equally appealing"); and Aversion (e.g., "I find it difficult to make career decisions as things cannot be predicted clearly"). Participants responded to each item using a 7-point Likert scale with a range of 1 (*strongly disagree*) to 7 (*strongly agree*).

The CDATS used in this study was composed of 18 items, with six items assessing each of the three subscales: Preference, Tolerance, and Aversion. Participants rated each item on a 7-point Likert scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). We scored the CDATS as follows: low scores on the CDATS Aversion scale indicated ambiguity tolerance in career decision-making and high scores on this scale indicated a lack of tolerance of ambiguity in career decision-making. In contrast, only high scores on the Preference and Tolerance scales indicated ambiguity tolerance in career-decision making.

The CDATS was developed and initially validated through two studies of college students at a large southwestern university (Xu & Tracey, 2015). The moderate correlations among these three factors indicate that career decision ambiguity tolerance is multi-dimensional and should not be viewed as a single factor or used as a total score; in other words, the scores on the three factors cannot be added to determine a total score. Therefore, career decision ambiguity tolerance is more nuanced than a simple construct and the three factors should be viewed separately. In this study, we used the six items from the Aversion scale to learn more about the career decision state in relation to the results of the CSI instrument. These six items are shown in Table 1.

Xu and Tracey (2015) developed the Career Decision Ambiguity Tolerance Scale (CDATS) that has demonstrated satisfactory performance in twenty validity and reliability studies.

Procedures

Students completed the survey instruments using Qualtrics in a procedure approved by the University Institutional Review Board (IRB), which ensures that research projects involving human subjects follow federal regulations. Students received some course credit for their participation in the research. Participants' demographic data were obtained from a self-report student data sheet distributed during the first week of class. The data sheet included self-reported information about gender, class, major, age, and racial/ethnic characteristics. Students were invited to complete the CSI and the CDATS via a Qualtrics survey on the first day of the class. They were told that the CSI and CDATS were questionnaires designed to help them begin thinking about their career goals and planning.

Table 1

CDATS Ambiguity Aversion Scale

Item	Statement
1	I try to avoid complicated career decision making tasks
2	I find it difficult to make career decisions as things cannot be predicted clearly
3	I am afraid of sorting out the complex aspects of a career
4	The career decision making process, which involves so many considerations, is just daunting
5	I try to avoid a career in which the prospects cannot be foreseen clearly
6	People's different or sometimes contradictory perspectives about a career make me uncomfortable

Note. Based on research by Xu, H., & Tracey, T. J. G. (2015). Items 1–6 load on the Aversion Factor of the Career Decision Ambiguity Tolerance Scale. Respondents use a Likert scale 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) where low scores indicate more ambiguity tolerance in career decision-making.

Data Analysis

With the G*Power software, it was calculated that 105 participants were needed for the study. Preliminary estimates suggested that there were moderate to large effect sizes among the variables; therefore, the bivariate correlations were assumed to be greater than .30, the significance level was set at $\alpha = .01$, and the power was set at .80.

Results

Low scores on the CSI indicate readiness for career decision-making with respect to career certainty, satisfaction, and clarity or confidence. In a similar way, low scores on the CDATS Ambiguity Aversion Scale indicate tolerance for ambiguity and uncertainty in career decision-making. Some readers will find this counterintuitive because low scores are typically associated with poor and unsatisfactory performance. Analysis of the data in this study revealed that only the Ambiguity Aversion scale of the CDATS, not the Preference or Tolerance Scales, was related to scores on the CSI (See Table 2). As a result of this finding, this article focuses only on the results from the Aversion scale. The reliability of the Ambiguity Aversion score scale was .88.

Given the four correlations conducted in this study, a Bonferroni correction was applied to mitigate the increased risk of Type I error (false positives). To further enhance statistical rigour, we applied an even more conservative threshold of $p < .005$. These adjustments increased our confidence in the validity of our findings.

Table 2

Correlations of CSI and CDAT Scales

Scales	1	2	3	4	5	6
1. CDAT-Aversion	-----					
2. CSI-Total	.55***	-----				
3. CSI Certainty	.25*	.68***	-----			
4. CSI-Satisfaction	.46***	.85***	.44**	-----		
5. CSI-Clarity	.57***	.88***	.40**	.61***	-----	
6. CDATS-Preference	.11	.05	.15	.08	-.05	-----
7. CDATS-Tolerance	.02	-.15	-.02	-.11	-.20	.44***

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

All four correlations between CSI scores and the Ambiguity Aversion score were statistically significant. Consequently, these relationships are more likely to reflect robust, meaningful associations rather than statistical artifacts.

Discussion

Our purpose in conducting this exploratory study was to examine ways in which the concept of ambiguity tolerance might inform our understanding of the career decision state and career decision-

making readiness. More specifically, we wanted to examine the relationships among four sections of the Career State Inventory (CSI), a measure of readiness for career decision-making, and scores on the Career Decision Ambiguity Tolerance Scale (CDATS). What did we learn? We found that only the CDATS Aversion Scale was significantly related to the four CSI measures and this is the focus of this discussion. Lower scores on these six items, indicating greater disagreement with the statements, reflected higher levels of tolerance for ambiguity and uncertainty in career decision-making.

Regarding the purposes of this study, our first question involved examining the correlation between CDATS-Aversion and CSI-Total scales ($r = .55$, $p < .001$) and the results suggest a strong association between ambiguity aversion and overall career decision-making difficulties as measured by the CSI. Given that higher CSI-Total scores indicate more complicated struggles with career readiness, certainty, satisfaction, and clarity, this finding may indicate that students who strongly agree with ambiguity aversion items on the CDATS experience heightened difficulties in multiple aspects of career decision-making. Conversely, those with lower scores (strongly disagree) on ambiguity aversion items demonstrate greater career readiness, confidence, and a desire to move forward in their career decision-making. The strength of this correlation suggests that Ambiguity Aversion is potentially a key factor in career decision-making because it provides insight into how an individual weighs career options with known probabilities against those with unknown or unspecified probabilities.

Our second question examined the relationship between CDATS-Aversion and CSI-Certainty ($r = .25$, $p = .004$). This finding indicated a weak to moderate positive relationship between ambiguity aversion and career certainty. Given that higher CSI-Certainty scores reflect less career certainty in career decision-making, this finding suggests that students who experience more Aversion to career ambiguity (higher scores) may be more uncertain about their career choices. Conversely, students with lower Aversion to ambiguity scores demonstrate greater certainty, reinforcing the notion that experiencing some ambiguity in the career decision process may contribute to more confidence about one's career choices. Although statistically significant, the strength of this relationship suggests that other factors likely influence career certainty beyond ambiguity aversion alone.

Our third question examined the relationship between CDAT-Aversion and CSI-Satisfaction ($r = .46$, $p < .001$). The results suggest a moderate to strong association between Ambiguity Aversion and Career Decision State Satisfaction in career decision-making. Students with lower Ambiguity Aversion scores tend to report lower CSI-satisfaction scores (i.e., less Ambiguity Aversion is associated with more satisfaction with one's career choices and decisions). In comparison, those with higher Ambiguity Aversion scores are likely to have higher CSI-satisfaction scores (i.e., less satisfaction with career decision-making). The strength of this correlation suggests that ambiguity aversion is a contributor to dissatisfaction in career decision-making. However, additional variables may further influence and shape this finding.

Finally, the strong positive correlation between CDAT-Aversion and CSI-Clarity ($r = .57$, $p < .001$) suggests that students having less discomfort with ambiguity tend to experience more clarity and confidence or certainty in their career decision-making process. Students with lower Aversion scores who are more tolerant of ambiguity are likely to experience greater clarity and confidence in their career choices, potentially allowing for more effective processing of career information and decision-making. Conversely, higher CDAT-Aversion scores are associated with higher CSI-Clarity scores, indicating that individuals who agree with ambiguity/aversion statements are more likely to feel lost, disorganized, or confused when making career decisions. Conversely, this finding draws attention to the significant relationship between ambiguity aversion and career clarity, suggesting that interventions aimed at decreasing the thoughts and emotions driving Ambiguity Aversion may enhance career decision-making clarity.

Implications for Practice and Research

Students enrolling in a university career planning class showed a more positive career decision state when they rejected negative items on the CDATS (i.e., strongly disagreed with items in Table 1). A future study might explore whether scores on the Aversion Scale could be even lower at the end of the class, given the instruction students received on career exploration, the labour market, job hunting, and career/employment

decision-making, as well as the course activities and assignments they completed that were designed to positively inform them about effective strategies for making career choices.

Students with strong aversion to ambiguity tolerance (i.e., strongly agreeing with items in Table 1) may need special assistance for career planning in response to uncertainty, anxiety, and rigid thinking. This might include interventions such as career counselling, cognitive restructuring, and mindfulness training related to cognitive information processing theory (Sampson et al., 2023).

Future studies and career interventions based on cognitive information processing theory (Sampson et al., 2023) might examine tolerance for ambiguity in terms of metacognitions, decision-making processes, and self- and options-knowledge. For example, ambiguity aversion may interfere with functions of the executive processing domain as individuals move through the CASVE Cycle career decision-making process.

Limitations and Future Directions

As the study sample was limited to 107 students enrolled at a single university, the generalizability of this study's findings is limited to other populations and universities. This exploratory study was based on a sample students enrolled in a career class at a southeastern university in the United States. This limits the generalizability of the findings of this study to career interventions with other populations and at other universities. In addition, the use of a correlational research design with data collected at a single point in time limits conclusions about implications of the findings.

Both the CSI and CDATS instruments were developed using college student samples. As such, additional research is required to determine their use on more varied and diverse population samples.

Conclusion

We undertook an exploratory study of the career decision state and the state of ambiguity tolerance with 107 university students enrolled in a career development class. Our purpose was to examine ways in which the concept of ambiguity tolerance might inform our understanding of the career decision state. More specifically, we wanted to examine the relationships among sections of the Career State Inventory (CSI), career certainty, satisfaction, and clarity, as a measure of readiness for career decision-making, and the Ambiguity Aversion Scale score on the Career Decision Ambiguity Tolerance Scale (CDATS). We found that four components of the career decision state and ambiguity tolerance were related with respect to the aversion of ambiguity tolerance. The strong positive correlation between CDAT-Aversion and the CSI components suggested that students having less discomfort with ambiguity tend to experience a more positive career decision state for career decision-making.

References

Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, *30*(1), 29–50. https://doi.org/10.1111/j.1467-6494.1962.tb02303.x

Bullock-Yowell, E., Peterson, G. W., Wright, L. K., Reardon, R. C., & Mohn, R. S. (2011). The contribution of self-efficacy in assessing interests using the Self-Directed Search. *Journal of Counseling & Development*, *89*(4), 470–478. https://doi.org/10.1002/j.1556-6676.2011.tb02844.x

Bullock-Yowell, E., Reed, C. A., Mohn, R. S., Galles, J., Peterson, G. W., & Reardon, R. C. (2015). Neuroticism, negative thinking, and coping with respect to career decision state. T*he Career Development Quarterly*, *63*(4), 333–347. https://doi.org/10.1002/cdq.12032

Chason, A. K., Bullock-Yowell, E., Sampson, J. P., Jr., Lenz, J. G., & Reardon, R. C. (2013). Relationships among career thoughts, career interests, and career decision state. *Canadian Journal of Career Development*, *12*(1), 39–47. https://doi.org/10.82396/cjcd.v12i1.3055

Dozier, V. C., Osborn, D., Kronholz, J., Peterson, G. W., & Reardon, R. C. (2019). The effects of the Online Self-Directed Search on the career decision state. *Canadian Journal of Career Development*, *18*(2), 48–62. https://doi.org/10.82396/cjcd.v18i2.3146

Frenkel-Brunswik, E. (1949). Intolerance of ambiguity as an emotional and perceptual personality variable. *Journal of Personality*, *18*(1), 108–143. https://doi.10.1111/j.1467-6494.1949.tb01236.x

Furnham, A., & Ribchester, T. (1995). Tolerance of ambiguity: A review of the concept, its measurement and applications. *Current Psychology*, *14*, 179–199. https://doi.org/10.1007/BF02686907

Holland, J. L., Johnston, J. A., & Asama, N. F. (1993). The Vocational Identity Scale: A diagnostic and treatment tool. *Journal of Career Assessment*, *1*(1), 1–12. https://doi.org/10.1177/106907279300100102

Holland, J. L., & Messer, M. A. (2013). *The Self-Directed Search professional manual*. PAR.

Leierer, S. J., Peterson, G. W., Reardon, R. C., & Osborn, D. S. (2025, January 16). *The Career State Inventory (CSI) as a measure of the career decision state and readiness for career decision making: A manual for assessment, administration, and intervention* (4th ed., Technical Report No. 64). Center for the Study of Technology in Counseling and Career Development, Florida State University. https://repository.lib.fsu.edu/islandora/object/fsu:997937/datastream/PDF/view

Leierer, S. J., Wilde, C., Peterson, G. W., & Reardon, R. C. (2016). The career decision state and rehabilitation counselor education programs. *Rehabilitation Counseling Bulletin*, *59*(3), 133–142. https://doi.org/10.1177/0034355215579278

Miller, A., Osborn, D., Sampson, J. P., Peterson, G. W., & Reardon, R. C. (2018). The impact of a college career course on students' career decision state. *The Career Development Quarterly*, *66*(4), 371–377. https://doi.org/10.1002/cdq.12157

Osborn, D. S., Sides, R. D., & Brown, C. A. (2020). Comparing career development outcomes among undergraduate students in Cognitive Information Processing Theory-Based versus Human Relations courses. *The Career Development Quarterly*, *68*, 32–47. https://doi.org/10.1002/cdq.12211

Reardon, R. C., & Lenz, J. L. (2018, March 1). *Learning from a career course over 45 years*. Career Convergence. https://ncda.org/aws/NCDA/pt/sd/news_article/153923/_self/layout_details/false.

Reardon, R. C., Lenz, J. G., Dozier, V. C., Roark, K. A., & Hultman, J. D. (2024). *Career development and planning: A comprehensive approach* (8th ed.). Kendall-Hunt.

Sampson, J. P., Jr., Lenz, J. G., Bullock-Yowell, E., Osborn, D. S., & Hayden, S. C. W. (Eds.). (2023). *Cognitive information processing: Career theory, research, and practice*. Florida State Open Publishing. https://doi.org/10.33009/fsop_sampson1123

Sampson, J. P., Peterson, G. W., Lenz, J. G., Reardon, R. C., & Saunders, D. E. (1996). *Career Thoughts Inventory (CTI): Professional manual*. Psychological Assessment Resources.

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Consulting Psychologists Press.

Xu, H., & Tracey, T. J. G. (2014). The role of ambiguity tolerance in career decision making. *Journal of Vocational Behavior*, *85*(1), 18–26. https://doi.org/10.1016/j.jvb.2014.04.001

Xu, H., & Tracey, T. J. G. (2015). Career Decision Ambiguity Tolerance Scale: Construction and initial validations. *Journal of Vocational Behavior, 88*, 1–9. https://doi.org/10.1016/j.jvb.2015.01.006

AI-Inferred Personality Profiles of Occupations: Implications for Career Counselling and AI Literacy

Jeanine Williamson & Steven D. Milewski
University of Tennessee Knoxville, United States of America

Abstract

This study examines whether artificial intelligence (AI) chatbots or "AIs" provide accurate personality profiles of occupations for career-exploring students and whether these profiles contain gender stereotypes. Although it is well known that AIs contain inaccurate data and gender stereotypes, similar to the human linguistic data it is based on, this is the first study of inaccuracies and bias in AI-inferred personality traits associated with occupations. GPT-4, Claude 3, and Gemini 1.0's inferences of Big Five personality traits of 92 occupations were compared with human expert analysis of the Big Five personality traits important for these jobs, derived from the O*NET Work Styles (Wilmot & Ones, 2021). Ten of 15 analyses of variance comparing AI and expert ratings were significant ($p < .05$), indicating selective accuracy. We also found seven significant one-way analyses of variance (ANOVAs) between the AI inferences and the occupations coded as female-dominant, male-dominant, or gender-balanced based on U.S. Bureau of Labor Statistics data (2023). Inaccuracies such as AI omissions of the Low category for Conscientiousness and Emotional Stability—and bias such as replication of gender stereotypes about women's personality traits—lead us to advocate for providing AI literacy training in career counselling to educate students about problems with using AI chatbots to provide personality profiles of occupations during career exploration.

Keywords: Artificial intelligence, occupations, personality inference

The need for artificial intelligence (AI) literacy in career development services is increasingly important with the awareness that AI contains biases and inaccurate information that could have consequences for career exploration. We define AI for the purpose of this paper as Machine Learning Systems that use Large Language Models (LLMs) to recognize patterns, predict outcomes, and generate responses (Bender et al., 2021). Xiao and Zheng (2025) demonstrated that effective engagement with ChatGPT significantly enhances students' employment confidence and cognitive readiness, directly fostering more proactive job-seeking behaviours. However, Lang and Catrino (2024) point out several reasons students should not use generative AI in their job search, such as that they may miss out on opportunities learned about through human connections; AIs may not be up to date on industry trends; and students may not experience adequate personal career development if they over-rely on AI. Inaccuracies and biases in AI inferences of personality traits associated with occupations could be particularly consequential. It is not a stretch to imagine that students, interested in matching their own personality traits to careers, might consult generative AI chatbots about the personality traits of occupations, asking for example, "What are the personality traits of accountants?" Misidentification by AI of the personality traits important for a career could cause students to overlook occupations that might be a good match for them in terms of their personality traits.

The Role of Personality in Career Exploration

The long-studied concept of person-occupation fit underlies the use of personality traits in career exploration, as the concept of a match between occupations and individuals' personality traits has inspired research and been the foundation of career personality tests. Holland's (1997) concept of congruence—the match between vocational interests and vocational environments—has been studied, for example, in relation to job satisfaction (Assouline & Meir, 1987). More recently, Nye et al.'s meta-analysis (2017) found that interest congruence was a greater predictor of performance than interest scores alone. The Big Five personality framework (Digman, 1990; Goldberg, 1993; McCrae & Costa, 2008) which includes the basic personality traits Neuroticism/Emotional Stability, Extraversion, Openness, Agreeableness, and Conscientiousness, has also been studied in relation to person-occupation fit. For example, Barrick and Mount's meta-analysis (1991) examined relationships between the Big Five personality traits and job performance, finding some differences among five occupational groups. More recently, Wilmot and Ones' meta-analysis of meta-analyses

found that the Big Five traits predicted performance differently for major occupational groups, with, for example, Agreeableness predicting performance for healthcare occupations (2021). Among the Big Five traits, while Conscientiousness is often cited as a universal predictor of performance, Wilmot and Ones (2021) demonstrated that its predictive validity is not uniform; specifically, the trait's impact is attenuated in highly complex occupations where cognitive demands often supersede dispositional effort.

Personality tests based on theories of personality occupational fit have practical applications for career counselling including matching congruent careers to seekers' personalities (e.g., Furnham, 2001). Databases of personality profiles of occupation (Anni et al., 2025; National Center for O*NET Development [NCOD], n.d.) allow matching between Big Five or Holland RIASEC-based personality test results and congruent occupations in career exploration. (The basic RIASEC occupational and personality types include Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (Holland, 1997).) In Québec, a number of personality tests are used in career counselling, such as the Strong Interest Inventory, AFC Holland, Myers-Briggs Type Indicator (MBTI), and NEO Personality Inventory (Dorceus et al., 2024). Thus, students are likely to become aware of their personality traits when participating in career counselling, and they may assume that matching their traits with traits associated with occupations could be a good thing.

While formal assessments remain the clinical standard, students increasingly view AI as a viable alternative, particularly where traditional services are resource-constrained. Research by Eze et al. (2025) indicates that students may report higher trust and comfort in AI-driven guidance compared to traditional counselling, largely due to dissatisfaction with the accessibility and personalization of formal services. Consequently, the shift toward AI reflects not just a preference for technology, but a practical response to the limitations of traditional support systems.

The Role of AI in Career Exploration

Students widely use AI for academic tasks (Attridge, 2025; Freeman, 2025) and are likely to encounter AI in college career centres that provide AI interviewing tools, AI resume assistants, and guidelines for using general chatbots in career exploration (Career Services at University of Wisconsin-Madison, n.d.; University of Colorado Boulder, 2025). In addition, students may be aware of AI Career exploration tools like CareerExplorer (Sokanu Interactive Inc, 2025) and Google's Career Dreamer (Google, n.d.). However, they may be unaware of bias and inaccuracy in AI's information about careers.

Bias in AI

Ethical considerations in using AI in career development abound (Pandya & Wang, 2024; Wilson et al., 2022) and bias and inaccuracy in AIs' data is recognized as a significant problem, despite the increasing use of AI in career guidance, which is found as a theme in the literature on all stages of career development (Bankins et al., 2024). To give an example of how AI bias is a problem, AI's use of client gender in personalized career guidance can replicate gender inequalities (Wilson et al., 2022).

Causes of gender bias are not fully understood due to AIs' proprietary black-box nature, but gender bias may be caused due to training data that contains biased attitudes (Bender et al., 2021). Even attempts to remove gender from AI do not solve the problem of gender-stereotyped responses, and the cues given to AI can trigger gender stereotyping (Duan et al., 2025). Also, AIs may learn gender biases from interacting with users (Xue et al., 2023). Bender et al. (2021) point out that LLMs' vast training data does not incorporate extensive diversity and that, because the data is static, it does not accommodate changing social views. AI models also hallucinate incorrect information due to their architecture (Ji et al., 2023), and sometimes come with a warning that the content they produce needs to be checked for errors (Google, 2023).

In hiring, AI bias can lead to unfair recommendations in resume filtering (Gagandeep et al., 2024), as in a case of AI at Amazon in 2014 disproportionately selecting men for technical jobs. And if the training data of AI contains gendered stereotypes, AI inferences about personality of occupations may contain inaccuracies related to these stereotypes (Gross, 2023). Gender bias may also be an outcome of the broader issue of AI data

quality which lowers accuracy in predicting career choices for some occupations (Bankins et al., 2024) and may be inaccurate for other unknown reasons.

AI Inferences of Personality Traits

The accuracy of general generative AI chatbots in inferring personality traits is an understudied topic and this lack of research supports our assertion that students need to become more aware of potential inaccuracies in AI information on the personality traits associated with careers. Fan et al. (2023) assessed the reliability and validity of an AI chatbot platform in generating inferences of personality from free-text results. However, this platform was not a commercially available chatbot of the sort students would be expected to use in asking about the personality traits of people in occupations during career exploration. Derner et al. (2024) used ChatGPT to compare its inferences of the personality traits of individuals with their actual Big Five scores but did not collect inferences about the overall personality traits of occupations. Grunenberg et al. (2024) demonstrated AI accuracy compared to human raters in predicting Extraversion and Conscientiousness from resumes and short text samples of job seekers. To our knowledge, our research is the first study to examine AI inferences about the Big Five personality traits of people in occupations.

The Need for AI Literacy

Perhaps most troubling about the prevalence of inaccuracy and bias in AI data in a college career development context is the fact that students may be unaware of the extent of the problem. College students use AI widely and have concerns about it, but they may not know how to mitigate its problems. Students in the UK reported that they were put off from using AI because of the fears of being accused of academic misconduct and getting false or biased information (Freeman, 2025), and in the US more than half of the students responding to a survey were pessimistic about their chances of getting a job because of the increased prevalence of AI in the workplace (Attridge, 2025). Creators of career centre websites, while promoting the benefits of using generative AI in career exploration, have warned students about potential problems. For example, University of Colorado Boulder (2025) reminds students engaging in career exploration that GenAI (generative AI) is not always accurate. Career Services at University of Wisconsin-Madison (2025) warns of bias in AI since AI is created by prejudiced humans and consists of biased Large Language Models (LLMs) which may or may exclude or include certain data. The curation of LLMs datasets may be biased, the weights of individual data points in the LLMs may be biased, and the training of LLMs may be biased (Bender et al., 2021).

Promoting AI literacy is a possible solution to the fact that students may be unaware of potential problems of using AI in career exploration. For example, the Barnard framework of AI literacy contains two parts that are relevant to the issues raised by our research on bias and inaccuracy in AI inferences of the personality of occupations: “Use and Apply AI” and “Analyze and Evaluate AI” (Hibbert et al., 2024). “Use and Apply AI” includes reviewing AI content for hallucinations, reasoning errors, and bias, and “Analyze and Evaluate” involves developing a complex meta-perspective on AI incorporating critical theory concepts such as gender bias. It is essential, from a career development perspective, for students to develop an awareness of possible inaccuracies within AIs’ data and the incorporation of stereotypes, such as those about gender. While existing AI literacy frameworks emphasize broad ethical concepts such as algorithmic fairness and data privacy (Long & Magerko, 2020), they often lack the specificity required to detect distortions like the positivity bias observed in this study.

Recent research indicates that LLMs exhibit a “positivity bias” when simulating individual human personas, often defaulting to socially desirable or agreeable responses (Derner et al., 2024). However, it remains unclear whether this bias extends to occupational profiling, where the model is tasked with simulating professional personality traits rather than individual personalities. To our knowledge, no prior study has investigated AI positivity bias within the context of occupational personality inference. This study aims to address this gap by determining if algorithmic models inflate positive traits (such as Agreeableness and Conscientiousness) when generating personality profiles for varied occupations.

We investigate the bias found in AI inferences about the Big Five Personality Traits—Agreeableness, Conscientiousness, Neuroticism (Emotional Stability), Extraversion, and Openness—analyzing the relationship between AI ratings of occupational personality traits and human expert ratings. We also investigate whether there is a gender effect in AI inferences of personality traits, with AI inferences about female-dominant occupations possibly differing from male-dominant occupations. Our research offers useful AI literacy-related findings for career counsellors that they may want to share with students who use AI to determine occupational personality characteristics.

Research Questions

We pose the following research questions:

1. What is the relationship between AI inferences of Agreeableness, Conscientiousness, Neuroticism (Emotional Stability), and Openness and human expert ratings of these traits in occupations?
2. What is the relationship between AI inferences of Agreeableness, Conscientiousness, Neuroticism (Emotional Stability), and Openness and dominant gender of occupations?

Method

AI Inferences of Personality Traits

In order to compare AI inferences with human expert ratings of personality traits, we prompted three AIs to infer Big Five personality characteristics of 92 occupations in Wilmot and Ones' meta-analysis (2021) that had human expert ratings of Big Five personality traits derived from O*NET Work Styles (National Center for O*NET Development [NCOD], n.d.), which are personal characteristics and behavioural tendencies that affect how well an individual performs a job.

Prompts of AIs

In 2024 we prompted Claude 3, GPT-4, and Gemini 1.0 Pro with the following question: "What are the Big Five Personality characteristics of the following occupations arranged in the order of Agreeableness, Conscientiousness, Neuroticism, Extraversion, and Openness: please arrange the data from your answer in a table with columns: occupation, A, C, N, E, O."

The prompt was refined as necessary to get the AIs to return the results in a spreadsheet-style table with values Low, Medium, and High. In the case of Claude 3, we had to modify the prompt slightly to get it to take a guess at the personality characteristics of occupations because Claude 3 initially made-up numbers for the occupations for demonstration purposes in response to the first prompt since it "did not actually have access to definitive scores for each occupation," (Anthropic, 2026) as it stated when asked about the source of its data. For Claude we used, "What would you guess are the Big Five personality characteristics of these occupations? Use the values: low, moderate, or high."

GPT-4, like the other AIs, provided caveats about its generation of levels of personality traits in occupations:

> [I]t's important to note that while certain occupations may attract individuals with specific personality traits, there is considerable variability among individuals within any given profession. The data below is a generalized view and should be taken as indicative rather than definitive, because personal variations are significant. The arrangement in the table is not based on empirical data but rather a general understanding of the typical demands and environments of these jobs which might attract or be suited for certain personality traits (OpenAI, 2026)).

To ensure that the modified prompt required for the Claude architecture did not introduce methodological artifacts, a sensitivity analysis was performed and is reported in the Results. We compared Claude's results

with those of GPT-4 and Gemini to see if there were any discrepancies that could have been due to the modified prompt.

Comparison with Expert Ratings

We used data from the meta-analysis published by Wilmot and Ones (2021) that estimated Big Five personality scores of 92 occupations to compare the AI data with expert ratings. Some occupations were repeated, entered each time for different data sources in Wilmot and Ones' study, so we repeated the occupations for differing data sources. The estimates were derived from the O*NET Work Styles scores. According to O*NET, the Work Style scores are derived from survey responses of job experts (incumbents of occupations) concerning the importance of the Work Style traits for their occupations (Tippins & Hilton, 2010).

The present study's expert personality benchmarks were derived from the Wilmot and Ones (2021) supplementary data, which aggregates O*NET job analyst ratings. These scores represent expert relevance ratings on a standardized 0–100 scale (where 0 indicates low relevance and 100 indicates high relevance to the occupation), rather than percentiles or z-scores. This continuous scale provides the dependent variable necessary for mean-level comparisons.

AI Inferences about Personality Traits of Gender-Predominance Categories

We also analyzed the AI inferences by gender-predominance of the occupations. An example of a male-dominant occupation would be engineer, and a female-dominant occupation would be nurse.

Coding of Female- and Male-Dominant Occupations

We coded the occupations as female, male, or gender-balanced by consulting 2021 labour force statistics (U.S. Bureau of Labor Statistics, 2023). Occupations with a workforce comprised of 55% or more women were labeled female-dominant, while those with less than 45% were labeled male-dominant. We employed this ±5% buffer around parity to form a "gender-balanced" category (45%–55%), ensuring that occupations labeled as "dominant" represented a statistical majority rather than marginal fluctuations near the 50% mark. This conservative threshold prevents occupations with near-parity from being erroneously classified as skewed.

Measurement Approach

We treated the AI assignments (Low, Medium, High) as the categorical independent variable and the expert O*NET ratings (0–100) as the continuous dependent variable. A one-way Analysis of Variance (ANOVA) was used because it is designed to test for mean-level differences in a continuous outcome across categorical groups.

While we considered ordinal tabulation measures, ANOVA offers a more direct test of the hypothesis: namely, that occupations labeled "High" by the AI should possess significantly higher mean expert ratings than those labeled "Low." This approach assumes the expert ratings function as interval-level data, consistent with their use in prior meta-analytic research (Wilmot & Ones, 2021).

Data Analysis

Differences in mean expert ratings across the three AI-assigned categories were assessed using one-way Analysis of Variance (ANOVA). In cases where the assumption of homogeneity of variances was violated (Levene's test $p < .05$), we employed Welch's F-test and the Games-Howell post-hoc procedure.[1]

1 Welch's ANOVA was used for Conscientiousness-GPT, Conscientiousness-Gemini, Emotional Stability-GPT, Emotional Stability-Gemini, Extraversion-Claude, and Openness-Claude.

Results

The AI inferences were compared with the human expert ratings of personality and analyzed by gender-dominance categories (male-dominant, female-dominant, and gender-balanced) of the occupations.

Sample Characteristics

The final sample included 92 participants across nine major occupational categories. As shown in Appendix Supplementary Table 2, the distribution of gender dominance—classified based on U.S. Bureau of Labor Statistics (2023) data—varied significantly by category. Over half of the occupations represented (56.5%) were identified as Male-Dominant, particularly in Law Enforcement, Management, and Military roles. Female-Dominant occupations accounted for 33.7% of the sample, primarily within Clerical, Customer Service, and Healthcare categories. The remaining 9.8% of participants were in Balanced occupations, with the highest concentration in the Professional and Sales sectors.

Sensitivity Analysis and Robustness Checks

To assess whether the modified prompt used for Claude influenced the gender bias findings, we conducted a sensitivity analysis comparing the trait-gender distributions across all three LLMs. The results indicate that the observed biases were robust to prompt variation and consistent across models. For Emotional Stability, the bias was not an artifact of the Claude prompt. Gemini (using the standard prompt) assigned high Emotional Stability almost exclusively to male-coded occupations (90% male) compared to Claude (72% male). Similarly, Agreeableness showed a consistent "female-high/male-low" pattern across all three models. Conscientiousness showed universal range restriction, with all models skewing heavily toward high scores regardless of the prompt, confirming that the null result for this trait was due to ceiling effects rather than prompt artifacts. Beyond the gendered traits, the models demonstrated high consistency in trait attribution; for example, Openness to Experience scores remained significantly aligned with expert ratings across all three architectures ($p < .001$), suggesting that the prompt modification did not alter the models' fundamental understanding of occupational roles.

Main Analysis (ANOVA Results)

Relationship Between AI and Human Ratings

Table 1 shows that post-hoc analyses (using Tukey HSD or Games-Howell tests) confirmed that for all statistically significant models, the relationship followed the expected direction: occupations classified as "High" in a trait by the AI possessed significantly higher expert-rated levels of that trait compared to those classified as "Low" or Gender-Balanced ($p < .05$). However, while AI category assignments showed statistically significant relationships with expert ratings for 10 of 15 traits, effect sizes ranged from small to large ($\eta^2_p = .10–.38$), indicating that the AI classifications explained between 10% and 38% of the variance in expert ratings.

Examination of effect sizes revealed varying magnitudes of association across the AI models. The effect of occupational gender dominance on Agreeableness scores for the GPT model was substantial ($\eta^2_p = .38$). Regarding Extraversion, the Claude model similarly demonstrated a substantial effect size ($\eta^2_p = .18$), while the GPT model represented a medium effect ($\eta^2_p = .13$). In contrast, observed differences in Emotional Stability for the Claude model were modest ($\eta^2_p = .05$), and differences in Openness ratings for the GPT model, though significant, were also modest in magnitude ($\eta^2_p = .03$) (See Table 2).

Notably, Conscientiousness was an exception to the pattern of alignment between AI ratings and expert scores. None of the three AI models produced Conscientiousness ratings that correlated significantly with expert O*NET scores ($p > .31$). This suggests that unlike other traits, AI models failed to differentiate occupational levels of Conscientiousness, perhaps due to the high frequency of High ratings across almost all

Table 1

Means, Standard Deviations, and Sample Sizes of Expert-Rated Big Five Personality Scores by AI Model and AI-Assigned Trait Category

Big Five Trait & AI Model	AI- Category	*N*	*M*	*SD*
Agreeableness				
GPT	Low[a]	12	63.83	7.35
	Medium[b]	44	75.36	6.89
	High[c]	36	82.41	8.85
Claude*	Medium[a]	38	72.19	8.78
	High[b]	54	79.72	9.21
Gemini*	Medium[a]	56	74.11	9.05
	High[b]	36	80.51	9.57
Conscientiousness				
GPT*	Medium	13	81.51	3.97
	High	79	79.73	7.82
Claude*	Medium	*17*	*78.31*	*6.30*
	High	*75*	*80.36*	*7.62*
Gemini*	Medium	*11*	*80.80*	*4.17*
	High	*81*	*79.87*	*7.75*
Emotional Stability				
GPT	Low	*2*	*77.50*	*8.49*
	Medium	*72*	*79.85*	*8.88*
	High	*18*	*79.58*	*13.23*
Claude*	Medium	*46*	*84.26a*	*6.94*
	High	*46*	*75.24b*	*10.14*
Gemini*	Medium	*62*	*82.22a*	*7.91*
	High	*30*	*74.65b*	*11.28*
Extraversion				
GPT	Low[a]	*17*	*49.53*	*9.91*
	Medium[b]	*51*	*71.63*	*15.98*
	High[b]	*24*	*67.61*	*15.81*
Claude	Low[a]	*16*	*47.45*	*8.89*
	Medium[b]	*37*	*66.79*	*15.12*
	High[b]	*39*	*74.04*	*15.32*
Gemini*	Medium	*80*	*66.08*	*16.81*
	High	*12*	*69.30*	*18.88*

Big Five Trait & AI Model	AI- Category	*N*	*M*	*SD*
Openness				
GPT	Low[a]	*20*	*52.65*	*11.49*
	Medium[b]	*46*	*69.39*	*12.61*
	High[c]	*26*	*77.07*	*11.84*
Claude	Low[a]	*34*	*57.49*	*13.24*
	Medium[b]	*37*	*69.29*	*10.76*
	High[c]	*21*	*82.40*	*9.97*
Gemini**	Low[a]	*37*	*58.74*	*14.12*
	Medium[b]	*55*	*74.10*	*11.95*

Note. AI = Artificial Intelligence. N = number of occupations classified into each AI-assigned category. *M* = mean expert-rated personality score. SD = standard deviation of expert-rated personality scores. Expert-rated scores were on a 0-100 scale from O*NET conversions by Wilmot & Ones, 2021. AI-assigned categories were Low, Medium, and High based on AI model inferences. The Emotional Stability scale was derived by reverse-scoring the Neuroticism scores from the original data source.

*The AI model only made "Medium" and "High" inferences of the personality trait.
**The AI model only made "Low" and "Medium" inferences of the personality trait.
[a,b] Within each AI Model's analysis for a given trait, means that do not share a common superscript letter are significantly different at $p < .05$ according to the appropriate post-hoc test (Tukey HSD or Games-Howell). For analyses where the overall ANOVA was not significant, no superscripts are shown.

Table 2

Analyses of Variance of Mean Expert-Rated Big Five Personality Scores Across AI-Assigned Trait Categories

Trait - AI Model	*F*	df1	df2	*p*	η^2_p
A - GPT	26.80	2	89	<.001	.38
A - Claude	15.49	1	90	<.001	.15
A - Gemini	10.46	1	90	.002	.10
C - GPT	1.59*	1	30.27	.22	n.a.
C - Claude	1.06	1	90	.31	.01
C - Gemini	1.59*	1	30.3	.22	n.a.
ES - GPT	.004*	1	20.8	.95	n.a.
ES - Claude	24.8	1	90	<.001	.22
ES - Gemini	10.9*	1	43.2	.002	n.a.
EX -GPT	13.89	2	90	<.001	.24
EX - Claude	34.87*	2	51.97	<.001	n.a.
EX - Gemini	.37	1	90	.54	.00
O - GPT	23.44	2	89	<.001	.35
O - Claude	31.1*	2	53.3	<.001	n.a.
O - Gemini	31.54	1	90	<.001	.259

Note. AI = Artificial Intelligence. Big Five traits are Agreeableness (A), Conscientiousness (C), Emotional Stability (ES), Extraversion (EX), and Openness. to Experience (O). The Emotional Stability scale was derived by reverse-scoring the Neuroticism scores from the original data source. Sample sizes (*n*) vary across analyses due to missing data.
*Welch's *F*-statistic and its adjusted denominator degrees of freedom (*df*2) are reported due to a significant Levene's test for homogeneity of variances ($p < .05$). Pairwise comparisons were conducted using Tukey's HSD for standard ANOVAs and Games-Howell for Welch's ANOVAs. Partial eta squared (η^2_p) is not reported for Welch's analyses as the metric relies on homoscedasticity assumptions that were violated. No Bonferroni correction was applied to the omnibus *F*-tests.

jobs (positivity bias) or a lack of signal in the training data regarding this specific trait.

When analyzing Conscientiousness ratings by job family, a pattern emerged across all three models (See Appendix Supplementary Table 1). High Conscientiousness ratings were almost exclusively assigned to Professional, Managerial, Clerical, and Healthcare roles, as well as occupations involving authority such as Law Enforcement and the Military. In contrast, Medium ratings were concentrated within the Skilled and Semi-skilled occupational group. This finding did not align with Wilmot and Ones' (2021) characterization of Skilled and Semi-Skilled occupations as having midrange empirical Conscientiousness scores compared to the other occupational groups.

Relationship Between AI Ratings and Gender-Dominance Category

Table 3 shows post hoc analyses (using Tukey HSD or Games-Howell when the Levene's Test for Homogeneity of Variances was significant at $p < .05$. All models assigned higher Agreeableness scores to Female-Dominant occupations compared to Male-Dominant ones. In the GPT-4 model, Female-Dominant roles averaged a score of 2.77 (*SD* = 0.43) versus 1.90 (*SD* = 0.6) for Male-Dominant roles. Conscientiousness showed the least differentiation across gender categories. Mean scores remained relatively flat across all models, perhaps because of the absence of a Low category for all models. For Extraversion, significant differences were noted in the Claude model, where Female-Dominant and Gender-Balanced occupations received higher scores (2.58 and 2.67 respectively) compared to Male-Dominant roles (1.98). For Openness to Experience only the Gemini model showed a statistically significant difference here, scoring Female-Dominant occupations higher (1.87) than Male-Dominant ones (1.40).

Table 3

Means, Standard Deviations, and Sample Sizes of AI-Inferred Big Five Personality Scores by AI Model and Occupational Gender Dominance Categor

Big Five Trait & AI	Occupational Gender Dominance Category	*N*	*M*	*SD*
Agreeableness				
	Male-Dominant	52	1.90[a]	0.6
GPT Model	Female-Dominant	31	2.77[b]	0.43
	Gender-Balanced	9	2.56[b]	0.53
	Male-Dominant	52	1.31[a]	0.47
Claude Model	Female-Dominant	31	1.97[b]	0.18
	Gender-Balanced	9	1.89[b]	0.33
	Male-Dominant	52	1.13[a]	0.34
Gemini Model	Female-Dominant	31	1.81[b]	0.4
	Gender-Balanced	9	1.44[ab]	0.53
Conscientiousness				
	Male-Dominant	52	1.9	0.3
GPT Model	Female-Dominant	31	1.84	0.37
	Gender-Balanced	9	1.67	0.5
	Male-Dominant	52	1.88	0.32
Claude Model	Female-Dominant	31	1.71	0.46
	Gender-Balanced	9	1.78	0.44

Big Five Trait & AI	Occupational Gender Dominance Category	*N*	*M*	*SD*
	Male-Dominant	52	1.88	0.32
Gemini Model	Female-Dominant	31	1.94	0.25
	Gender-Balanced	9	1.67	0.5
Emotional Stability				
	Male-Dominant	52	1.25	0.44
GPT Model	Female-Dominant	31	1.16	0.37
	Gender-Balanced	9	1	0
	Male-Dominant	52	1.6	0.5
Claude Model	Female-Dominant	31	1.39	0.5
	Gender-Balanced	9	1.33	0.5
	Male-Dominant	52	1.52[a]	0.5
Gemini Model	Female-Dominant	31	1.06[b]	0.25
	Gender-Balanced	9	1.11[b]	0.33
Extraversion				
	Male-Dominant	52	1.87a	0.66
GPT Model	Female-Dominant	31	2.35b	0.55
	Gender-Balanced	9	2.33ab	0.71
	Male-Dominant	52	1.98a	0.78
Claude Model	Female-Dominant	31	2.58b	0.5
	Gender-Balanced	9	2.67b	0.5
	Male-Dominant	52	1.15	0.36
Gemini Model	Female-Dominant	31	1.06	0.25
	Gender-Balanced	9	1.22	0.44
Openness to Experience				
	Male-Dominant	52	1.96	0.74
GPT Model	Female-Dominant	31	2.23	0.62
	Gender-Balanced	9	2.11	0.78
	Male-Dominant	52	1.79	0.82
Claude Model	Female-Dominant	31	1.9	0.65
	Gender-Balanced	9	2.11	0.78
	Male-Dominant	52	1.40[a]	0.5
Gemini Model	Female-Dominant	31	1.87[b]	0.34
	Gender-Balanced	9	1.78[ab]	0.44

Note. This table presents descriptive statistics for AI-inferred personality scores. *N* = number of occupations within each gender dominance category. *M* = mean AI-inferred personality score. *SD* = standard deviation of AI-inferred personality scores. AI-assigned ratings (e.g., Low, Medium, High) were numerically coded as [e.g., 1 = Low, 2 = Medium, 3 = High. Occupational gender dominance categories were defined as Male-Dominant (coded 1), Female-Dominant (coded 2), and Gender-Balanced (coded 3) based on 2019 Bureau of Labor Statistics data (less than 45%=male and >55%=female). AI Model refers to GPT-4, Claude 3, and Google Gemini 1.0 Pro. The Emotional Stability scale was derived by reverse-scoring the Neuroticism scores from the original data source.
[a,b] Within each AI Model's analysis for a given trait, means that do not share a common superscript letter are significantly different at $p < .05$ according to the appropriate post-hoc test.

In Table 4, seven analyses of variance of AI inferences by gender dominance category were significant at $p < .05$, indicating that there was a relationship between AI inferences and occupational gender dominance in about half of the cases. One large effect was reported (GPT-Agreeableness), but several effect sizes were not available in IBM SPSS Statistics software since the Welch ANOVA was used when the Levene's test for homogeneity of variances was significant at $p < .05$. For GPT-4 Emotional Stability, *F*, *df1*, *df2*, *p*, and could not be reported because of zero variance in one of the levels.

Table 4

Analyses of Variance of AI-Assigned Big Five Personality Scores by Occupational Gender Dominance Category

Trait - AI Model	*F*	df1	df2	*p*	η^2_p
A - GPT	26.50	2	89	<.001	.37
A - Claude	40.59*	2	21.38	<.001	n.a.
A - Gemini	29.34*	2	20.18	<.001	n.a.
C - GPT	1.13*	2	19.82	.34	n.a.
C - Claude	1.77*	2	20.39	.20	n.a.
C - Gemini	1.31*	2	20.41	.29	n.a.
ES - GPT	n.a.**	n.a	n.a	n.a.	n.a.
ES - Claude	2.29	2	89	.11	.05
ES - Gemini	14.81*	2	23.07	<.001	n.a.
EX -GPT	6.7.3	2	89	.002	.13
EX - Claude	9.58	2	89	<.001	.18
EX - Gemini	1.15*	2	21.02	.34	n.a.
O - GPT	1.39	2	89	.26	.03
O - Claude	.70*	2	22.32	.51	n.a.
O - Gemini	12.78*	2	22.41	<.001	n.a.

Note. This table summarizes one-way ANOVAs testing differences in mean AI-assigned personality scores (numerically coded: Low=1, Medium=2, High=3), across three occupational gender dominance categories (Female-Dominant, Male-Dominant, Mixed). AI = Artificial Intelligence; GPT Model refers to GPT-4; Claude Model refers to Claude 3; Gemini Model refers to Google Gemini [specify versions if known]. Analysis for Gemini Model on Conscientiousness by gender dominance category could not be performed due to zero variance in one of the gender dominance groups for the AI's Conscientiousness ratings for this model.

* Welch's *F*-statistic and its adjusted denominator degrees of freedom (*df2*) are reported due to a significant Levene's test for homogeneity of variances ($p < .05$). Games-Howell post-hoc tests were used for pairwise comparisons where Welch's *F* was significant. Partial eta squared (η^2_p) is not reported for these analyses as the metric relies on homoscedasticity assumptions that were violated.

** For the GPT Model's Emotional Stability ratings, the standard deviation for the Gender-Balanced category was 0, as all occupations in this group were assigned an identical rating. A one-way ANOVA across all three gender categories could not be performed for this specific analysis due to this lack of variance

Discussion

These results suggest two insights about inaccuracies and bias in AI generated personality profiles of occupations: a positivity bias, with AIs' leaving out low values of socially undesirable traits; and a gender bias, with AI inferences of personality traits differing between male-dominant and female-dominant occupations. Both biases could cause students to prematurely foreclose on considering possible careers during career exploration using AI.

Positivity Bias

GPT-4, Gemini, and Claude seemed to exhibit a positivity bias in their inferences for Emotional Stability and Conscientiousness, since there were no low values for these socially desirable traits (Hoorens, 2014). Derner et al.'s. (2024) finding of a positivity bias in AI inferences of personality in individuals' chat messages supports our identification of a positivity bias in AI inferences of personality traits in occupations. While we initially attributed this positivity bias to Reinforcement Learning from Human Feedback (RLHF) training designed to create models with harmlessness (Anthropic, 2024), this explanation remains speculative without access to the models' proprietary documentation. Alternative explanations are equally plausible: (a) the underlying training data (internet text) may lack negative descriptors for occupations generally, (b) occupational databases and career guidance literature typically emphasize positive framing to attract candidates, or (c) the models may have learned to systematically avoid negative characterizations of any human group or role to prevent toxicity. Future research accessing model internals would be required to test these hypotheses definitively. A consequence of the omission of low Conscientiousness as a viable trait is that students in creative fields may be discouraged. This consequence could particularly affect minority-gender students.

The Conscientiousness Anomaly: Why AI Systems Fail to Differentiate

Conscientiousness represented an anomaly in this study, showing zero significant relationship with expert ratings across all three models. Unlike Extraversion or Openness, where the models could detect differences of "High" versus "Low," the AI models appeared unable to differentiate Conscientiousness levels among occupations. This failure is likely attributable to range restriction in the training data and the occupational context itself. Because Conscientiousness is universally valued across the labour market—specifically the facets of dependability and orderliness—occupational descriptions rarely contain language indicating a lack of this trait. Consequently, the AI models suffer from a "ceiling effect," categorizing all occupations as High or Medium, which mathematically restricts the variance necessary to establish a statistical correlation with expert O*NET scores. These findings indicate that career counsellors should avoid using AI to profile Conscientiousness. Creative jobs typically associated with lower Conscientiousness would be expected to be incorrectly profiled by AI, in particular. Career counsellors should supplement or replace AI profiling of Conscientiousness with structured assessments of this trait.

Gender

Human societal gender stereotypes about the personality traits of women also seem to be replicated in the AI inferences about the traits associated with gender-dominance categories. Our results line up moderately well with the literature on the personality traits of women and stereotypes about the personality traits or women (Löckenhoff et al., 2014). A major study of 26 countries by Löckenhoff et al. (2014) found that women were stereotyped as being higher than men on Openness, Agreeableness, Conscientiousness, and facets of Extraversion and Neuroticism, and that the perceived gender differences "mapped closely onto assessed sex differences in self- and observer-related personality."

The female-dominant occupations in this study are significantly associated with higher levels of Neuroticism (lower Emotional Stability), Agreeableness, Extraversion, and Openness than male-dominant occupations in at least one of the AI models' inferences. Conscientiousness did not significantly occur at a higher level in female dominant occupations than male dominant occupations, as expected by human stereotypes, but Conscientiousness was less accurately inferred by AIs in general, and there was no association between AI Conscientiousness inferences and human ratings.

Since Weisberg et al. (2011) found that women had higher Extraversion, Agreeableness, and Neuroticism than men and that there were other differences between men and women on the Aspect level of the Big Five personality traits, the AI gender stereotypes described in this study appear to have a "kernel of truth " (Jussim et al., 2020), with the stereotypes mirroring small real-world differences between the personality traits of women and men. However, AI gender stereotypes could pigeonhole male-dominant and female-dominant occupations, foreclosing career exploration of occupations that might be good for students with personality traits not matching the stereotypes.

These gender-based findings should be interpreted through the lens of the ecological fallacy (Robinson, 1950). While our data reflects aggregate trends where female-Dominant occupations score higher on Agreeableness, this does not imply that individual women in these roles possess or require these traits. Relying on these aggregate associations poses a risk of stereotype amplification, where AI models might over-apply group-level characteristics to individuals. Future research should investigate whether AI amplifies these differences beyond human baselines—specifically by comparing the AI's effect sizes against published meta-analytic benchmarks.

Regarding stereotype amplification, our results suggest the AI models may exaggerate gender differences beyond human baselines. For example, the GPT model displayed a very large effect size for Agreeableness ($\eta^2_p = .38$) across gender-dominant groups. This is notably higher than typical meta-analytic benchmarks for human gender differences in personality, which usually range from small to medium effects (e.g., $d = 0.48$, roughly equivalent to $\eta^2_p = .06$) (Weisberg et al., 2011).

Implications for AI Literacy in Career Counselling

The results show that AI chatbots contain inaccuracies possibly related to a positivity bias, as well as stereotypes about gendered occupations. Socially undesirable personality traits like low Conscientiousness and Emotional Stability have positive aspects for some occupations, so it is problematic that AI had no low level for these traits. For example, creativity can be associated with low Conscientiousness (George & Zhou, 2001) and low Emotional Stability (Clark & DeYoung, 2014). The omission of a low level may cause students to miss occupations possibly matching their personality traits when exploring careers. Similarly, AI inferences about female-dominant occupations may contain stereotypes that people in these occupations are more extraverted and agreeable, causing introverted and low-on-Agreeableness individuals who are considering female-dominant careers like nursing to overlook this profession. While AI inferences in many cases contain a kernel of truth, just as the human stereotypes they are based on sometimes do, students need to be aware that using AI to ascertain the personality traits of people in occupations could limit their information about potential career choices.

Practitioners must be aware that AI-generated career advice may suffer from exclusionary biases. For instance, the model's "positivity bias"—that is, its failure to detect low Conscientiousness—may exclude valid career paths for clients who self-identify as spontaneous or unstructured, particularly in artistic or creative domains. Career counsellors must therefore actively intervene to ensure these "invisible" options are provided to students.

Thus, career counsellors may want to inform students that AI contains empirically verifiable biases about the personality traits of people in careers, such as a positivity bias and gender stereotypes. Career counsellors may want to teach students that:

1. Due to positivity bias, AI omits low conscientiousness, affecting students in creative roles.
2. AI may contain a kernel of truth, but its data replicates human stereotypes.
3. AI may treat male-dominant and female-dominant occupations differently when it responds to prompts about occupational personality traits.

To mitigate the first point about AI possibly leaving out jobs suited for students due to inaccuracies and bias, career websites should encourage students to cast a wide net when using AI-inferred personality traits. Students should not assume, for example, that AI represents all levels of Conscientiousness characteristic of people in occupations. Students may want to require AI in their prompts to list some occupations whose incumbents tend to score relatively low in Conscientiousness and to give reasons why low Conscientiousness might be an asset.

To mitigate the second point about AIs' containing a kernel of truth based on human stereotypes, students need to be trained about the source of AI's data, which contains stereotypes (Bender et al., 2021). If students are aware that biased human data like that on the World Wide Web are the basis for AI's conclusions, they may better understand the potential for human stereotypes to be replicated by AI.

To mitigate the third point that AIs treat male-dominant and female-dominant occupations differently in response to prompts, students should be encouraged to develop a critical meta-perspective about gender bias in AI, which is one goal of the Barnard framework (Hibbert et al., 2024). Kotek et al. (2023) show that carefully constructed prompts can lead AI to reveal biases such as that doctors tend to be male. Students could try to prompt AIs to get them to reveal their gender bias, perhaps experimenting with questions about the personality traits of a male nurse or a female software engineer. Gross' article (2023) instructively discusses how the limitations of AI training data result in gender biases, and could be provided as reading material.

Limitations

One limitation of this study is that AI models available in 2024 were used and have been superseded by later models. AI LLMs are constantly being updated both in functionality and knowledge training bases. Continuous auditing is necessary as models update. Our results thus need to be interpreted as applying to past AI models, and further testing would need to be done to see if inaccuracies and bias are present in current

models. Testing of new models such as ChatGPT-5.5 should be ongoing.

Another limitation of the study is the proprietary black-box nature of AI algorithms, which mitigates the interpretability of the study findings. It is ultimately not known how AI generated the ratings that it did, even though it is clear that the training data contains human biases that the AIs reflect. We attempt to answer the reliability problem with AI's black-box nature by triangulating results with three AIs. Results in which two or three AI models yielded similar results in our study can be viewed as more reliable than those in which one AI had a significantly different result. The results for Agreeableness, Extraversion, and Openness to Experience in the comparisons between AI inferences and human ratings were supported by two or three AIs, as were the results for Agreeableness and Extraversion in the ANOVAs between AI inferences and gender-dominance categories.

Another limitation is that we do not develop multiple prompts, as Lin (2026) recommends for large language model research in psychology. As Lin points out, "The challenge is distinguishing genuine computational phenomena—stable, theoretically coherent behavioural regularities—from statistical artifacts or 'cognitive phantoms." Despite having the limitation of not testing multiple prompts, our study's triangulation of results by three different AIs suggests that we have found some phenomena of interest in this exploratory study.

Additionally, because the occupational list was derived from established meta-analytic data (Wilmot & Ones, 2021), the sample may over-represent traditional professional and managerial roles while under-representing the modern "gig economy," emerging technology sectors, or niche skilled trades. Therefore, the biases observed in these established occupational titles may not necessarily generalize to newer, less codified job titles where AI training data may be sparser or qualitatively different.

We acknowledge that broad occupational labels (e.g., "Engineers" or "Nurses") may mask within-occupation variation in gender ratios across specific sub-specialties. However, as the AI models were prompted with these same high-level O*NET titles, our analysis accurately reflects the model's response to the generalized semantic labels used in public discourse, even if specific sub-roles may differ in demographic composition.

Our analysis was constrained by the binary gender coding inherent in the available occupational data. This binary framework masks significant within-occupational variation and fails to capture the experiences of non-binary and gender-minority individuals. Future research must move beyond this binary classification to fully understand how AI infers personality for the gender-diverse workforce.

Finally, we acknowledge that the demands of AI tool developers may conflict with those of career counsellors, and realistically tools may not easily and cost-effectively eliminate bias at this point in time.

Conclusion

This study examined inaccuracies and gender bias in AI chatbot inferences of occupational the Big Five personality traits. While 10 of 15 trait comparisons showed statistically significant relationships ($p < .05$) effect sizes indicated that 62–90% of variance remained unexplained. Notably, Conscientiousness was an exception: none of the three models' Conscientiousness ratings correlated significantly with expert ratings ($p > .31$), suggesting this trait may be particularly unreliable when inferred by AI.

Despite these shortcomings, some inferences were accurate, reflecting a kernel of truth—just as the human stereotypes in the human linguistic data on which AI models are based sometimes do (Jussim et al., 2020). Jussim et al. (2020) found personality-gender stereotypes often map to real differences; however, this does not validate occupational stereotyping. With Agreeableness the Female-Dominant occupations scored higher in all three models. The results for Extraversion, Emotional Stability, and Openness, which were not shared across all three models, may depend on model architecture. Gender biases likely reflect occupational gender associations present in the training data (e.g., Common Crawl[2]), which is problematic, as it may deter career explorers from occupations where the AI infers a poor personality fit based on stereotypes rather than actual trait requirements.

2 Common Crawl is a non-profit organization that maintains a publicly accessible, open repository of web crawl data to support research and development (Common Crawl Foundation, 2026).

In addition, the AI chatbots showed gender biases in inferences about personality traits of male-dominant and female-dominant occupations, with all traits but Conscientiousness exhibiting gendered difference in the inferences of one or more models. We recommend that (a) career counsellors explicitly teach students to critically evaluate AI occupational profiles, (b) institutions incorporate findings in AI literacy curricula, and (c) future research test effectiveness of interventions. Future research should (a) test whether AI literacy interventions improve critical evaluation, (b) examine whether findings generalize to newer models and emerging occupations, (c) investigate similar biases in other AI career tools (e.g., resume screening, interview prep, and salary estimation). This research advances understanding of how AI training data properties (e.g., stereotyping and positivity bias) manifest in occupational profiling. As AI adoption in educational and career services accelerate, AI literacy becomes increasingly urgent. This wok contributes to addressing that need. Beyond career development, our findings may apply to hiring systems, labour market information services and "educational counselling." While the current research identifies some occupational personality stereotypes in AI, the implications of these findings are best understood through the lens of the broader recruitment pipeline. As Mujtaba and Mahapatra (2024) demonstrate, these ingrained biases do not exist in isolation; rather, they are amplified at every stage of the hiring process—from the initial sourcing of candidates to the final selection and offer.

References

Anni, K., Vainik, U., & Mõttus, R. (2025). Personality profiles of 263 occupations. *Journal of Applied Psychology*, *110*(4), 481–511. https://doi.org/10.1037/apl0001249

Anthropic. (2026). *Claude* [Large language model]. https://claude.ai

Anthropic. (2024, June 8). *Claude's character*. https://www.anthropic.com/research/claude-character

Assouline, M., & Meir, E. I. (1987). Meta-analysis of the relationship between congruence and well-being measures. *Journal of Vocational Behavior*, *31*(3), 319–332. https://doi.org/10.1016/0001-8791(87)90046-7

Attridge, M. (2025, April 28). *Survey: The economy, AI have 2025 grads worried for their careers*. BestColleges. https://www.bestcolleges.com/news/the-economy-ai-have-grads-worried-about-careers/

Bankins, S., Jooss, S., Restubog, S. L. D., Marrone, M., Ocampo, A. C., & Shoss, M. (2024). Navigating career stages in the age of artificial intelligence: A systematic interdisciplinary review and agenda for future research. *Journal of Vocational Behavior*, *153*, Article 104011. https://doi.org/10.1016/j.jvb.2024.104011

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, *44*(1), 1–26. https://doi.org/10.1111/j.1744-6570.1991.tb00688.x

Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). *On the dangers of stochastic parrots: Can language models be too big?* In Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency (pp. 610–623). Association for Computing Machinery. https://doi.org/10.1145/3442188.3445922

Career Services at University of Wisconsin-Madison. (n.d.). *Artificial Intelligence (AI) career toolkit*. https://careers.wisc.edu/artificial-intelligence-career-toolkit/

Clark, R., & DeYoung, C. (2014). Creativity and the aspects of Neuroticism. *Personality and Individual Differences*, *60*, S54. https://doi.org/10.1016/j.paid.2013.07.224

Common Crawl Foundation. (2026). *Common Crawl: Open repository of web crawl data*. Amazon Web Services Registry of Open Data. https://registry.opendata.aws/commoncrawl/

Derner, E., Kučera, D., Oliver, N., & Zahálka, J. (2024). Can ChatGPT read who you are? *Computers in Human Behavior: Artificial Humans*, *2*(2), Article 100088. https://doi.org/10.1016/j.chbah.2024.100088

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology*, *41*, 417–440. https://doi.org/10.1146/annurev.ps.41.020190.002221

Dorceus, S., Le Corff, Y., & Yergeau, E. (2024). Description des principaux construits psychologiques évalués et instruments psychométriques utilisés par les conseillères et conseillers d'orientation québécois [The main psychological constructs assessed and psychometric instruments used by Quebec guidance counsellors]. *Canadian Journal of Career Development*, *23*(2), 107–148. https://doi.org/10.53379/cjcd.2024.394

Duan, W., McNeese, N., & Li, L. (2025). Gender stereotypes toward non-gendered generative AI: The role of gendered expertise and gendered linguistic cues. *Proceedings of the ACM on Human-Computer Interaction*, *9*(1), 1–35, Article GROUP18. https://doi.org/10.1145/3701197

Eze, P., Alabi, A., & Osunbunmi, I. (2025). AI-driven career guidance: Comparing Nigerian undergraduate and postgraduate perceptions. *Discover Education*, *4*(1), Article 543. https://doi.org/10.1007/s44217-025-00900-0

Fan, J., Sun, T., Liu, J., Zhao, T., Zhang, B., Chen, Z., Glorioso, M., & Hack, E. (2023). How well can an AI chatbot infer personality? Examining psychometric properties of machine-inferred personality scores. *Journal of Applied Psychology*, *108*(8), 1277–1299. https://doi.org/10.1037/apl0001082

Freeman, J. (2025). *Student generative AI Survey 2025* (HEPI Policy Note 61). Higher Education Policy Institute. https://www.hepi.ac.uk/reports/student-generative-ai-survey-2025/

Furnham, A. (2001). Vocational preference and P–O fit: reflections on Holland's theory of vocational choice. *Applied Psychology: An International Review*, *50*(1), 5–29. https://doi.org/10.1111/1464-0597.00046

Gagandeep, Kaur, J., Mathur, S., Kaur, S., Nayyar, A., Singh, S. P., & Mathur, S. (2024). Evaluating and mitigating gender bias in machine learning based resume filtering. *Multimedia Tools and Applications*, *83*(9), 26599–26619. https://doi.org/10.1007/s11042-023-16552-x

George, J. M., & Zhou, J. (2001). When openness to experience and conscientiousness are related to creative behavior: An interactional approach. *Journal of Applied Psychology*, *86*(3), 513–524. https://doi.org/10.1037/0021-9010.86.3.513

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, *48*(1), 26–34. https://doi.org/10.1037/0003-066X.48.1.26

Google. (n.d.). *Career Dreamer*. https://grow.google/career-dreamer/home/

Google. (2023). *Gemini: A family of highly capable multimodal models*. Google. https://storage.googleapis.com/deepmind-media/gemini/gemini_1_report.pdf

Gross, N. (2023). What ChatGPT tells us about gender: A cautionary tale about performativity and gender biases in AI. *Social Sciences*, *12*(8), Article 435. https://doi.org/10.3390/socsci12080435

Grunenberg, E., Peters, H., Francis, M. J., Back, M. D., & Matz, S. C. (2024). Machine learning in recruiting: Predicting personality from CVs and short text responses. *Frontiers in Social Psychology*, *1*, Article 1290295. https://doi.org/10.3389/frsps.2023.1290295

Hibbert, M., Altman, E., Shippen, T., & Wright, M. (2024, June 3). *A framework for AI literacy*. EDUCAUSE Review. https://er.educause.edu/articles/2024/6/a-framework-for-ai-literacy

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Psychological Assessment Resources.

Hoorens, V. (2014). Positivity bias. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 4938–4941). Springer. https://doi.org/10.1007/978-94-007-0753-5_2219

Ji, Z., Lee, N., Frieske, R., Yu, T., Su, D., Xu, Y., Ishii, E., Bang, Y. J., Madotto, A., & Fung, P. (2023). Survey of hallucination in natural language generation. *ACM Computing Surveys*, *55*(12), 1–38, Article 248. https://doi.org/10.1145/3571730

Jussim, L., Stevens, S. T., & Honeycutt, N. (2020). The accuracy of stereotypes about personality. In T. D. Letzring & J. S. Spain (Eds.), *The Oxford handbook of accurate personality judgment* (pp. 245–257). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190912529.013.16

Kotek, H., Dockum, R., & Sun, D. Q. (2023). *Gender bias and stereotypes in large language models*. In Proceedings of the ACM Collective Intelligence Conference (pp. 12–24). Association for Computing Machinery. https://doi.org/10.1145/3582269.3615599

Lang, J., & Catrino, J. (2024). *How students should not use generative AI in the job search*. NACE Journal. https://www.naceweb.org/career-development/best-practices/how-students-should-not-use-generative-ai-in-the-job-search

Lin, Z. (2026). A validity-guided workflow for robust large language model research in psychology. *Behavior Research Methods*, *58*(8) Article 216. https://doi.org/10.3758/s13428-026-03073-2

Löckenhoff, C. E., Chan, W., McCrae, R. R., De Fruyt, F., Jussim, L., De Bolle, M., Costa, P. T., Jr., Sutin, A. R., Realo, A., Allik, J., Nakazato, K., Shimonaka, Y., Hřebíčková, M., Graf, S., Yik, M., Ficková, E., Brunner-

Sciarra, M., Leibovich de Figueora, N., Schmidt, V., … Terracciano, A. (2014). Gender stereotypes of personality: Universal and accurate? *Journal of Cross-Cultural Psychology*, *45*(5), 675–694. https://doi.org/10.1177/0022022113520075

Long, D., & Magerko, B. (2020). *What is AI literacy? Competencies and design considerations*. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (pp. 1–16). Association for Computing Machinery. https://doi.org/10.1145/3313831.3376727

McCrae, R. R., & Costa, P. T. (2008). Empirical and theoretical status of the five-factor model of personality traits. In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE handbook of personality theory and assessment: Vol. 1. Personality theories and models* (pp. 273–294). SAGE Publications. https://doi.org/10.4135/9781849200462.n13

Mujtaba, D. F., & Mahapatra, N. R. (2024). *Fairness in AI-driven recruitment: Challenges, metrics, methods, and future directions* [Preprint]. arXiv. https://doi.org/10.48550/arXiv.2405.19699

National Center for O*NET Development. (n.d.). *O*NET OnLine*. https://www.onetonline.org/

Nye, C. D., Su, R., Rounds, J., & Drasgow, F. (2017). Interest congruence and performance: Revisiting recent meta-analytic findings. *Journal of Vocational Behavior*, *98*, 138–151. https://doi.org/10.1016/j.jvb.2016.11.002

OpenAI. (2026). *ChatGPT* [Large language model]. https://www/chatgpt.com

Pandya, S. S., & Wang, J. (2024). Artificial intelligence in career development: A scoping review. *Human Resource Development International*, *27*(3), 324–344. https://doi.org/10.1080/13678868.2024.2336881

Robinson, W. S. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review*, *15*(3), 351–357. https://doi.org/10.2307/2087176

Sokanu Interactive Inc. (2025.). *CareerExplorer*. https://www.careerexplorer.com/

Tippins, N. T., & Hilton, M. L. (Eds.). (2010). *A database for a changing economy: Review of the Occupational Information Network* (O*NET). National Academies Press. https://doi.org/10.17226/12814

University of Colorado Boulder. (2025). *AI for career readiness*. https://www.colorado.edu/career/job-searching/ai-resource-guide

U.S. Bureau of Labor Statistics. (2023). *Women in the labor force: A databook* (Report No. 1103). U.S. Department of Labor. https://www.bls.gov/opub/reports/womens-databook/2022/

Weisberg, Y. J., DeYoung, C. G., & Hirsh, J. B. (2011). Gender differences in personality across the ten aspects of the Big Five. *Frontiers in Psychology*, *2*, Article 178. https://doi.org/10.3389/fpsyg.2011.00178

Wilmot, M. P., & Ones, D. S. (2021). Occupational characteristics moderate personality–performance relations in major occupational groups. *Journal of Vocational Behavior*, *131*, Article 103655. https://doi.org/10.1016/j.jvb.2021.103655

Wilson, M., Robertson, P., Cruickshank, P., & Gkatzia, D. (2022). Opportunities and risks in the use of AI in career development practice. *Journal of the National Institute for Career Education and Counselling*, *48*(1), 48–57. https://doi.org/10.20856/jnicec.4807

Xiao, Y., & Zheng, L. (2025). Can ChatGPT boost students' employment confidence? A pioneering booster for career readiness. *Behavioral Sciences*, *15*(3), Article 362. https://doi.org/10.3390/bs15030362

Xue, J., Wang, Y.-C., Wei, C., Liu, X., Woo, J., & Kuo, C.-C. J. (2023). *Bias and fairness in chatbots: An overview* [Preprint]. arXiv. https://doi.org/10.48550/arXiv.2309.08836

CANADIAN JOURNAL OF CAREER DEVELOPMENT | REVUE CANADIENNE DE DÉVELOPPEMENT DE CARRIÈRE

Appendix

Supplementary Table 1

Distribution of Conscientiousness Ratings by Occupational Category by AI Models

Occupational Category	Total (*N*)	GPT-4 Ratings	Claude Ratings	Gemini Ratings
Clerical	9	High (9)	High (9)	High (9)
Customer Service	6	High (6)	High (6)	High (6)
Healthcare	5	High (5)	High (5)	High (5)
Law Enforcement	4	High (4)	High (4)	High (4)
Management	7	High (7)	High (7)	High (7)
Military	6	High (6)	High (6)	High (6)
Professional	19	High (19)	High (19)	High (19)
Sales	9	High (9)	High (9)	High (9)
Skilled/Semiskilled	27	High (14) / Med (13)	High (10) / Med (17)	High (16) / Med (11)
Total	92	High (79) / Med (13)	High (75) / Med (17)	High (81) / Med (11)

Note. $N = 92$. Occupations were grouped into broader functional categories based on the Standard Occupational Classification (SOC) system used in Wilmot and Ones (2019). The "Skilled/Semiskilled" category aggregates occupations from construction, production, transportation, and installation families. Values represent the number of occupations in each category receiving a "High" or "Medium" conscientiousness rating. No occupations received a "Low" rating from any model. Examples of occupations associated with high levels of Conscientiousness include army officers, doctors, accountants, and managers.

Supplementary Table 2

Distribution of Gender Dominance within Occupational Categories

Occupational Category	Total (*N*)	Male-Dominated	Female-Dominated	Balanced
Clerical	9	0	8	1
Customer Service	6	0	5	1
Healthcare	5	1	4	0
Law Enforcement	4	4	0	0
Management	7	6	0	1
Military	6	6	0	0
Professional	19	11	5	3
Sales	9	5	2	2
Skilled/Semiskilled	27	19	7	1
Total	92	52	31	9

Note. $N = 92$. Gender dominance categories are based on U.S. Bureau of Labor Statistics (2023) data for the respective occupations. "Male-Dominated" refers to occupations where men comprise >55% of the workforce; "Female-Dominated" refers to occupations where women comprise >55% of the workforce; and "Balanced" refers to occupations falling between these thresholds.

An Examination of Career Planning Processes Among Students in the Faculty of Sport Sciences

Piyami Çakto. *Murcia University, Spain*
İlyas Görgüt. *Ankara University, Türkiye*

Abstract

This study explored the career planning processes of students enrolled in the Faculty of Sport Sciences, taking into account variables such as gender, sport type, year of study, department, and income. Employing a quantitative survey design, data were collected through the Career Planning Scale, and the sample was determined using simple random sampling. The study group consisted of 249 students (99 females, 150 males; M = 19.95, SD = 1.41). Findings indicated no statistically significant differences in the sub-dimensions of career awareness by gender, economic income, or academic department, nor in professional awareness, career belief, correctness of choice, and education proficiency. However, statistically significant differences were observed in career-oriented beliefs by sport type (individual versus team sports), both career-oriented beliefs and perceptions regarding the education proficiency showed statistically significant differences by academic year and department. These results underscore the importance of strengthening career planning and guidance services, particularly for fourth year students. Moreover, expanding internship and practicum opportunities at the departmental level may further reinforce students' confidence in their career trajectories.

Keywords: career beliefs, coach-teacher candidates, physical education, sports management, recreation, university students

Career encompasses the behaviours, evaluations, and planning of individuals regarding their professional lives. It reflects the alignment between the requirements and expectations of the working environment, as shaped by societal norms, and the personal needs and aspirations of the individual (Kurtoğlu, 2010). In this sense, career development refers to the process of advancing within professional life, attaining desired positions, and securing employment that enhances both social and professional status (Sabuncuoğlu, 2005). Career planning is a structured process that enables individuals to discover their talents, interests, and professional goals and to take strategic steps to achieve these goals (Çimen et al., 2022; Savickas, 2013). While every stage of education supports the integration of individuals into social life in a changing and developing world, the choices made in this process directly shape future professional life (Fan, 2025). Choosing the right profession is one of the most critical decisions for individuals in terms of both psychological satisfaction and professional productivity. The process of transitioning to a career after leaving school is one of the most important stages in an individual's career journey (Akıncı & Cingöz, 2023). Career development is shaped by the interaction of individual characteristics and contextual factors, making theoretical perspectives essential for understanding students' career planning processes. Within this framework, the Social Cognitive Career Theory (SCCT), developed by Lent, Brown, and Hackett (1994), provides a comprehensive lens for examining how self-efficacy beliefs, environmental opportunities, and outcome expectations influence career choices. SCCT highlights that career planning during university education is particularly critical, as it facilitates students' adaptation to professional life and contributes to long-term success (Eroglu & Eroglu, 2020; Lent et al., 1994). While SCCT provides a useful theoretical lens for understanding career planning, the present study does not directly operationalize its core constructs, which include self-efficacy, outcome expectations, interests, and contextual supports. Instead, SCCT is used here as a broader framework to situate demographic and contextual findings.

Building on these theoretical foundations, it is particularly important to examine career planning within the field of sports sciences, where students encounter unique sectoral demands and diverse professional pathways. While career planning is a universal process across disciplines, its implications in sports sciences are distinctive, given the sector's interdisciplinary nature and the critical role of graduates in addressing societal needs. Although sports sciences is a multidisciplinary and socially influential field, it has not received sufficient attention in the literature, either from an academic perspective or as an industry. By bringing together existing studies and situating them within a career planning framework, this study contributes to filling this gap and highlights other relevant research areas that could enrich the debate on this subject.

Career Planning from the Sports Sciences Perspective

Career planning in sports sciences is of great importance, as it enables individuals to adapt to the evolving demands of the sectoral needs (Chelladurai, 2014). Once graduated, sport science students contribute not only to their own professional success but also to the improvement of physical and mental health in society through roles such as trainers, coaches, teachers, and sport psychologists (Ministry of National Education [MoNE], 2018; Prior et al., 2025; Wang et al., 2025). Although a career is often associated with success, high status, and promotion in professional life, it also encompasses broader processes of setting goals, positioning oneself within sectoral needs, and achieving long-term development (Harmandal, 2024; Lartey, 2021). Sports sciences students face diverse career pathways, including sports management, physical education teaching, coaching, sports psychology, and recreation (Tannoubi et al., 2022). While this diversity offers opportunities, it can also create uncertainty in clarifying professional preferences and designing a career roadmap. Research indicates that the challenges encountered in career planning stem from factors such as unclear personal goals, intense competition in the sports sector, dynamic labour market conditions, and insufficient guidance (Tutar & Öner, 2023; Vidal-Vilaplana et al., 2022; Wendling & Sagas, 2020). These findings suggest that students require a more strategic perspective on career planning.

Career planning is therefore an essential component in sports sciences, shaped by the dynamic and interdisciplinary nature of the sector. The sports industry, once primarily focused on athletic performance, has transformed into a multifaceted domain intersecting with health, media, technology, marketing, and economics (Chelladurai, 2014; Pedersen et al., 2021; Thurik et al., 2024). This transformation requires graduates to develop a wide range of competencies to meet labour market expectations. In particular, soft skills—such as communication, leadership, problem-solving, and digital literacy—are indispensable for success and competitiveness in the industry (Eti, 2022). Evidence shows that the acquisition of these skills significantly enhances students' ability to integrate into the labour market. Despite these developments, sports sciences students in Turkey continue to face structural challenges in their career planning processes. These include difficulties in goal setting, limited sectoral knowledge, and a mismatch between students' competencies and labour market requirements (Aksüt & Duman, 2024; Aslan & Uğraş, 2021; Yüksel & Karafil, 2022). Furthermore, inadequate mentorship and career guidance services exacerbate these challenges, restricting access to professional opportunities and hindering career development (Yeşilyaprak, 2019). Comparable challenges can also be observed in international contexts. McMahon and Watson (2015) highlight the complex interplay of environmental, sectoral, and individual factors that shape career planning processes, and the multidimensional nature of sports sciences exemplifies this complexity. Furthermore, Taylor and Ntoumanis (2007) emphasize the pivotal role of social support—particularly from educators and mentors—in motivating students and guiding their professional choices. Addressing these dynamics requires a holistic approach that integrates external conditions with individual aspirations and competencies, ensuring that career planning strategies remain both context-sensitive and student-centred.

In summary, the evolving landscape of sports sciences necessitates adaptive and comprehensive strategies for effective career planning. Within this context, stakeholders—including universities, faculty members, career counsellors, policymakers, and industry representatives—must prioritize mentorship programs, strengthen career guidance services, bridge gaps in competencies, and cultivate critical soft skills. Such coordinated efforts will ensure that sports sciences students are well-prepared to navigate their professional paths and contribute meaningfully to the sector.

Career Awareness and Effective Planning

Career awareness constitutes a fundamental process through which individuals identify their abilities, limitations, and professional goals, thereby enabling more conscious and strategic career choices (Erdoğmuş, 2003). In this regard, effective career awareness requires not only the recognition of personal competencies but also the alignment of values and interests with professional environments (Holland, 1997). Furthermore, reflecting on past experiences and integrating them into future aspirations plays a critical role in shaping sustainable career trajectories (Savickas, 2013). For students in sports sciences, career awareness plays a

critical role because it directly influences both their personal career trajectories and the broader development of the sports industry. Students who are able to clearly identify their strengths and professional aspirations are more likely to select appropriate career paths—such as coaching, sports management, or physical education—that not only enhance their individual success but also contribute to the sector's growth and its long-term impact on society (Zhang et al., 2024). In this sense, career awareness functions as a bridge between individual development and sectoral advancement.

Sports sciences students therefore need to shape their careers by considering both internal factors (e.g., motivation, self-confidence, and interests) and sectoral dynamics, which refer to the external conditions and trends shaping the sports industry, such as labour market demands, technological innovations, commercialization, and evolving health and wellness priorities. These dynamics determine the opportunities available to graduates and the competencies required to succeed. The breadth of literature reviewed reflects the multidimensional nature of career planning in sports sciences. To ensure analytical clarity, the discussion is organized into thematic strands—career awareness, contextual challenges, and theoretical perspectives—each highlighting how sports sciences remain under-represented in academic and industry-focused research.

In the career planning process, psychological factors and external conditions are effective in shaping career decisions and outcomes (Martini et al., 2023; Slomski et al., 2024). For example, Kaynak (1996) and Şirin and Aydın (2020) emphasize the importance of balancing intrinsic factors—stemming from the emotional and psychological characteristics of the individual—with extrinsic factors, such as family expectations, socio-economic conditions, and cultural norms (Al-Hendawi et al., 2024; Zhou, 2023). Ultimately, career awareness enhances not only individual success but also social contribution. For sports sciences students, gaining this awareness strengthens their ability to meet sectoral needs, increases their employability, and supports the training of qualified professionals who can sustain the economic and social impact of the sports industry (Yurtsızoğlu & Gül, 2023; Gottfredson, 2005).

The Importance of a Career in Sports Sciences

Career planning in the context of sports sciences involves setting goals that align with sectoral needs and developing strategies to achieve them. Professionals such as sports managers, physical education teachers, and coaches play critical roles in the industry by applying their expertise to areas including athlete development, organizational management, and the promotion of health and well-being in society (Chelladurai, 2014; Yurtsızoğlu & Gül, 2023). Students who clarify their professional goals during their education become valuable contributors to both the labour market and the broader social context of sports.

The sports sector itself is inherently multidisciplinary, encompassing not only athletic performance but also domains such as technology, marketing, and health (Chelladurai, 2014). Within this framework, education in sports sciences must be enriched with structured programs and guidance services that equip students with the competencies required to participate effectively in professional life. Strengthening career planning processes is therefore essential, as it enables students to transition smoothly into diverse career pathways and adapt to the dynamic demands of the sector (Eroglu & Eroglu, 2020).

Examining the career planning processes of sports sciences students is particularly important because these processes directly influence both individual success and the preparation of competent professionals who can respond to the evolving needs of the industry. The sector impacts not only physical health but also economic development and the social fabric of communities (Acquah-Sam, 2021). Consequently, training qualified individuals who can meet these multifaceted demands is a central responsibility of sports sciences education. Moreover, factors such as job satisfaction, performance, and career success among professionals in the sports sector directly affect the quality of services delivered (Boswell & Boudreau, 2000; Özman, 2023). Against this backdrop, the present study aims to analyze in detail the individual, environmental, and sectoral factors shaping the career planning processes of sports sciences students. By identifying both opportunities and obstacles, the study seeks to provide evidence-based recommendations for improving career planning practices, thereby contributing to the development of a workforce capable of sustaining the growth and impact of the sports industry.

Method

Study Design

This study employed a quantitative correlational survey design to examine the relationships among students' career planning processes and selected demographic and academic variables. Specifically, the analysis focused on gender, sports type (individual versus team sports), year of study, academic department, and economic income as independent variables, and the sub-dimensions of the Career Planning Scale (i.e., career awareness, professional awareness, career belief, correctness of choice, and adequacy of education) as dependent variables. These demographic and contextual variables were selected to provide descriptive and comparative insights into career planning processes. They do not directly operationalize the core constructs of SCCT—self-efficacy, outcome expectations, interests, and contextual supports—and therefore the study is positioned as situating findings within a broader theoretical framework rather than empirically testing SCCT.

The correlational survey design was chosen because it allows for the systematic investigation of associations among multiple variables without manipulating the natural conditions of the participants. This design enabled the identification of patterns of co-variation and provided insights into how demographic and academic factors are related to students' career planning outcomes. By employing this approach, data collection and analysis were aligned with the study's objectives, ensuring that the interactions among variables critical to understanding career planning in sports sciences were effectively captured.

Participants

The sample of the study consisted of 249 undergraduate students enrolled in the Faculty of Sport Sciences at a public university in Türkiye, including 99 females and 150 males. Participants were selected using a simple random sampling procedure. Specifically, the university's student registry was used to generate a list of eligible students, and random numbers were assigned to ensure that each student had an equal and independent chance of selection (Büyüköztürk et al., 2015). Students were contacted through official university communication channels, including email announcements and in-class invitations coordinated with faculty members. Those who agreed to participate completed the survey voluntarily during scheduled sessions. To collect the data, the Faculty of Sport Sciences was visited, and students were asked to fill out the survey in person. Prior to participation, students were informed about the purpose of the study and the procedures involved, and their voluntary consent was obtained.

All procedures performed in this study involving human participants were conducted in accordance with the latest version of the Declaration of Helsinki (World Medical Association [WMA], 2025). This process ensured both accessibility and ethical compliance in data collection. Other demographic and academic characteristics of the participants are presented in Table 1.

Instruments

The Career Planning Scale (Eroğlu & Eroğlu, 2020), originally developed and validated in the Turkish context, was employed to assess the career planning processes of sports sciences students. Although this instrument is not yet widely used in international literature, its reliability and construct validity have been demonstrated in prior studies, making it suitable for cross-cultural application. The scale consists of five sub-dimensions: career awareness (nine items), professional awareness (four items), belief in career (four items), correctness of choice (three items), and adequacy of education (three items), yielding a total of 23 items. All items were rated on a 5-point Likert scale ranging from 1 (*completely agree*) to 5 (*strongly disagree*). Sub-dimension scores were calculated by summing the relevant items, with higher scores indicating higher levels of the respective construct. The overall reliability of the instrument in this study was satisfactory (Cronbach's $\alpha = 0.88$).

Socio-Demographic Variables

In this study, several socio-demographic variables were included to better understand the factors influencing students' career planning processes. These variables were gender, sports type (individual versus team sports), year of study, academic department, and family income. Each variable was selected because of its potential relevance to career development in sports sciences. Data on these characteristics were collected through the survey instrument, with participants self-reporting their demographic and academic information. These variables were later used as independent factors in the analysis to examine their associations with the sub-dimensions of the Career Planning Scale.

Statistical Analysis

Before the data collected from the participants were transferred from the Excel file to the SPSS software, incomplete questionnaires were excluded. Normality tests were conducted before the relevant analyses were performed, and since the data did not show normal distribution, Kruskal-Wallis H and Mann-Whitney U tests were applied as nonparametric tests (McKight & Najab, 2010). The Games-Howell test was applied as a second level test to examine the pairwise differences between the groups in detail (Ruxton & Beauchamp, 2008). The results obtained were evaluated at 0.05 significance level ($p < 0.05$).

Results

According to Table 1, the proportion of males (n = 150; 60.2%) and females (n = 99; 39.8%) among the participants was distributed at a certain level. A greater number of participants were involved in individual sports (n = 149; 59.8%). The vast majority of students participating in the study were fourth year students (n = 112; 45%). In contrast, the lowest participation was from third-year students (n = 40; 16.1%). From Table 1, most participants were enrolled in the Sport Management department (n = 76; 30.5%), whereas the fewest were from the Coaching Education department (n = 50; 20%). The majority of participants (n = 113; 45.4%) reported monthly incomes at or below ₺2,500 (Turkish Lira), whereas a smaller proportion (n = 29; 11.6%) reported incomes ranging from ₺5,001 to ₺7,500.

Table 1

Descriptive Analysis of Participants' Demographic Information

		N	%
Gender	Female	99	39.8
	Male	150	60.2
Sport Type	Team Sports	100	40.2
	Individual Sports	149	59.8
Year of Study	1st Year Student	51	20.5
	2ndYear Student	46	18.5
	3rd Year Student	40	16.1
	4th Year Student	112	45.0
Departments	PE**	66	26.5
	Coaching Education	50	20.1
	Recreation Education	57	22.9
	Sport Management	76	30.5

		N	%
Income	2,500 Turkish Liras (₺2,500) and below	113	45.4
	₺2,501–₺5,000	107	43.0
	₺5,001–₺7,500	29	11.6

Note: **Physical Education and Sports Teaching.

Table 2 shows no significant difference in the sub-dimensions of career awareness, professional awareness, belief in career, accuracy of choice, and education proficiency, according to the gender variable ($p > .05$).

Table 2

Analysis of Career Planning by Gender

Sub-dimension	Gender	*N*	Rank Mean	Rank Sum	*U*	*p*
Career Awareness	Female	99	130.61	12930.0	6870.0	.31
	Male	150	121.30	18195.0		
Professional Awareness	Female	99	119.40	11820.5	6870.5	.31
	Male	150	128.70	19304.5		
Career Oriented Belief	Female	99	127.42	12615.0	7185.0	.66
	Male	150	123.40	18510.0		
Accuracy of Choice	Female	99	122.97	12174.0	7224.0	.70
	Male	150	126.34	18951.0		
Education Proficiency	Female	99	127.18	12590.5	7209.5	.69
	Male	150	123.56	18534.5		

When Table 3 is examined, no statistically significant difference was found in the sub-dimensions of career awareness, professional awareness, accuracy of choice, and education proficiency, according to the type of sports variable ($p > .05$), while a statistically significant difference was found in the sub-dimension of belief in career ($p < .05$). Looking at the rank mean, in the sub-dimension of belief in career, the mean scores of the participants who do team sports are higher than the participants who do individual sports.

Table 3

Analysis of Career Planning by Sport Type

Sub-dimension	Sport Type	*N*	Rank Mean	Rank Sum	*U*	*p*
Career Awareness	Team Sports	100	133.43	13342.5	6607.5	.12
	Individual Sports	149	119.35	17782.5		
Professional Awareness	Team Sports	100	128.98	12898.0	7052.0	.47
	Individual Sports	149	122.33	18227.0		
Career Oriented Belief	Team Sports	100	143.00	14299.5	5650.5	.00*
	Individual Sports	149	112.92	16825.5		

Sub-dimension	Sport Type	*N*	Rank Mean	Rank Sum	*U*	*p*
Accuracy of Choice	Team Sports	100	132.87	13287.0	6663.0	.13
	Individual Sports	149	119.72	17838.0		
Education Proficiency	Team Sports	100	128.32	12831.5	7118.5	.54
	Individual Sports	149	122.78	18293.5		

Note: *p < 0.05

While Table 4 shows no statistically significant difference in the sub-dimensions of career awareness, professional awareness, and accuracy of choice according at the year of study of the participants ($p > .05$), a statistically significant difference was found in the sub-dimension of belief in career and education proficiency ($p < .05$). The Mann-Whitney U test revealed a significant difference between participants in their first, second, and third year of study and those in their fourth year of study, with respect to the sub-dimensions of career-oriented beliefs and education proficiency.

Table 4

Analysis of Career Planning by Year of Study

Sub-dimension	Year of Study	*N*	Rank Mean	χ^2	*p*	Diff.
Career Awareness	1st Year Student	51	115.43	1.665	.64	
	2ndYear Student	46	131.98			
	3rd Year Student	40	131.24			
	4th Year Student	112	124.26			
Professional Awareness	1st Year Student	51	132.38	1.703	.63	
	2ndYear Student	46	118.74			
	3rd Year Student	40	132.99			
	4th Year Student	112	121.36			
Career Oriented Belief	1st Year Student	51	140.76	11.770	.00*	1 > 4 2 > 4 3 > 4
	2ndYear Student	46	140.48			
	3rd Year Student	40	134.98			
	4th Year Student	112	107.90			
Accuracy of Choice	1st Year Student	51	135.40	1.909	.59	
	2ndYear Student	46	126.16			
	3rd Year Student	40	125.78			
	4th Year Student	112	119.51			
Education Proficiency	1st Year Student	51	136.14	9.559	.02*	1 > 4 2 > 4 3 > 4
	2ndYear Student	46	146.83			
	3rd Year Student	40	123.14			
	4th Year Student	112	111.63			

Note: *p < 0.05.

As shown in Table 5, no statistically significant difference was found in the sub-dimensions of career awareness, professional awareness, and accuracy of choice according to the department variable ($p > 05$). However, a statistically significant difference was found in the sub-dimensions of belief in career and education proficiency ($p < .05$). Similarly, the Mann-Whitney U test showed a significant difference between physical education and sports, teaching, and recreation department students as well as coaching department students in the sub-dimension of belief in careers. There was a significant difference between physical education and sports teaching, coaching, and recreation department students and sports management department students in the sub-dimension, education proficiency.

Table 5

Analysis of Career Planning by Department

Sub-dimension	Departments	*N*	Rank Mean	χ^2	*p*	Diff.
Career Awareness	PE**	66	118.79	.774	.85	
	Coaching Education	50	125.23			
	Recreation Education	57	126.50			
	Sport Management	76	129.12			
Professional Awareness	PE**	66	123.23	3.342	.34	
	Coaching Education	50	113.59			
	Recreation Education	57	122.01			
	Sport Management	76	136.29			
Career Oriented Belief	PE** (a)	66	129.26	18.614	.00*	a > b c > b
	Coaching Education (b)	50	89.59			
	Recreation Education (c)	57	148.46			
	Sport Management (d)	76	127.01			
Accuracy of Choice	PE	66	120.19	.612	.89	
	Coaching Education	50	126.18			
	Recreation Education	57	129.74			
	Sport Management	76	124.85			
Education Proficiency	PE** (a)	66	143.25	8.074	.04*	a > d b > d c > d
	Coaching Education (b)	50	126.68			
	Recreation Education (c)	57	123.25			
	Sport Management (d)	76	109.36			

Note: **PE = Physical Education and Sports Teaching. *$p < 0.05$.

As presented in Table 6, no statistically significant difference was found in the sub-dimensions of career awareness, professional awareness, belief in career, correctness of choice, and education proficiency according to the economic income ($p > .05$).

Table 6

Analysis of Career Planning by Income

Sub-dimension	Economic Income	*N*	Rank Mean	χ^2	*p*
Career Awareness	₺2,500 and below	113	124.31	.025	.98
	₺2,501–₺5,000	107	125.81		
	₺5,001–₺7,500	29	124.72		
Professional Awareness	₺2,500 and below	113	127.65	.585	.74
	₺2,501–₺5,000	107	121.07		
	₺5,001–₺7,500	29	129.19		
Career Oriented Belief	₺2,500 and below	113	125.67	2.338	.31
	₺2,501–₺5,000	107	129.31		
	₺5,001–₺7,500	29	106.47		
Accuracy of Choice	₺2,500 and below	113	120.54	.950	.62
	₺2,501–₺5,000	107	129.54		
	₺5,001–₺7,500	29	125.64		
Education Proficiency	₺2,500 and below	113	124.83	3.308	.19
	₺2,501–₺5,000	107	130.92		
	₺5,001–₺7,500	29	103.83		

Discussion

This study analyzed the career planning processes of students enrolled in the Faculty of Sport Sciences, focusing specifically on gender, type of sport, academic year of study, departmental affiliation, and income. No statistically significant differences were found between gender and the components of career awareness, professional awareness, accuracy of choice, or education proficiency. This finding is consistent with previous research reporting that gender does not act as a direct determinant in career planning outcomes (Aksüt & Duman, 2024; Erail, 2024; Yurtsızoğlu & Gül, 2023). In interpreting this result, it is important to note that the present study did not examine other potential influences such as personal interests, values, family support, or cultural expectations. Therefore, while gender did not emerge as a significant factor in this sample, further research incorporating these additional variables would be necessary to clarify the broader mechanisms shaping career planning.

The findings here suggest that, at least within the studied population, career planning outcomes may be more closely related to academic and contextual variables—such as sports type, year of study, and departmental affiliation—than to gender differences. However, this interpretation should be considered cautiously, as the data do not directly measure institutional support, individual motivation, or resource accessibility. Future studies could expand on these dimensions to provide a more comprehensive understanding of the factors influencing career planning in sports sciences. Studies conducted in Europe emphasize that career success is directly related to institutional support, individual motivation, and access to resources (Glebova & Zare, 2023). Vidal-Vilaplana et al. (2022) found that internship opportunities and professional networks are the main factors shaping career paths. Similarly, Baruch et al. (2023) highlight the importance of a sustainable career ecosystem at the interface between higher education and industry, emphasizing that effective talent flow and acquisition depend on coordinated structures that support students' transition into professional life. These findings support the importance of adopting more inclusive and holistic approaches rather than demographic

characteristics in career planning. Taken together, these results reinforce the broader pattern that gender exerts limited influence, while contextual and academic conditions emerge as the more decisive elements shaping career planning outcomes.

The type of sport preferred by the participants did not have any significant effect on career awareness, professional awareness, accuracy of choices, or education proficiency, but there was a statistically significant difference in belief in career (Table 3). In their study on dual career competencies of athletes, Sarı and Sağ (2024) reported that the sport type variable had no effect on perceived competence and perceived importance scores. Similarly, Koçak et al. (2024) found no significant difference in the perceptions of dual career competencies of student-athletes engaged in individual and team sports. Baron-Thiene and Alfermann (2015) observed that athletes interested in individual sports had a higher tendency to quit sports, a decision influenced by physical complaints and low motivation to win. Tessitore et al. (2021) emphasized that athlete-friendly schools and supportive programs facilitate dual career processes. These results suggest that different types of sports can shape students' career beliefs, particularly team sports, which may foster self-confidence and strengthen career beliefs. This finding implies that other contextual and educational factors may be more decisive in determining career awareness than sport type alone. Thus, the evidence indicates that sport type is not a sufficient explanatory variable for career planning differences and that broader academic and social environments provide a stronger framework for understanding these outcomes.

When considering university students' year of study, the analysis revealed no significant differences in career awareness, professional awareness, or accuracy of choices. In contrast, notable variations emerged in the dimensions of career belief and perceived education proficiency (Table 4). Similarly, Aybek (2023) and Karadaş et al. (2017) reported that the effect of the year of study on career adaptability and career development was insignificant. The uncertainty of approaching graduation and the perceived deficiencies in education can be considered as possible reasons for the decline in career beliefs and perceptions of the education proficiency. Students in the lower years of study generally had a more optimistic career perspective. Pshembayeva et al. (2022) emphasized that environmental factors such as socioeconomic conditions and career counselling may be decisive in this process. Findings show that career beliefs and educational perceptions are shaped along with cognitive and emotional development, while cumulative educational experiences also play an important role. This finding has implications for the implementation of comprehensive programs that are year-of-study independent and address environmental factors to support career planning. In this respect, the year of study functions less as a determinant in itself and more as a contextual marker, highlighting how academic progression interacts with broader institutional and environmental supports in shaping career beliefs (Moradian et al., 2025).

While no statistically significant differences were observed in the sub-dimensions of career awareness, professional awareness, and accuracy of choice, significant variations emerged in the dimensions of career belief and education proficiency (Table 5). These findings are consistent with previous studies reporting similar outcomes (Ertekin, 2021; Koçer, 2019; Yılmaz & Caz, 2022). Within the Faculty of Sport Sciences, the departments of Physical Education and Sport Teaching, Recreation, Coaching Education, and Sport Management provide distinct career trajectories: teaching positions in schools and educational institutions, leisure and community program management, athlete training and performance development, and administrative or managerial roles in sports organizations and federations, respectively. Despite these differences, departmental affiliation did not produce significant variation in career awareness, planning, adaptability, or optimism, which may be explained by overlapping curriculum structures, shared foundational courses, and common labour market challenges. Nevertheless, departments with clearer career pathways—such as teaching and sports management—may strengthen career beliefs by offering students more tangible professional perspectives. Lent and Brown (2019) underscore that self-efficacy and belief systems are central to career development, and, in this context, educational practices that foster self-efficacy can positively influence the career trajectories of sports sciences students. Furthermore, international comparative studies highlight that developmental career stages shape career awareness, suggesting that this dimension should be systematically integrated into educational programs (Robnik et al., 2022). Consequently, departmental affiliation appears secondary to the shared curricular and institutional structures, underscoring that contextual and programmatic factors carry greater weight in influencing career trajectories.

The economic income level did not create a statistically significant difference in sub-dimensions such as career awareness, professional awareness, belief in career, accuracy of choices, or education proficiency. Yurtsızoğlu and Gül (2023) and Kılıç et al. (2020) similarly reported that the effect of economic income on career awareness and planning was limited. This result suggests that intrinsic motivation—such as personal interest, skills, and passion—may be more determinant in career choices. Lent and Brown (2019), within the framework of SCCT, emphasized that self-efficacy and belief systems are more influential than economic income level. It should be noted that the findings of the present study do not directly extend SCCT, as self-efficacy, outcome expectations, and contextual supports and barriers were not assessed. Interpretations grounded in SCCT are therefore tentative, and the results are best understood as descriptive insights into how demographic and contextual variables intersect with career planning processes. In addition, Savickas (2013), through Career Construction Theory, confirmed that individuals shape their careers through personal meaning and identity formation processes, and that the impact of economic factors is limited. Career guidance and mentoring programs can support individuals' career goals, regardless of their economic background. Hughes et al. (2016) and OECD (2024) reported that structured education and guidance interventions improve career outcomes by reducing the impact of socio-economic inequalities. Overall, the limited role of economic income in this study aligns with the central pattern that intrinsic motivation and contextual academic supports, rather than demographic or financial variables, are the primary drivers of career planning processes.

Conclusion

The findings of this study, conducted among undergraduate students in the Faculty of Sports Sciences, reveal that in the current sample, gender and income did not show statistically significant differences in perceptions of career awareness, professional awareness, career-oriented beliefs, choice accuracy, and the education proficiency. In contrast, career-oriented beliefs showed statistically significant differences based on sport type, year of study, and department, while perceptions regarding the education proficiency exhibited statistically significant differences based on year of study and department. For example, participation in team sports may foster stronger career beliefs by enhancing self-confidence and collaborative skills, though this interpretation should be considered cautiously and requires further investigation. Fourth-year students reported lower levels of career belief and perceived education proficiency, which may be related to the uncertainties associated with approaching graduation, the pressures of transitioning into professional life, and a heightened awareness of perceived gaps in their education. These findings imply that universities should strengthen career guidance and mentoring programs particularly for final-year students to mitigate uncertainties and reinforce confidence in their professional preparation.

Based on the results of this study, several context-specific recommendations can be made for sports sciences faculties. Career planning and guidance services could be strengthened by integrating structured workshops and internship opportunities, particularly for students nearing graduation, to reduce uncertainty and better prepare them for professional transitions. Differences observed across departments suggest that career-related support should be tailored to the distinct pathways offered—for instance, physical education and sports teaching, recreation, and sports management provide clearer professional trajectories compared to other areas. Expanding practice-based learning and internship opportunities within these curricula may help reinforce students' confidence in their career choices.

The limited effect of economic income level on career planning outcomes in this study suggests that personal interests, skills, and intrinsic motivation may play a more central role in shaping students' career decisions. Accordingly, career guidance programs should place greater emphasis on helping students identify and build upon their individual strengths and aspirations, rather than focusing solely on external economic factors. While these conclusions are specific to the sample studied, they provide insights into the challenges and opportunities faced by sports sciences students in career planning. Future research across different institutions and larger samples will be necessary to validate these findings and to develop broader recommendations for enhancing career planning processes in sports sciences education. Future research should incorporate measures of SCCT's core constructs—such as self-efficacy, outcome expectations, and

contextual supports—to fully operationalize the theory in the sports sciences context.

References

Acquah-Sam, E. (2021). Developing sports for economic growth and development in developing countries. *European Scientific Journal*, *17*(15), 172–216. https://doi.org/10.19044/esj.2021.v17n15p172

Akıncı, A. Y., & Cingöz, E. (2023). The effect of career awareness status of students Faculty of Sports Sciences on career plans. *KOSALB International Journal of Human Movements Science*, *2*(1), 39–47. https://doi.org/10.5281/zenodo.8079888

Aksüt, N. N., & Duman, S. (2024). Rekreasyon bölümü öğrencilerinin mesleki yeterlilikleri, iş bulma kaygısı ve kariyer planlamaları arasındaki ilişkinin incelenmesi [Investigation of the relationship between professional competencies, employment anxiety, and career planning of recreation department students]. *Mediterranean Journal of Sport Science*, *7*(3), 552–570. https://doi.org/10.38021/asbid.1527716

Al-Hendawi, M., Hussein, E., & Ismail, F. (2024). Career choices among individuals with disabilities in the Gulf Region: Cultural, religious, policy, and socio-economic influences: A literature review. *Societies*, *14*(11), Article 243. https://doi.org/10.3390/soc14110243

Aslan, M., & Uğraş, S. (2021). The relationship between the anxiety about finding a job and the career beliefs of the sports management department students. *International Journal of Education Technology & Scientific Researches*, *6*(15), 1149–1178. https://www.ijetsar.com/index.php/pub/article/view/144

Aybek, S. (2023). Spor bilimleri öğrencilerinin kariyer farkındalığının araştırılması [Investigation of career awareness among sports science students]. *Journal of ROL Sport Sciences*, *4*(3), 1169–1181. https://doi.org/10.5281/zenodo.8353668

Baron-Thiene, A., & Alfermann, D. (2015). Personal characteristics as predictors for dual career dropout versus continuation: A prospective study of adolescent athletes from German elite sport schools. *Psychology of Sport and Exercise*, *21*, 42–49. https://doi.org/10.1016/j.psychsport.2015.04.006

Baruch, Y., Ashleigh, M. J., & Donald, W. E. (2023). A sustainable career ecosystem perspective of talent flow and acquisition: The interface between higher education and industry. In W. E. Donald (Ed.), *Handbook of research on sustainable career ecosystems for university students and graduates* (pp. 177–194). IGI Global Scientific Publishing. https://doi.org/10.4018/978-1-6684-7442-6.ch010

Boswell, W. R., & Boudreau, J. W. (2000). Employee satisfaction with performance appraisals and appraisers: The role of perceived appraisal use. *Human Resource Development Quarterly*, *11*(3), 283–299. https://doi.org/10.1002/1532-1096(200023)11:3<283::AID-HRDQ6>3.0.CO;2-3

Büyüköztürk, Ş., Akgün, Ö. E., Demirel, F., Karadeniz, Ş., & Çakmak, E. K. (2015). *Bilimsel araştırma yöntemleri* [Scientific research methods]. Pegem Akademi.

Chelladurai, P. (2014). *Managing organizations for sport and physical activity: A systems perspective* (4th ed.). Routledge. https://doi.org/10.4324/9781315213286

Çimen, E., Koçyiğit, B., & Doğan, F. (2022). Spor bilimleri fakültesi öğrencilerinin akademik hedef yönelimleri ile akademik başarıları arasındaki ilişkinin incelenmesi [Investigation of the relationship between the academic goal orientations and academic achievements of sports sciences faculty students]. *Sportive*, *5*(2), 69–77. https://doi.org/10.53025/sportive.1185699

Erail, S., Uzun, R. N., & Çebi, A. İ. (2024). Spor bilimleri fakültesi öğrencilerinin kariyer planlaması ve iş bulma kaygılarının incelenmesi [An investigation into the career planning and job-seeking anxieties of sports sciences faculty students]. *Spor ve Performans Araştırmaları Dergisi*, *15*(2), 315–324. https://doi.org/10.17155/omuspd.1514332

Erdoğmuş, N. (2003). *Kariyer geliştirme: Kuram ve uygulama* [Career development: Theory and practice]. Nobel Yayınları.

Eroglu, S. Y., & Eroglu, E. (2020). Career planning scale of students studied in sports sciences (CPS): Validity and reliability study. *International Journal of Progressive Education*, *16*(3), 123–131. https://doi.org/10.29329/ijpe.2020.248.9

Ertekin, A. B. (2021). Genç bireylerin kariyer planlama tutumlarının incelenmesi [Examination of the career

planning attitudes of young individuals]. *Sobider SOSYAL BİLİMLER DERGİSİ The Journal of Social Sciences,* 8(51), 125–134. https://doi.org/10.29228/SOBIDER.49809

Eti, R. (2022). *Z Kuşağı spor bilimleri öğrencilerinin kariyer algısı ve iş bulma kaygısı* [Career perception and job-seeking anxiety among Generation Z sports science students] [Master's thesis, Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü]. Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü.

Fan, G. (2025). The reconfiguration of human education in an uncertain world. *ECNU Review of Education*, *8*(3), 609–637. https://doi.org/10.1177/20965311241266856

Glebova, E., & Zare, F. (2023). Career paths in sport management: Trends, typology, and trajectories. *Journal of Physical Education and Sport*, *23*(2), 463–468. https://doi.org/10.7752/jpes.2023.02057

Gottfredson, L. S. (2005). Applying Gottfredson's theory of circumscription and compromise in career guidance and counseling. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 71–100). John Wiley & Sons.

Harmandal, G. (2024). *Öğretmenlerin kariyer hedefleri ile performansları ve örgütsel mutluluk algıları arasındaki ilişki* [The relationship between teachers' career goals, their performance, and their perceptions of organizational happiness] [Unpublished doctoral dissertation]. İstanbul Sabahattin Zaim Üniversitesi.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Psychological Assessment Resources.

Hughes, D., Mann, A., Barnes, S.-A., Baldauf, B., & McKeown, R. (2016). *Careers education: International literature review*. Education Endowment Foundation. https://educationendowmentfoundation.org.uk/education-evidence/evidence-reviews/careers-education

Karadaş, A., Duran, S., & Kaynak, S. (2017). Hemşirelik öğrencilerinin kariyer planlamaya yönelik görüşlerinin belirlenmesi [Determining nursing students' views on career planning]. *Süleyman Demirel Üniversitesi Sağlık Bilimleri Dergisi*, *8*(1), 1–8. https://doi.org/10.22312/sdusbed.224956

Kaynak, T. (1996). *İnsan kaynakları planlaması* [Human resources planning]. Alfa Basım Yayım Dağıtım.

Kılıç, Y., Coşkuner, Z., & Karakaya, Y. E. (2020). Spor bilimleri alanında eğitim alan öğrencilerin kariyer geleceklerine yönelik tutumları [Attitudes of students studying in the field of sports sciences towards their career futures]. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, *15*(23), 2064–2078. https://doi.org/10.26466/opus.666255

Koçak, D., Ağar, B., & Karadağ, D. (2024). Öğrenci-sporcuların çift kariyer yetkinlik algılarının akademik ve sportif değişkenler açısından incelenmesi [Investigation of student-athletes' dual-career competence perceptions in terms of academic and athletic variables]. *Fenerbahçe Üniversitesi Spor Bilimleri Dergisi*, *4*(1), 16–32. https://izlik.org/JA35MA66ZG

Koçer, G. (2019). *Gençlik ve spor bakanlığında görev yapan uzmanların birey-örgüt uyumları ile bireysel kariyer planlamaları arasındaki ilişkilerin farklı değişkenler açısından incelenmesi* [An examination of the relationships between person-organization fit and individual career planning among specialists working at the Ministry of Youth and Sports] [Master's thesis, Manisa Celal Bayar Üniversitesi]. Council of Higher Education National Thesis Center.

Kurtoğlu, E. (2010). *Kariyer yönetiminin kamu kurumlarının etkinliği üzerindeki olası sonuçlarının incelenmesi ve Çorum örneği* [An examination of the potential effects of career management on the effectiveness of public institutions: The case of Çorum] [Unpublished master's thesis]. Hitit University.

Lartey, F. M. (2021). Impact of career planning, employee autonomy, and manager recognition on employee engagement. *Journal of Human Resource and Sustainability Studies*, *9*(2), 135–158. https://doi.org/10.4236/jhrss.2021.92010

Lent, R. W., & Brown, S. D. (2019). Social cognitive career theory at 25: Empirical status of the interest, choice, and performance models. *Journal of Vocational Behavior*, *115*, Article 103316. https://doi.org/10.1016/j.jvb.2019.06.004

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, *45*(1), 79–122. https://doi.org/10.1006/jvbe.1994.1027

Martini, S., Khan, W. A., & Muttaqiyathun, A. (2023). The influence of training, motivation, and self-efficacy

on career planning. *Jurnal Genesis Indonesia*, *2*(2), 54–73. https://doi.org/10.56741/jgi.v2i02.153
McKight, P.E. and Najab, J. (2010). Kruskal-Wallis test. In I. B. Weiner & W. E. Craighead (Eds.), *The Corsini encyclopedia of psychology*. Wiley. https://doi.org/10.1002/9780470479216.corpsy0491
McMahon, M., & Watson, M. (Eds.). (2015). *Career assessment: Qualitative approaches*. SensePublishers. https://doi.org/10.1007/978-94-6300-034-5
Ministry of National Education [MoNE].(2018). *Physical education and sports course*. Republic of Türkiye Ministry of National Education. https://mufredat.meb.gov.tr/ProgramDetay.aspx?PID=324
Moradian, S. M., Moradian, S. A., Amirkhani, Z., Namvar, R., Gharib, S. N., & Afroughi, S. (2025). Disparities in attitudes toward field of study and future career among students at Yasuj University of Medical Sciences. *BMC Medical Education*, *26*, Article 136. https://doi.org/10.1186/s12909-025-08087-6
OECD. (2024). *Career guidance, social inequality and social mobility: Insights from international data* (OECD Education Spotlights No. 11). OECD Publishing. https://https://doi.org/10.1787/e98d0ae7-en
Özman, C. (2023). İnsan kaynakları açısından spor işletmelerinde performans değerlendirme [Performance evaluation in sports organizations from a human resources perspective]. In S. Ceyhun (Ed.), *Spor bilimlerinde farklı yaklaşımlar* [Different approaches in sports sciences] (pp. 69–93). Özgür Yayınları. https://doi.org/10.58830/ozgur.pub330.c1503
Pedersen, P. M., Laucella, P. C., Kian, E., & Geurin, A. N. (2021). *Strategic sport communication* (3rd ed.). Human Kinetics.
Prior, E., Papathomas, A., & Rhind, D. (2025). A balancing act: Sport psychologist insights into supporting athlete mental health in elite sport. *Journal of Applied Sport Psychology*, *37*(6), 701–721. https://doi.org/10.1080/10413200.2025.2462551
Pshembayeva, E., Pfeyfer, N., Uaikhanova, M., & Bubenchikova, A. (2022). Career success: Analysis and development of career opportunities in students. *Frontiers in Education*, *7*, Article 999541. https://doi.org/10.3389/feduc.2022.999541
Robnik, P., Kolar, E., Štrumbelj, B., & Ferjan, M. (2022). Dual career development perspective: Factors affecting quality of post-sport career transition of employed Olympic athletes. *Frontiers in Psychology*, *12*, Article 800031. https://doi.org/10.3389/fpsyg.2021.800031
Ruxton, G. D., & Beauchamp, G. (2008). Time for some a priori thinking about post hoc testing. *Behavioral Ecology*, *19*(3), 690–693. https://doi.org/10.1093/beheco/arn020
Sabuncuoğlu, Z. (2005). *İnsan kaynakları yönetimi* [Human resources management]. Alfa Yayınları.
Sarı, İ., & Sağ, S. (2024). Eğitim ve sporu bir arada yürütebilmek: Sporcuların çift kariyer yetkinliklerinin incelenmesi [Balancing education and sports: An examination of athletes' dual-career competencies]. *Spor ve Performans Araştırmaları Dergisi*, *15*(3), 345–363. https://doi.org/10.17155/omuspd.1455073
Savickas, M. L. (2013). Career construction theory and practice. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (2nd ed., pp. 147–183). John Wiley & Sons.
Şirin, E. Y., & Aydın, Ö. (2020). Spor bilimleri fakültesi öğrencilerinin kariyer değerlerinin incelenmesi [An investigation of the career values of sports sciences faculty students]. *Mediterranean Journal of Sport Science*, *3*(2), 317–330. https://doi.org/10.38021/asbid.833906
Slomski, V. G., Tavares de Souza Junior, A. V., Lavarda, C. E. F., Simão Kaveski, I. D., Slomski, V., Frois de Carvalho, R., & Fontes de Souza Vasconcelos, A. L. (2024). Environmental factors, personal factors, and the entrepreneurial intentions of university students from the perspective of the theory of planned behavior: Contributions to a sustainable vision of entrepreneurship in the business area. *Sustainability*, *16*(13), Article 5304. https://doi.org/10.3390/su16135304
Tannoubi, A., Guelmami, N., Bonsaksen, T., Chalghaf, N., Azaiez, F., & Bragazzi, N. L. (2022). Development and preliminary validation of the Physical Education-Study Process Questionnaire: Insights for physical education university students. *Frontiers in Public Health*, *10*, Article 856167. https://doi.org/10.3389/fpubh.2022.856167
Taylor, I. M., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology*, *99*(4), 747–760. https://doi.org/10.1037/0022-0663.99.4.747

Tessitore, A., Capranica, L., Pesce, C., De Bois, N., Gjaka, M., Warrington, G., MacDonncha, C., & Doupona, M. (2021). Parents about parenting dual career athletes: A systematic literature review. *Psychology of Sport and Exercise*, *53*, Article 101833. https://doi.org/10.1016/j.psychsport.2020.101833

Thurik, A. R., Audretsch, D. B., Block, J. H., Burke, A., Carree, M. A., Dejardin, M., Rietveld, C. A., Sanders, M., Stephan, U., & Wiklund, J. (2024). The impact of entrepreneurship research on other academic fields. *Small Business Economics*, *62*(2), 727–751. https://doi.org/10.1007/s11187-023-00781-3

Tutar, O. F., & Öner, B. (2023). Üniversite öğrencilerinin kariyer farkındalığı ile iş bulma kaygısı arasındaki ilişki [The relationship between university students' career awareness and their anxiety about finding a job]. *Journal of ROL Sport Sciences*, *4*(3), 1043–1058. https://doi.org/10.5281/zenodo.8353441

Vidal-Vilaplana, A., Valantine, I., Staskeviciute-Butiene, I., González-Serrano, M. H., Capranica, L., & Calabuig, F. (2022). Combining sport and academic career: Exploring the current state of student-athletes' dual career research field. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *31*, Article 100399. https://doi.org/10.1016/j.jhlste.2022.100399

Wang, W., Schweickle, M. J., Arnold, E. R., & Vella, S. A. (2025). Psychological interventions to umprove elite athlete mental wellbeing: A systematic review and meta-analysis. *Sports Medicine*, *55*(4), 877–897. https://doi.org/10.1007/s40279-024-02173-3

Wendling, E., & Sagas, M. (2020). An application of the social cognitive career theory model of career self-management to college athletes' career planning for life after sport. *Frontiers in Psychology*, *11*, Article 9. https://doi.org/10.3389/fpsyg.2020.00009

World Medical Association. (2025). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human participants. *JAMA*, *333*(1), 71–74. https://doi.org/10.1001/jama.2024.21972

Yeşilyaprak, B. (2019). Türkiye'de mesleki rehberlik ve kariyer danışmanlığı hizmetleri: Güncel durum ve öngörüler [Vocational guidance and career counseling services in Turkey: Current situation and projections]. *Kariyer Psikolojik Danışmanlığı Dergisi*, *2*(2), 73–102. https://dergipark.org.tr/tr/pub/kpdd/article/596807

Yılmaz, K., & Caz, Ç. (2022). Spor bilimleri fakültesi öğrencilerinin kariyer planlamaları ile iş bulma kaygıları arasındaki ilişki [The relationship between the career planning of sports sciences faculty students and their concerns about finding employment]. *ÇOMÜ Spor Bilimleri Dergisi*, *5*(1), 39–52. https://izlik.org/JA63DZ56CZ

Yüksel, A. U., & Karafil, A. Y. (2022). Examination of sports science students' career anxiety using the Q method. *Gazi Journal of Physical Education and Sport Sciences*, *27*(3), 203–218. https://doi.org/10.53434/gbesbd.1098182

Yurtsızoğlu, Z., & Gül, O. (2023). Kariyer eğitimi ve kariyer planlama farkındalığının spor endüstrisi için önemi [The importance of career training and career planning awareness for the sports industry]. *Ondokuz Mayıs University Journal of Education Faculty*, *42*(1), 431–468. https://doi.org/10.7822/omuefd.1295267

Zhang, R., Khatibi, A., & Tham, J. (2024). The impact of sports participation on college students' behavioural patterns: A study on employee well-being and entrepreneurial intentions. *International Journal of Instructional Cases*, *8*(1), 283–308. https://ijicases.com/article-view/?id=145

Zhou, X. (2023). The factors influencing the career choices of western students and international students: The role of culture. *Journal of Theory and Practice of Contemporary Education*, *3*(11), 10–24. https://centuryscipub.com/index_php/jtpce/article/view/356

CERIC | Advancing Career Development in Canada | Promouvoir le développement de carrière au Canada

Project Partnership Funding Available

Financement offert pour des projets en partenariat



Two open calls each year
Winter/Spring and Summer/Fall

Deux appels ouverts chaque année
Hiver/printemps et été/automne

We invite individuals and organizations to submit project proposals for research or learning related to career development.

Priority areas include:

1. Career practitioning with social and economic impact
2. Impact of career services on policy and programs
3. New emerging career development theories and career service models
4. Shifting career mindsets and the role of career development professionals in evolving times

Nous invitons les personnes et les organismes à soumettre des propositions de projets de recherche ou d'apprentissage en développement de carrière.

Les domaines prioritaires comprennent :

1. Pratique du développement de carrière ayant une incidence sociale et économique
2. Incidence des services d'orientation professionnelle sur les politiques et les programmes
3. Nouvelles théories de développement de carrière et nouveaux modèles de services d'orientation professionnelle
4. États d'esprit favorables au développement de carrière et le rôle des professionnels du développement de carrière en période de changement

PROJECT PARTNERS HAVE INCLUDED | PARMI NOS PARTENAIRES DE PROJETS

eCaliberGroup · ccdf | fcdc · Agilec · Dalhousie University · University of Waterloo · York University · Career Trek · OneLifeTools · AXTRA · University of Lethbridge · The University of Winnipeg · Université Laval · Canada Career Counselling · SOIT · Sheridan Centre for Elder Research · Workforce Synergy · NEADS · SRDC | SRSA · University of Manitoba · Memorial University · Ironwood Consulting · Employment + Education Centre Everforward · FutureBlackFemale · Ordre des conseillers et conseillères d'orientation du Québec · Challenge Factory · Life Strategies Ltd. · Centre Louis-Jolliet · UQÀM · Life-Role Development Group Ltd. NOW | NEXT | FUTURE

Watch for updates at
ceric.ca/partnerships

Surveillez les mises à jour à
ceric.ca/partenariats

Navigating Career Development for Autistic Individuals with Lower to Moderate Support Needs: Integrating Evidence and Practice

Shana Harrison & Deepak Mathew
Trinity Western University

Abstract

As awareness of neurodiversity grows, so does recognition of the unique considerations and strengths that autistic individuals with lower to moderate support needs bring to the workforce. Career counselling plays a crucial role in helping these individuals navigate the complex employment landscape and achieve their career goals. While many demonstrate strengths such as creativity, attention to detail, analytical thinking, and dedication, they also face challenges like social communication differences, sensory sensitivities, discrimination, and a lack of workplace accommodations. By adopting a client-centred, strengths-based approach tailored to each individual, career counsellors can assist autistic adults in identifying suitable career paths and requesting necessary supports. This paper explores key employment barriers for this group, highlights evidence-informed strategies, and offers practical recommendations for career counsellors and employers to foster inclusive, neurodiversity-affirming workplaces that enable autistic adults with lower to moderate support needs to thrive and contribute meaningfully to their careers.

Keywords: Autism, Career Development, Support Needs, Neurodiversity

Autism spectrum disorder (ASD or autism) is a neurodevelopmental condition marked by differences in social communication, sensory processing, and focused or "special" interests (American Psychiatric Association, 2022; Pellicano & Stears, 2011). Autism covers a broad spectrum of experiences, influenced by intersecting factors such as gender, culture, and support needs. For example, autistic women and gender-diverse individuals are frequently underdiagnosed or misdiagnosed, which can delay access to support and career guidance (Hull et al., 2020; Pearson & Rose, 2021). Similarly, cultural norms and stigma impact how autism is identified and supported, affecting access to education and employment (Botha & Frost, 2020; Sonuga-Barke et al., 2024).

Although research has increasingly examined inclusion in education and community life, comparatively less attention has been given to the career development of autistic adults (Hedley et al., 2018). Notably, much of the existing employment literature does not reflect the full diversity of the autistic population. When support levels for diagnostic specifiers are included, participants usually fall into the DSM-5-TR support categories of requiring support (Level 1) and, less commonly, requiring substantial support (Level 2). These studies often focus on individuals without co-occurring intellectual disabilities who are verbally fluent and able to participate independently in interviews and standardized assessments (Frank et al., 2018). Individuals who require very substantial support (Level 3), including those who are minimally or non-verbal, require continuous assistance, or have significant cognitive impairments, are seldom represented in employment and career development research (Davies et al., 2024). As a result, while these studies frequently refer to "autistic adults," they typically describe the experiences of only a subset of the population.

Employment disparities remain notable: fewer than half of autistic individuals hold paid jobs, often in part-time or entry-level positions, and many face frequent job changes and underemployment (Davies et al., 2024; Harvery et al., 2021). Compared to other disability groups, autistic adults tend to have some of the poorest employment outcomes and endure longer periods of unemployment (Dudley et al., 2015). Drexel University's National Autism Indicators Report revealed that only 58% of autistic individuals worked during their 20s (Roux et al., 2013), while Frank et al. (2018), whose sample primarily included autistic adults with Level 1 support needs, noted that even highly educated autistic adults often find it difficult to secure stable, meaningful employment. These poor employment outcomes are closely linked to lower quality of life and increased mental health issues such as anxiety and depression (Frank et al., 2018; Taylor et al., 2022).

Career counsellors and other mental health practitioners play a vital role in supporting vocational development for autistic adults by recognizing strengths, addressing barriers, and promoting inclusion. However, traditional career counselling models may not fully reflect autistic experiences (Murray et al., 2016;

Sarrett, 2022). For example, trait and factor theory focus on matching traits with job requirements (Chartrand, 1991). Still, autistic individuals might struggle with self-assessment or expressing their preferences in typical ways (Murray et al., 2016). Similarly, strict adherence to standardized career paths can overlook the diversity of autistic interests, skills, and communication styles. Therefore, counsellors need a nuanced understanding of how autism intersects with career development, including sensory, social, and systemic influences that shape vocational identity (Roux et al., 2020).

This paper aims to enhance knowledge and practice in the field of career development for autistic adults by examining challenges and opportunities within the segment of the population most represented in existing literature—individuals with lower to moderate support needs (primarily Levels 1 and 2). Although some barriers, such as sensory sensitivities, may be common across support levels (Robertson & Simmons, 2015; Wigham et al., 2015), the research reviewed and the subsequent recommendations do not include the experiences of autistic individuals with higher or very high support needs (Level 3), who remain significantly underrepresented in empirical studies (Nicholas et al., 2019; Hedley et al., 2018). By focusing explicitly on this population, the paper ensures that its conclusions are appropriately scoped and do not overgeneralize, while also emphasizing the urgent need for research that considers the full spectrum of autistic experiences.

Barriers to Employment and Solutions

Understanding the barriers to employment for autistic individuals is crucial for developing effective interventions and supports that promote inclusion and equity in the workforce. This section highlights four main barriers: social communication and interaction challenges, sensory sensitivities, stigma and discrimination, and the lack of accessible accommodations, along with evidence-based strategies and implications for career development professionals (Bury et al., 2024).

Social Communication and Interaction Challenges

Differences in social communication and interaction are among the most cited barriers to employment for autistic individuals. These differences arise from diverse ways of perceiving, interpreting, and responding to social cues (Kuzminskaite et al., 2020). Difficulties in reading subtle facial expressions, body language, and tone of voice can make workplace interactions and unspoken expectations, such as small talk, networking, or hierarchical communication, confusing and tiring (Cope & Remington, 2022; Pellicano & Stears, 2011). Consequently, autistic employees may experience social exclusion, misunderstanding, or conflict, which can hinder both job acquisition and retention (Wilczynski et al., 2013).

Recent theoretical advances, especially the double empathy problem (DEP), have shifted the perspective on these difficulties to be bidirectional rather than one-sided. Milton (2012) argued that communication breakdowns result from mutual misunderstandings between autistic and non-autistic people, rather than from inherent autistic deficits. Szechy et al. (2024) found that autistic participants were more accurate than neurotypical participants in interpreting the behaviours of an autistic employee, supporting the idea that social challenges are relational and contextual, not solely neurodevelopmental. Despite growing recognition of DEP, limited awareness among employers and colleagues continues to sustain bias about autistic experiences and misinterpretation (Bury et al., 2024).

Addressing these challenges requires shifting from “fixing” autistic ways of interacting to bridging communication styles through mutual understanding (Bolis & Schilbach, 2020). Supported employment programs that provide job coaches and structured feedback can assist autistic employees in navigating social expectations (Flower et al., 2019). Mentoring programs and peer support also promote a sense of belonging and skill development. Career counsellors can incorporate DEP into their practice by helping clients identify their communication preferences, develop advocacy strategies, and prepare for the social aspects of work environments. Integrating DEP-informed approaches into counselling and workplace training fosters more equitable and authentic interactions between autistic and non-autistic employees.

Sensory Sensitivities and Overwhelm

Sensory sensitivities, such as heightened reactions to noise, lighting, textures, or smells, create another significant barrier to employment (Harmuth et al., 2018; Lorenz et al., 2016). Environments with fluorescent lighting, constant noise, or strong scents can cause sensory overload, impair concentration, and increase anxiety or fatigue (Farkas et al., 2021; Hayward et al., 2019). For some autistic individuals, sensory overload may lead to shutdowns or meltdowns, resulting in absenteeism or job loss.

Implementing sensory-friendly accommodations can significantly enhance work performance and employee retention. Examples include providing noise-cancelling headphones, adjustable lighting, quiet work zones, or remote work options (Hendricks, 2010; Farkas et al., 2021). Career counsellors should incorporate sensory needs into career assessments, helping clients express their sensory preferences and request accommodations confidently. Employers who proactively adopt sensory-aware workplace adjustments create environments where autistic and other neurodiverse employees can thrive.

Stigma and Discrimination

Despite progress in neurodiversity awareness, stigma and discrimination continue to serve as widespread barriers to employment for autistic individuals (Raymaker et al., 2023). Misconceptions about autism, assumptions of incapacity, and implicit biases can result in exclusionary hiring practices, limited career advancement, and workplace harassment (Cooper & Mujtaba, 2022). Fear of discrimination often leads autistic individuals to mask their traits, which involves suppressing natural behaviours or mimicking neurotypical norms to gain acceptance (Miller et al., 2021). However, chronic masking is linked to anxiety, depression, and autistic burnout, characterized by extreme exhaustion and temporary loss of skills such as speaking and executive functions like organization and memory (Raymaker et al., 2020; van Wieren et al., 2008).

Organizations can lessen these harms through neurodiversity education and policy reform. Evidence-based diversity and inclusion training, clear anti-discrimination policies, and the implementation of neurodiversity hiring initiatives, such as Microsoft's Neurodiversity Program, have demonstrated effectiveness in promoting workplace inclusion (Baker-Ericzén et al., 2018; Flower et al., 2019). Career counsellors play a vital advocacy role by assisting clients in making informed decisions about disclosure, enhancing self-advocacy skills, and identifying inclusive employers. Through this process, counsellors can empower clients to pursue employment environments that appreciate authenticity and neurodiversity.

Lack of Accessible Support and Accommodations

A lack of personalized support and accommodations continues to hinder employment outcomes for autistic individuals (Holwerda et al., 2012; Harvery et al., 2021). Many workplaces lack awareness, resources, or infrastructure to meet the diverse needs of autistic employees, especially those with higher support needs. Without appropriate accommodations, employees may experience stress, reduced productivity, and burnout (Raymaker et al., 2020; Harmuth et al., 2018).

Effective inclusion requires systemic and collaborative approaches. Employers should partner with disability advocacy groups, vocational rehabilitation services, and neurodiversity consultants to design tailored accommodations and foster inclusive workplace cultures (Raymaker et al., 2023). One promising and complementary strategy is Universal Design, which involves creating workplaces, policies, systems, and environments that are accessible and usable by the widest possible range of individuals, regardless of ability, neurotype, or background (Doussard et al., 2024). Instead of waiting to implement accommodations after challenges occur, Universal Design (UD) promotes flexibility, simplicity, and inclusion from the outset, fostering a sense of belonging for all staff. Examples of UD in practice include adjustable workstations, accessible office layouts, and quiet or sensory-friendly spaces that minimise sensory overload and support diverse needs (Ashburner et al., 2018; Raymaker et al., 2023). Career counsellors and other mental health practitioners can assist these efforts by helping clients request UD-informed accommodations, facilitating communication with employers, and advocating for inclusive policies. Additionally, peer support networks

and neurodiversity employee resource groups can offer spaces for connection, mentoring, and advocacy. By adopting collaborative, evidence-based strategies grounded in UD principles, counsellors and employers can move beyond ad hoc accommodations to create sustainable, inclusive workplaces that enable autistic individuals—and ultimately all employees—to thrive (Doussard et al., 2024).

Leveraging the Strengths of Autistic Individuals in the Workforce

Historically, autism has been viewed mainly through its deficits (Pellicano & Stears, 2011). This perspective is problematic and overly simplistic because it overlooks the unique skills and qualities of this community (Dudley et al., 2015; Botha et al., 2020). Hiring autistic individuals benefits not only the individuals but also society (Austin & Pisano, 2017; Dudley et al., 2015). It is essential for employers to increasingly value diversity and inclusion in the workplace, recognizing the unique strengths and abilities that autistic individuals bring. This section discusses the benefits of hiring individuals with autism and harnessing their strengths to boost innovation, productivity, and success at work.

Creativity and Innovation

Autistic individuals often approach problems from distinctive angles, recognizing patterns and connections that others may miss (Happé & Vital, 2009; Johnson, 2022). This unconventional way of thinking can lead to innovative solutions and new viewpoints in the workplace. For example, in fields such as technology and design, autistic individuals may provide fresh insights that push the limits of what is achievable (Teti et al., 2016; Nowell et al., 2021). Their ability to think divergently and generate original ideas can drive creativity within teams, fostering an environment where innovation thrives (Botha et al., 2020). By recognizing and harnessing the creative potential of autistic employees, organizations can stay competitive and adapt more effectively to changing market demands (Austin & Pisano, 2017).

Reliability and Dedication

Autistic individuals are known for their strong sense of responsibility and dedication to their work. They often take pride in completing tasks accurately and on time, demonstrating high levels of dependability and commitment (Cheriyan et al., 2021; Nicholas et al., 2019). In roles that require consistency and attention to detail, such as data entry, quality control, and administrative support, autistic employees can be valuable assets (Cheriyan et al., 2021). Their meticulous approach to work ensures projects are finished with precision and efficiency, contributing to overall productivity and organizational success. Employers can rely on autistic employees to uphold high standards and deliver results consistently, which enhances trust and confidence in their abilities (Johnson, 2022).

Specialized Knowledge and Expertise

Many autistic individuals develop deep expertise in areas of focused interest through self-guided learning and sustained engagement (Jordan & Caldwell-Harris, 2012; Grove et al., 2018; Nowell et al., 2021). These areas can range from technology and mathematics to art or niche research fields, providing organizations with highly specialized skill sets. Harnessing this depth of knowledge allows employers to manage complex projects, innovate, and remain competitive in specialized sectors (Morris et al., 2025; Johnson, 2022).

Attention to Detail and Accuracy

Autistic individuals often excel in tasks that require precision, accuracy, and meticulous attention to detail (Bury et al., 2020; Crasta et al., 2024). Their ability to focus deeply on specific aspects of a project, recognize patterns, and maintain consistency ensures that work is completed to the highest standards. In industries such as finance, healthcare, and manufacturing, where accuracy is vital, autistic employees play a

crucial role in safeguarding data integrity, complying with regulations, and maintaining quality control (Farkas et al., 2021; Robertson & Simmons, 2015). Employers can rely on autistic individuals to scrutinize details, identify discrepancies, and deliver high-quality work, enhancing operational efficiency and reducing the risk of costly errors or rework.

Analytical and Logical Thinking

Autistic individuals are known for their strong analytical and logical thinking skills, which enable them to examine complex problems and develop systematic solutions (Bury et al., 2020). Their ability to analyze data, identify trends, and draw logical conclusions is valuable in research, software development, and strategic planning (Cope & Remington, 2022). Autistic employees often excel at breaking down large problems into manageable parts, creating transparent methodologies, and evaluating outcomes based on objective criteria (Cope & Remington, 2022). By leveraging the analytical and logical thinking skills of autistic employees, organizations can make informed decisions, enhance processes, and support ongoing development across all operational areas (Wong et al., 2015; Johnson, 2022).

Adapting Career Counselling Theories for Autistic Individuals: Challenges and Strategies

Modern career counselling theories, especially those that integrate social justice, cultural context, and systemic perspectives, offer more inclusive frameworks than traditional trait-based models. However, even progressive models might not fully address the unique needs, communication styles, and identity experiences of autistic individuals (Nicholas et al., 2019; Scott et al., 2015). This section examines current approaches, highlights limitations for autistic clients, and proposes practical adjustments for neurodiverse career development.

Cultural Infusion Model

The cultural infusion model emphasizes the importance of integrating cultural awareness throughout career counselling, recognizing how ethnicity, language, and family systems influence career experiences (Arthur et al., 2009). However, neurodiversity—including autism—is often overlooked within multicultural frameworks. Autistic individuals typically have a distinct neurotype-based culture, shaped by sensory processing differences, unique communication styles, and identity development that diverges from neurotypical norms (Kapp et al., 2013; Botha et al., 2023). To adapt this model for autistic clients, counsellors can expand their understanding of culture to explicitly include neurodiverse ways of being. Practitioners can explore how behaviours such as stimming, direct communication, or intense focus on specific interests impact career strengths and challenges. Additionally, counsellors should reflect on their own biases and adjust communication strategies and decision-making processes to better align with the preferences and processing styles of autistic clients (Nicholas et al., 2019).

Social Cognitive Career Theory

Social Cognitive Career Theory (SCCT) highlights self-efficacy, outcome expectations, and goal-setting as key factors in career development (Lent et al., 2008). For autistic individuals, ongoing experiences of stigma, social exclusion, and negative feedback can reduce self-efficacy and limit perceived career options (Hedley et al., 2018; Nicholas et al., 2019). Additionally, SCCT's focus on social networking and mentorship might not always be accessible or comfortable for autistic clients who find conventional social scripts challenging. To adapt SCCT, counsellors can support clients in building self-efficacy by helping them recognize their specialized knowledge, problem-solving skills, and interests, rather than concentrating on traditional social skills. Including autistic role models and mentors who understand neurodiversity can provide relatable examples of career success. Broadening social learning to include online communities or alternative networks can foster connections and environments that may feel safer and more supportive (Botha et al., 2023; Scott et al., 2015).

These adaptations align with DSM-5-TR guidance that emphasizes individualized service needs, ensuring interventions are tailored to each client's abilities and needs.

Social Justice Career Counselling

Social justice approaches aim to address systemic inequalities such as racism, sexism, and poverty (Arthur et al., 2009). However, ableism and neurotypical privilege are often overlooked, despite being significant barriers for autistic individuals (Scott et al., 2015; Hedley et al., 2018). To adapt social justice strategies, counsellors should explicitly acknowledge ableism as a structural obstacle to career access. This includes supporting clients who may face job discrimination for behaviours like avoiding eye contact or using sensory regulation strategies such as stimming, which are often viewed as problematic. Career counsellors can actively advocate for inclusive practices, educate employers about neurodiversity, and help clients request accommodations under disability rights laws. By incorporating advocacy at both individual and systemic levels, practitioners can turn social justice principles into tangible outcomes that boost employment opportunities for autistic clients (Nicholas et al., 2019; Botha et al., 2023).

Constructivist Career Counselling

Constructivist approaches view career development as an ongoing process where individuals actively create meaning from their experiences (McMahon, 2011; Savickas, 1997). This aligns well with neurodiversity-affirming practice by emphasizing each person's unique perspective; however, autistic clients may face challenges due to differences in abstract thinking, alexithymia, or preferences for concrete communication (Bird & Cook, 2013; Hedley et al., 2018). To make constructivist approaches more accessible, practitioners can incorporate structured tools such as visual timelines, guided worksheets, or checklists. Using clients' special interests as entry points for reflection can boost engagement, while recognizing alternative forms of meaning-making, such as detailed factual narratives rather than emotion-driven storytelling, honours neurodiverse communication styles (Grove et al., 2018). Additionally, integrating neurodivergent role models and co-constructing interpretations enables autistic clients to develop career paths that genuinely reflect their strengths, interests, and identities, reducing reliance on neurotypical norms and fostering meaningful, individualized outcomes (Botha et al., 2022; Nicholas et al., 2019).

Adapting career counselling theories for autistic individuals involves recognizing neurodiversity as a cultural dimension, supporting self-efficacy through strengths and interests, addressing ableism, and providing structured, concrete strategies for reflection and goal setting. These modifications enable counsellors to offer personalized, practical, and inclusive support across the spectrum, empowering autistic clients to navigate careers successfully.

Effective Career Counselling for Autistic Individuals: A Multi-Dimensional Approach

Effective career counselling for autistic individuals requires a client-centred approach that recognizes and accommodates their unique strengths, challenges, and preferences. Such an individualized approach aligns with the DSM-5-TR, which emphasizes that autism presents differently across individuals and developmental stages and notes that service needs can only be developed at the individual level through collaborative discussion of personal goals and priorities (American Psychiatric Association, 2022). In practice, this means that career counselling must address multiple dimensions, including assessment, career exploration and planning, and skill development, while remaining flexible and responsive to neurodiverse experiences (Flower et al., 2019; Griffiths et al., 2016). By grounding counselling strategies in individualized goals and collaborative decision-making, practitioners can better support autistic clients with lower to moderate support needs in navigating vocational pathways that align with their strengths, interests, and contextual needs.

Assessments

Assessment plays a vital role in career counselling by providing insights into a person's strengths, interests, and areas for growth. However, traditional assessment tools may not fully capture the abilities of autistic individuals due to difficulties with communication, sensory processing, or social interaction (Wilczynski et al., 2013). To enhance accessibility and accuracy, counsellors can offer assessments in different formats, such as online, written, and verbal, allowing clients to participate in the way that works best for them. Clear instructions, additional time, and scheduled breaks can further reduce stress and improve performance (Tebele et al., 2015). Moreover, visual aids—including diagrams, charts, and instructional videos—can enhance understanding and make abstract concepts more tangible (Flower et al., 2019). By tailoring assessment methods to meet the needs of autistic clients, counsellors honour individual differences while gathering reliable information to inform career decisions.

Career Exploration and Planning

Career exploration and planning are essential for helping clients navigate complex decisions and establish achievable goals. Autistic individuals often benefit from structured, concrete strategies that include visual tools, real-world examples, and step-by-step activities (Griffiths et al., 2016). Visual career mapping, for instance, allows clients to identify potential career paths that match their interests and strengths, while scenario-based exercises and role-playing provide safe opportunities to 9ractice decision-making and problem-solving. By making the exploration process clear and tangible, counsellors can increase clients' confidence in assessing options and taking informed steps towards meaningful employment (Flower et al., 2019).

Skill Development

Developing self-awareness and self-advocacy is a crucial part of career counselling, empowering autistic individuals to express their preferences, articulate career goals, and confidently request accommodations. Counsellors can improve skill development through reflective exercises that help clients identify their strengths, interests, and values, along with role-playing activities to practice workplace interactions, job interviews, or requesting accommodations (Flower et al., 2019). These strategies promote independence and confidence, enabling clients to navigate employment environments more effectively and advocate for their needs in different situations.

By incorporating these practical methods into career counselling, practitioners can strengthen existing theoretical frameworks, promoting flexible and inclusive practices that support neurodiverse clients. While theoretical adaptations provide a foundation, these applied strategies make counselling more actionable, client-centred, and responsive to the real-world experiences of autistic individuals.

Creating Neurodiversity Affirming Workplaces

Beyond career counselling, creating neurodiversity-affirming workplaces is essential for supporting autistic individuals in their careers. This involves implementing organizational policies, practices, and initiatives that promote inclusion, understanding, and support for employees across the neurodiversity spectrum (Solomon, 2020; Flower et al., 2019). Building on UD principles, organizations can systematically apply these frameworks to make workplace structures, communication processes, and expectations accessible and adaptable for a diverse range of employees (Doussard et al., 2024).

Training and Education

Providing training and education to all employees is a key strategy for increasing awareness and acceptance of neurodiversity in the workplace. Workshops, seminars, and online resources can cover topics such as autism awareness, effective communication strategies, and best practices for supporting neurodiverse

colleagues. By equipping employees and management with knowledge and practical tools, organizations can reduce misconceptions, foster empathy, and create a culture that values diverse cognitive styles (Ashburner et al., 2018; Solomon, 2020).

Accommodations and Flexibility

Implementing flexible work arrangements and tailored accommodations is another essential element of a neurodiversity-affirming workplace. Strategies may include sensory-friendly workspaces, alternative communication methods such as email or instant messaging, flexible scheduling, and telecommuting options to suit individual preferences and needs (Solomon, 2020). By proactively addressing environmental and procedural barriers, organizations improve accessibility and support autistic employees in performing at their best, promoting both retention and productivity.

Inclusive Culture

Fostering a workplace culture of respect, empathy, and open communication is crucial for creating a sense of belonging and acceptance. When differences are celebrated and valued, autistic employees are more likely to engage fully and contribute their unique strengths to the team (Ashburner et al., 2018). Inclusive cultures benefit not only autistic individuals but also enhance team performance, innovation, and overall organizational success.

Conclusion

This paper has highlighted the complex barriers autistic individuals face in accessing meaningful employment, from social communication challenges and sensory sensitivities to stigma, discrimination, and lack of accessible support. At the same time, it has emphasized the valuable strengths autistic individuals bring to the workforce, such as creativity, analytical thinking, attention to detail, and dedication. Effective career counselling for this community requires flexible, individualized, and neurodiversity-affirming strategies. Workplaces must implement accommodations, promote inclusive policies, and foster supportive cultures.

Advancing inclusion and equity in employment for autistic individuals requires ongoing research, advocacy, and collaboration across sectors involving employers, career counsellors, educators, and policymakers. By focusing on practical strategies, strengths-based approaches, and inclusive mindsets, we can go beyond simple representation to empowerment, ensuring autistic individuals are not only included but also positioned to thrive and make meaningful contributions in their careers.

References

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Arthur, N., Collins, S., McMahon, M., & Marshall, C. (2009). Career practitioners' views of social justice and barriers for practice. *Canadian Journal of Career Development*, *8*(1), 22–31. https://doi.org/10.82396/cjcd.v8i1.3024

Arthur, N., & McMahon, M. (2005). Multicultural career counseling: Theoretical applications of the Systems Theory Framework. *The Career Development Quarterly*, *53*(3), 208–222. https://doi.org/10.1002/j.2161-0045.2005.tb00991.x

Ashburner, J. K., Bobir, N. I., & van Dooren, K. (2018). Evaluation of an innovative interest-based post-school transition programme for young people with autism spectrum disorder. *International Journal of Disability, Development and Education*, *65*(3), 262–285. https://doi.org/10.1080/1034912X.2017.1403012

Austin, R. D., & Pisano, G. P. (2017). *Neurodiversity as a competitive advantage*. Harvard Business Review, 95(3), 96–103.

Baker-Ericzén, M. J., Fitch, M. A., Kinnear, M., Jenkins, M. M., Twamley, E. W., Smith, L., Montano, G.,

Feder, J., Crooke, P. J., Winner, M. G., & Leon, J. (2018). Development of the supported employment, comprehensive cognitive enhancement, and social skills program for adults on the autism spectrum: Results of initial study. *Autism*, *22*(1), 6–19. https://doi.org/10.1177/1362361317724294

Bird, G., & Cook, R. (2013). Mixed emotions: The contribution of alexithymia to the emotional symptoms of autism. *Translational Psychiatry*, *3*(7), Article e285. https://doi.org/10.1038/tp.2013.61

Bolis, D., & Schilbach, L. (2020). 'I Interact Therefore I Am': The self as a historical product of dialectical attunement. *Topoi*, *39*(3), 521–534. https://doi.org/10.1007/s11245-018-9574-0

Botha, M., & Frost, D. M. (2020). Extending the minority stress model to understand mental health problems experienced by the autistic population. *Society and Mental Health*, *10*(1), 20–34. https://doi.org/10.1177/2156869318804297

Botha, M., Hanlon, J., & Williams, G. L. (2023). Does language matter? Identity-first versus person-first language use in autism research: A response to Vivanti. J*ournal of Autism and Developmental Disorders*, *53*(2), 870–878. https://doi.org/10.1007/s10803-020-04858-w

Bury, S. M., Hedley, D., Uljarević, M., & Gal, E. (2020). The autism advantage at work: A critical and systematic review of current evidence. *Research in Developmental Disabilities*, *105*, Article 103750. https://doi.org/10.1016/j.ridd.2020.103750

Bury, S. M., Hedley, D., Uljarević, M., Li, X., Stokes, M. A., & Begeer, S. (2024). Employment profiles of autistic people: An 8-year longitudinal study. *Autism*, *28*(9), 2322–2333. https://doi.org/10.1177/13623613231225798

Chartrand, J. M. (1991). The evolution of trait-and-factor career counselling: A person × environment fit approach. *Journal of Counseling & Development*, *69*(6), 518–524. https://doi.org/10.1002/j.1556-6676.1991.tb02635.x

Cheriyan, C., Shevchuk-Hill, S., Riccio, A., Vincent, J., Kapp, S. K., Cage, E., Dwyer, P., Kofner, B., Attwood, H., & Gillespie-Lynch, K. (2021). Exploring the career motivations, strengths, and challenges of autistic and non-autistic university students: Insights from a participatory study. *Frontiers in Psychology*, *12*, Article 719827. https://doi.org/10.3389/fpsyg.2021.719827

Cope, R., & Remington, A. (2022). The strengths and abilities of autistic people in the workplace. *Autism in Adulthood*, *4*(1), 22–31. https://doi.org/10.1089/aut.2021.0037

Cooper, A. A., & Mujtaba, B. G. (2022). Assessment of workplace discrimination against individuals with autism spectrum disorder (ASD). *SocioEconomic Challenges*, *6*(2), 19–28. https://doi.org/10.21272/sec.6(2).19-28.2022

Crasta, J. E., Green, O. J., Gavin, W. J., & Davies, P. L. (2024). The relationship between attention, sensory processing, and social responsiveness among adults on the autism spectrum. *Journal of Autism and Developmental Disorders*, *54*, 2972–2986. https://doi.org/10.1007/s10803-023-06019-1

Davies, J., Romualdez, A. M., Pellicano, E., & Remington, A. (2024). Career progression for autistic people: A scoping review. *Autism*, *28*(11), 2690–2706. https://doi.org/10.1177/13623613241236110

Doussard, C., Garbe, E., Morales, J., & Billion, J. (2024). Universal design for the workplace: Ethical considerations regarding the inclusion of workers with disabilities. *Journal of Business Ethics*, *194*(2), 285–296. https://doi.org/10.1007/s10551-023-05582-y

Dudley, C., Nicholas, D. B., & Zwicker, J. (2015). What do we know about improving employment outcomes for individuals with Autism Spectrum Disorder? *SPP Research Paper*, *8*(32), 1–35. https://doi.org/10.55016/ojs/sppp.v8i1.42538

Farkas, T. N., Kargas, N., & Mendy, J. (2021). Autism and employment: Challenges and strategies for a bright future. In N. L. Papaneophytou & U. N. Das (Eds.), *Emerging programs for autism spectrum disorder: Improving communication, behavior, and family dynamics* (pp. 285–302). Academic Press. https://doi.org/10.1016/B978-0-323-85031-5.00015-3

Flower, R. L., Hedley, D., Spoor, J. R., & Dissanayake, C. (2019). An alternative pathway to employment for autistic job-seekers: A case study of a training and assessment program targeted to autistic job candidates. *Journal of Vocational Education & Training*, *71*(3), 407–428. https://doi.org/10.1080/13636820.2019.1636846

Frank, F., Jablotschkin, M., Arthen, T., Riedel, A., Fangmeier, T., Hölzel, L. P., & Tebartz van Elst, L. (2018).

Education and employment status of adults with autism spectrum disorders in Germany – a cross-sectional-survey. *BMC Psychiatry*, *18*, Article 75. https://doi.org/10.1186/s12888-018-1645-7

Griffiths, A. J., Giannantonio, C. M., Hurley-Hanson, A. E., & Cardinal, D. (2016). Autism in the workplace: Assessing the transition needs of young adults with autism spectrum disorder. *Journal of Business and Management*, *22*(1), 5–22. https://doi.org/10.1504/JBM.2016.141233

Grove, R., Hoekstra, R. A., Wierda, M., & Begeer, S. (2018). Special interests and subjective wellbeing in autistic adults. *Autism Research*, *11*(5), 766–775. https://doi.org/10.1002/aur.1931

Happé, F., & Vital, P. (2009). What aspects of autism predispose to talent? *Philosophical Transactions of the Royal Society B: Biological Sciences*, *364*(1522), 1369–1375. https://doi.org/10.1098/rstb.2008.0332

Harmuth, E., Silletta, E., Bailey, A., Adams, T., Beck, C., & Barbic, S. P. (2018). Barriers and facilitators to employment for adults with autism: A scoping review. *Annals of International Occupational Therapy*, *1*(1), 31–40. https://doi.org/10.3928/24761222-20180212-01

Harvery, M., Froude, E. H., Foley, K. R., Trollor, J. N., & Arnold, S. R. (2021). Employment profiles of autistic adults in Australia. *Autism Research*, *14*(10), 2061–2077. https://doi.org/10.1002/aur.2588

Hayward, S. M., McVilly, K. R., & Stokes, M. A. (2019). Autism and employment: What works. *Research in Autism Spectrum Disorders*, *60*, 48–58. https://doi.org/10.1016/j.rasd.2019.01.006

Hedley, D., Uljarević, M., Wilmot, M., Richdale, A., & Dissanayake, C. (2018). Employment programmes and interventions targeting adults with autism spectrum disorder: A systematic review of the literature. *Autism*, *22*(5), 693–703. https://doi.org/10.1177/1362361317709603

Hendricks, D. (2010). Employment and adults with autism spectrum disorders: Challenges and strategies for success. *Journal of Vocational Rehabilitation*, *32*(2), 125–134. https://doi.org/10.3233/JVR-2010-0502

Holwerda, A., van der Klink, J. J. L., Groothoff, J. W., & Brouwer, S. (2012). Predictors for work participation in individuals with an autism spectrum disorder: A systematic review. *Journal of Occupational Rehabilitation*, *22*, 333–352. https://doi.org/10.1007/s10926-011-9347-8

Hull, L., Lai, M.-C., Baron-Cohen, S., Allison, C., Smith, P., Petrides, K. V., & Mandy, W. (2020). Gender differences in self-reported camouflaging in autistic and non-autistic adults. *Autism*, *24*(2), 352–363. https://doi.org/10.1177/1362361319864804

Johnson, K. R. (2022). Using a strengths-based approach to improve employment opportunities for individuals with autism spectrum disorder. *New Horizons in Adult Education and Human Resource Development*, *34*(1), 16–25. https://doi.org/10.1002/nha3.20321

Jordan, C. J., & Caldwell-Harris, C. L. (2012). Understanding differences in neurotypical and autism spectrum special interests through internet forums. *Intellectual and Developmental disabilities*, *50*(5), 391–402. https://doi.org/10.1352/1934-9556-50.5.391

Kapp, S. K., Gillespie-Lynch, K., Sherman, L. E., & Hutman, T. (2013). Deficit, difference, or both? Autism and neurodiversity. *Developmental Psychology*, *49*(1), 59–71. https://doi.org/10.1037/a0028353

Kuzminskaite, E., Begeer, S., Hoekstra, R. A., & Grove, R. (2020). Social communication difficulties and restricted repetitive behaviors as predictors of anxiety in adults with autism spectrum disorder. *Autism*, *24*(7), 1917–1923. https://doi.org/10.1177/1362361320934218

Lent, R. W., Lopez, A. M., Jr., Lopez, F. G., & Sheu, H.-B. (2008). Social cognitive career theory and the prediction of interests and choice goals in the computing disciplines. *Journal of Vocational Behavior*, *73*(1), 52–62. https://doi.org/10.1016/j.jvb.2008.01.002

Lorenz, T., Frischling, C., Cuadros, R., & Heinitz, K. (2016). Autism and overcoming job barriers: Comparing job-related barriers and possible solutions in and outside of autism-specific employment. *PLOS ONE*, *11*(1), Article e0147040. https://doi.org/10.1371/journal.pone.0147040

McMahon, M. (2011). The systems theory framework of career development. *Journal of Employment Counseling*, *48*(4), 170-172. https://doi.org/10.1002/j.2161-1920.2011.tb01106.x

Miller, D., Rees, J., & Pearson, A. (2021). "Masking is life": Experiences of masking in autistic and nonautistic adults. *Autism in Adulthood*, *3*(4), 330–338. https://doi.org/10.1089/aut.2020.0083

Milton, D. E. M. (2012). On the ontological status of autism: The "double empathy problem." *Disability & Society*, *27*(6), 883–887. https://doi.org/10.1080/09687599.2012.710008

Morris, R., Southey, S., & Pilatzke, M. (2025). Autistic-inclusive employment: A qualitative interpretive meta-

synthesis. *The British Journal of Social Work*, *55*(4), 1794–1815. https://doi.org/10.1093/bjsw/bcaf024

Murray, N., Hatfield, M., Falkmer, M., & Falkmer, T. (2016). Evaluation of career planning tools for use with individuals with autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders*, *23*, 188–202. https://doi.org/10.1016/j.rasd.2015.12.007

Nicholas, D. B., Hedley, D., Randolph, J. K., Raymaker, D. M., Robertson, S. M., & Vincent, J. (2019). An expert discussion on employment in autism. *Autism in Adulthood*, *1*(3), 162–169. https://doi.org/10.1089/aut.2019.29003.djn

Nowell, K. P., Bernardin, C. J., Brown, C., & Kanne, S. (2021). Characterization of special interests in autism spectrum disorder: A brief review and pilot study using the special interests survey. *Journal of Autism and Developmental Disorders*, *51*, 2711–2724. https://doi.org/10.1007/s10803-020-04743-6

Pearson, A., & Rose, K. (2021). A conceptual analysis of autistic masking: Understanding the narrative of stigma and the illusion of choice. *Autism in Adulthood*, *3*(1), 52–60. https://doi.org/10.1089/aut.2020.0043

Pellicano, E., & Stears, M. (2011). Bridging autism, science and society: Moving toward an ethically informed approach to autism research. *Autism Research*, *4*(4), 271–282. https://doi.org/10.1002/aur.201

Raymaker, D. M., Sharer, M., Maslak, J., Powers, L. E., McDonald, K. E., Kapp, S. K., Moura, I., Wallington, A. F., & Nicolaidis, C. (2023). "[I] don't wanna just be like a cog in the machine": Narratives of autism and skilled employment. *Autism*, *27*(1), 65–75. https://doi.org/10.1177/13623613221080813

Raymaker, D. M., Teo, A. R., Steckler, N. A., Lentz, B., Scharer, M., Delos Santos, A., Kapp, S. K., Hunter, M., Joyce, A., & Nicolaidis, C. (2020). "Having all of your internal resources exhausted beyond measure and being left with no clean-up crew": Defining autistic burnout. *Autism in Adulthood*, *2*(2), 132–143. https://doi.org/10.1089/aut.2019.0079

Robertson, A. E., & Simmons, D. R. (2015). The relationship between sensory sensitivity and autistic traits in the general population. *Journal of Autism and Developmental Disorders*, *45*(12), 4062–4078. https://doi.org/10.1007/s10803-015-2518-3

Roux, A. M., Rast, J. E., Garfield, T., Anderson, K. A., & Shattuck, P. T. (2020). Prevalence and correlates of work experiences among high school students on the autism spectrum. I*ntellectual and Developmental Disabilities*, *58*(4), 273–287. https://doi.org/10.1352/1934-9556-58.4.273

Roux, A. M., Shattuck, P. T., Cooper, B. P., Anderson, K. A., Wagner, M., & Narendorf, S. C. (2013). Postsecondary employment experiences among young adults with an autism spectrum disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, *52*(9), 931–939. https://doi.org/10.1016/j.jaac.2013.05.019

Sarrett, E. R. (2022). *Narrative inquiry into postsecondary transition outcomes for young adults with intellectual & developmental disabilities* [Doctoral dissertation, Walden University]. Walden Dissertations and Doctoral Studies. https://scholarworks.waldenu.edu/dissertations/13755

Savickas, M. L. (1997). Career adaptability: An integrative construct for life-span, life-space theory. *The Career Development Quarterly*, *45*(3), 247–259. https://doi.org/10.1002/j.2161-0045.1997.tb00469.x

Scott, M., Falkmer, M., Girdler, S., & Falkmer, T. (2015). Viewpoints on factors for successful employment for adults with autism spectrum disorder. *PLOS ONE*, *10*(10), Article e0143674. https://doi.org/10.1371/journal.pone.0143674

Solomon, C. (2020). Autism and employment: Implications for employers and adults with ASD. *Journal of Autism and Developmental Disorders*, *50*(11), 4209–4217. https://doi.org/10.1007/s10803-020-04537-w

Sonuga-Barke, E. J. S., Chandler, S., Lukito, S., Kakoulidou, M., Moore, G., Cooper, N., Matejko, M., Jackson, I., Balwani, B., Boyens, T., Poulton, D., Harvey-Nguyen, L., Baker, S., & Pavlopoulou, G. (2024). Participatory translational science of neurodivergence: model for attention-deficit/hyperactivity disorder and autism research. *The British Journal of Psychiatry*, *224*(4), 127–131. https://doi.org/10.1192/bjp.2023.151

Szechy, K. A., Turk, P. D., & O'Donnell, L. A. (2024). Autism and employment challenges: The double empathy problem and perceptions of an autistic employee in the workplace. *Autism in Adulthood*, *6*(2), 205–217. https://doi.org/10.1089/aut.2023.0046

Taylor, J. L., Adams, R. E., Pezzimenti, F., Zheng, S., & Bishop, S. L. (2022). Job loss predicts worsening

depressive symptoms for young adults with autism: A COVID-19 natural experiment. *Autism Research*, *15*(1), 93–102. https://doi.org/10.1002/aur.2621

Tebele, C., Nel, K. A., & Dlamini, B. (2015). Career support needs of learners with historical disadvantage: An exploratory study. *Journal of Psychology in Africa*, *25*(3), 258–261. https://doi.org/10.1080/14330237.2015.1065062

Teti, M., Cheak-Zamora, N., Lolli, B., & Maurer-Batjer, A. (2016). Reframing autism: Young adults with autism share their strengths through photo-stories. *Journal of Paediatric Nursing*, *31*(6), 619–629. https://doi.org/10.1016/j.pedn.2016.07.002

Van Wieren, T. A., Reid, C. A., & McMahon, B. T. (2008). Workplace discrimination and autism spectrum disorders: The National EEOC Americans with Disabilities Act research project. *WORK: A Journal of Prevention, Assessment & Rehabilitation*, *31*(3), 299–308. https://doi.org/10.3233/WOR-2008-00784

Wigham, S., Rodgers, J., South, M., McConachie, H., & Freeston, M. (2015). The interplay between sensory processing abnormalities, intolerance of uncertainty, anxiety, and restricted and repetitive behaviours in autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *45*(4), 943–952. https://doi.org/10.1007/s10803-014-2248-x

Wilczynski, S. M., Trammell, B., & Clarke, L. S. (2013). Improving employment outcomes among adolescents and adults on the autism spectrum. *Psychology in the Schools*, *50*(9), 876–887. https://doi.org/10.1002/pits.21718

Wong, C., Odom, S. L., Hume, K. A., Cox, A. W., Fettig, A., Kucharczyk, S., Brock, M. E., Plavnick, J. B., Fleury, V. P., & Schultz, T. R. (2015). Evidence-based practices for children, youth, and young adults with autism spectrum disorder: A comprehensive review. *Journal of Autism and Developmental Disorders*, *45*(7), 1951–1966. https://doi.org/10.1007/s10803-014-2351-z

25

VOL 25/ NO 2

By / Par CERIC

MEMORIAL UNIVERSITY

CANADIAN JOURNAL OF CAREER DEVELOPMENT

REVUE CANADIENNE DE DÉVELOPPEMENT DE CARRIÈRE

The Canadian Journal of Career Development is a peer-reviewed publication of multi-sectoral career-related academic research and best practices from Canada and around the world.

This Journal was made possible through the generous contributions of The Counselling Foundation of Canada, CERIC, Memorial University of Newfoundland, and support by the Social Sciences and Humanities Research Council of Canada.

La Revue canadienne de développement de carrière est une publication évaluée par les pairs qui présente des recherches universitaires multisectorielles sur le développement de carrière et les meilleures pratiques au Canada et dans le monde entier.

Cette revue est rendue possible grâce aux généreuses contributions de The Counselling Foundation of Canada, du CERIC, l'Université Mémorial de Terre-Neuve, et financée par le Conseil de recherches en sciences humaines du Canada.

CERIC
Advancing Career Development in Canada | Promouvoir le développement de carrière au Canada

MEMORIAL UNIVERSITY

The Counselling Foundation of Canada

Social Sciences and Humanities Research Council of Canada | Conseil de recherches en sciences humaines du Canada

Canada

IN MEMORY OF ITS FOUNDING EDITOR



Dr. Robert Shea
1963 - 2024

EN MÉMOIRE DE SON RÉDACTEUR EN CHEF FONDATEUR