

Developing Norms for the Hope-Action Inventory with a Substance Misuse Sample

Lauren N. Currie & Robinder P. Bedi
University of British Columbia

Acknowledgement: This research was supported by funding from the University of British Columbia Department of Educational and Counselling Psychology, and Special Education, the Social Sciences and Humanities Research Council of Canada, and Mitacs. We thank the individuals who volunteered their time to participate in this study and community support centers who helped facilitate this study. We gratefully acknowledge the research assistant contributions of Jesús Calderón Villalón and Aly Moscovitz during this study. Materials and analyses code for this study are available by emailing the corresponding author. This study used the same sample of participants as a previous study (Currie et al., 2023) but this was an independent study and the research questions are novel to this paper and analyses have not been previously reported.

Abstract

The Hope-Action Inventory (HAI), a hope-based measure of career competencies, has demonstrated solid predictive validity for educational and vocational outcomes. The purpose of this study was to justify an expansion of the use of the HAI by examining group differences and establishing norms for interpreting HAI results with individuals with a history of substance misuse. Participants (N = 783) were recruited through substance use support centers and the Amazon Mechanical Turk online recruitment platform. Significant group differences were found among differing employment statuses and age groups. Normative data on the HAI with substance use populations are provided by age and employment status.

Substance use disorders are a significant global health and social issue. In 2012, 21.6%

of Canadians met criteria for a substance use disorder over the course of their lifetime, with alcohol being the most common substance meeting criteria for abuse or dependence (Statistics Canada, 2013). Problematic substance use can result in a range of difficulties across various areas of life, such as social relationships, family, housing, physical and mental health challenges, and occupational and educational functioning (Bauld et al., 2012). Given the prevalence of and adverse consequences associated with problematic substance use, it is important to help this population achieve recovery and general life outcomes.

The literature has established a strong connection between both setting career goals and gaining employment with successful substance use recovery (West, 2008). Given this, it seems very important to validly assess an individual's degree of career competencies that support job attainment and

overall career development. By developing a better understanding of their strengths or weaknesses in certain career competencies, professionals can better tailor assistance for those in recovery who are searching for employment and making career decisions with more targeted interventions, and ultimately further improving their substance use outcomes as well (Amundson et al., 2016). The Hope-Action Inventory (HAI) is a measure that assesses an individual's degree of Action-Oriented Career Hope (i.e., Hope, Self-Reflection, Self-Clarity, Visioning, Goal Setting and Planning, Implementing, and Adapting). The HAI provides meaningful information for clients and career practitioners on how to effectively manage career decisions and work through career challenges (Amundson et al., 2016).

Previous Research on the Hope-Action Inventory

The HAI has previously been assessed with samples of unemployed job seekers (Amundson et al., 2016; Clarke et al., 2016), individuals in career transition (Niles, Yoon, Balin, et al. 2010), university students (Amundson et al., 2013; Yoon et al., 2015), healthcare professionals (Santilli et al., 2020), refugees (Yoon et al., 2019), and individuals with histories of problematic substance use (Currie et al., 2023). Previous research assessing the psychometric properties of the HAI, or its predecessors, have reported good model fit, adequate internal consistency reliability, and supportive evidence for construct validity, including once for problematic substance users (Currie et al., 2023; Niles, Yoon, & Amundson, 2010; Schreiber et al., 2013; Schindler et al., 2014; Yoon, 2017; Yoon et al., 2015; Yoon et al., 2020). This study supported the use of the HAI with this population; however, transparent and rigorous guidelines for interpreting HAI scores have not yet been established.

Purpose of the Present Study

Although the HAI has undergone previous psychometric evaluation, there have been no published studies that report norms for practitioner use. The purpose of this study was to expand the application and use of the HAI by examining specific group differences (gender, age, and

employment status patterns) and establishing norms for interpreting HAI results with individuals with a history of problematic substance use.

Method

Participant Recruitment

Participants were recruited through (a) Amazon's Mechanical Turk (MTurk; $n = 716$) and (b) community substance use treatment centres ($n = 67$). Participants from substance use treatment centres completed survey materials on paper and were entered into a draw for one of four \$25 CAD gift cards to local restaurants. MTurk participants completed the survey online through Qualtrics and received \$0.05 USD for completing a screening survey that included the CAGE-AID and the additional item: "Have you ever attended treatment or detox for substance use?" Those who received a score of 2 or greater on the CAGE-AID or endorsed the additional screening item, were eligible for the main survey and received \$0.75 USD for completing the main survey. The average age of participants was 35.86 years old ($SD = 10.60$, range = 19–72) and 51.09% ($n = 400$) were female (Table 1). For a more detailed description of participant recruitment and demographics see Currie et al., 2023.

Measures

The survey materials included a demographic questionnaire, the CAGE-AID, and HAI. There were also two attention check questions placed within the survey to ensure participants were reading each question carefully.

CAGE-Adapted to Include Drugs

The CAGE-Adapted to Include Drugs (CAGE-AID; Brown & Rounds, 1995) is a 4-item questionnaire that simultaneously screens for both alcohol and drug use problems. Item responses are scored 0 for "No" or 1 for "Yes." A score of 2 or greater denotes clinically significant substance use (Brown & Rounds, 1995). Previous research has found the CAGE-AID to have good sensitivity (.70) and specificity (.85; Brown & Rounds, 1995).

Hope-Action Inventory

The HAI (Yoon, 2017; Yoon et al., 2019) is a 28-item scale based on hope-action theory that was developed to assess adults' hope-centered career competencies, which reflect one's experience of Action-Oriented Career Hope. The scale utilizes a 4-point Likert-type response scale (1 = definitely false to 4 = definitely true). It is composed of seven 4-item subscales, each corresponding to one of the seven specific career competencies: Hope, Self-Reflection, Self-

Table 1

Community and MTurk Sample Demographics (N = 783)

Variables		<i>n (%)</i> , <i>M (SD)</i>
Gender	Male	382 (48.79%)
	Female	400 (51.09%)
	Other	1 (0.12%)
Age (years)		35.86 (10.60)
Relationship	Single/never legally married	408 (52.11%)
	Legally married	241 (30.78%)
	Separated, but still legally married	12 (1.53%)
	Common-law	31 (3.96%)
	Divorced	81 (10.34%)
	Widowed	8 (1.02%)
Education	Some high school or less	20 (2.55%)
	Graduated high school	173 (22.09%)
	Attending college	116 (14.81%)
	Associate degree or diploma/certificate, completed	86 (10.98%)
	Completed an apprenticeship/trade	10 (1.28%)
	Bachelor's degree completed/master's program, attending	258 (32.95%)
	Master's degree completed/doctoral program, attending	98 (12.52%)
	Doctoral degree or equivalent, completed	18 (2.30%)
Work Experience	Years of any work experience	15.76 (10.58)
	Years full-time work experience	12.46 (9.55)
Employment Status	Unemployed, not looking for work	79 (10.09%)
	Unemployed, looking for work	80 (10.22%)
	Part-Time	123 (15.71%)
	Full-Time	501 (63.98%)
Ethnicity	Aboriginal	9 (1.15%)
	African	43 (5.49%)
	Arab/West Asian	5 (0.64%)
	Chinese	9 (1.15%)
	European	610 (77.91%)
	Filipino	13 (1.66%)
	Japanese	4 (0.51%)
	Korean	6 (0.77%)
	Latin American	36 (4.60%)
	South Asian	8 (1.02%)
	South East Asian	6 (0.76%)
Other	34 (4.34%)	
Number of psychoactive substances used		6.87 (4.41)
Attended Treatment or Detox		237 (30.27%)
CAGE-AID Total Score		3.02 (0.85)
	Endorsed 4 CAGE-AID items	273 (34.87%)
	Endorsed 3 CAGE-AID items	264 (33.72%)
	Endorsed 2 CAGE-AID items	238 (30.4%)

Table 2*Means and Standard Deviations for the HAI by Employment Status*

	Employment Status				ANOVA Results		
	Unemployed, not looking for work	Unemployed, looking for work	Employed Part-Time	Employed Full-Time	<i>F</i>	<i>p</i>	eta- squared
Hope	3.01 (.74)	2.80 (.78)	2.95 (.63)	3.00 (.78)	1.60	.19	.018
Self-Reflection	3.44 (.53)	3.53 (.49)	3.36 (.53)	3.33 (.51)	4.37	.01*	.035
Self-Clarity	3.19 (.57)	3.05 (.57)	3.16 (.58)	3.24 (.59)	2.74	.04*	.026
Visioning	3.10 (.67)	3.07 (.72)	3.06 (.65)	3.15 (.62)	0.89	.45	.012
Goal Setting and Planning	2.84 (.70)	2.78 (.70)	2.87 (.69)	3.00 (.68)	3.80	.01*	.032
Implementing	3.00 (.70)	2.83 (.62)	2.98 (.62)	3.07 (.64)	3.62	.01*	.031
Adapting	3.31 (.48)	3.28 (.58)	3.23 (.57)	3.26 (.53)	0.38	.77	.007
HAI Total	3.13 (.48)	3.05 (.48)	3.09 (.44)	3.15 (.48)	1.38	.25	.005

Note. Standard deviations are in parentheses. * $p < .05$.

Clarity, Visioning, Goal Setting and Planning, Implementing, or Adapting. Consistent with the underlying theory, the subscales of the HAI are expected to be correlated and load onto a higher-order factor (Action-Oriented Career Hope; e.g., Yoon, 2017; Yoon et al., 2019). A high score on a subscale indicates that the individual has a high degree of that particular hope-centered career competency. A high total score on the Action-Oriented Career Hope indicates the individual overall has strong career competencies for effective career development overall.

Analyses

The distribution of responses on the HAI and its seven subscales were assessed.

Little's test suggested that data were missing completely at random (MCAR), $X^2(134) = 109.18$, $p = .94$. Any items with missing values were replaced using person mean substitution justified by the extremely low percentage of missing data (0.03%). A Multivariate Analysis of Variance (MANOVA) was conducted to examine for possible differences by gender, age, and employment status. Follow-up Analyses of Variance (ANOVA) were conducted to examine significant MANOVA group differences. Norm reference tables were created with t-scores by employment status and age. Furthermore, percentile rankings were established for the total sample. The statistical software SPSS (version 28) was used to conduct all analyses.

Results

Multivariate Analysis

A 2 (gender) x 10 (age groups) x 4 (employment status) Multivariate Analysis of Variance (MANOVA) with the seven HAI subscales was conducted. Significant main effects were found for age, Wilks' Lambda = 0.86, $F = 1.72$ (63, 3937.28), $p < .001$ and employment status, Wilks' Lambda = .95, $F = 1.63$ (21, 2004.83), $p < .05$, but not gender, Wilks' Lambda = 0.99, $F = .52$ (14, 1396), $p = .92$. All four of the interaction terms were not significant.

HAI Patterns

Tables 2 and 3 depict the means and standard deviations

Table 3

Means and Standard Deviations for the HAI by Age

	Age										ANOVA Results		
	18-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	F	p	Eta-squared
Hope	2.93 (.68)	3.01 (.72)	3.03 (.74)	2.99 (.79)	2.96 (.82)	2.76 (.82)	2.93 (.87)	3.16 (.77)	2.65 (.63)	2.81 (.72)	1.11	.35	.013
Self-Reflection	3.32 (.56)	3.35 (.53)	3.35 (.52)	3.34 (.52)	3.42 (.53)	3.45 (.44)	3.36 (.41)	3.36 (.43)	3.48 (.51)	3.72 (.38)	1.01	.43	.012
Self-Clarity	2.96 (.60)	3.13 (.57)	3.18 (.60)	3.28 (.60)	3.36 (.55)	3.23 (.50)	3.47 (.49)	3.53 (.47)	3.30 (.48)	3.44 (.58)	5.74	<.001***	.063
Visioning	3.11 (.64)	3.20 (.59)	3.15 (.64)	3.01 (.67)	3.21 (.66)	3.10 (.72)	3.04 (.59)	3.19 (.60)	2.80 (.73)	2.94 (.74)	1.35	.21	.016
Goal Setting and Planning	2.84 (.68)	2.96 (.68)	3.04 (.69)	2.93 (.74)	2.93 (.67)	2.85 (.73)	2.94 (.65)	3.16 (.58)	2.60 (.53)	3.08 (.61)	1.33	.22	.015
Implementing	2.91 (.63)	3.06 (.58)	3.06 (.68)	3.00 (.69)	3.08 (.66)	2.95 (.66)	3.12 (.67)	3.14 (.55)	2.86 (.34)	3.03 (.63)	0.90	.48	.011
Adapting	3.19 (.57)	3.21 (.53)	3.28 (.59)	3.25 (.51)	3.34 (.52)	3.26 (.49)	3.36 (.47)	3.48 (.49)	3.15 (.44)	3.06 (.50)	1.32	.22	.015
HAI Total	3.04 (.47)	3.13 (.45)	3.15 (.52)	3.11 (.50)	3.19 (.49)	3.09 (.45)	3.17 (.42)	3.29 (.42)	2.98 (.34)	3.16 (.47)	1.17	.31	.014

Note. Standard deviations are in parentheses. *** $p < .001$.

for the HAI subscales and total score by employment status and age, respectively. One-way ANOVAs compared mean scores across employment status and age groups. The F-ratios for the Self-Reflection, Self-Clarity, Goal Setting and Planning, and Implementing subscales were significant for employment status. On the Self-Clarity, Goal Setting and Planning, and Implementing subscales, participants who were

employed full-time had higher scores whereas participants who were unemployed and looking for work had lower scores, on average. On the Self-Reflection subscale an inverse relationship was found; participants who were unemployed and looking for work had higher scores and participants who were employed full-time had lower scores, on average. With regards to age groups, only the F-ratio for Self-Clarity was

significant with a trend of older participants having higher scores on this subscale, on average.

HAI Norms

The HAI total and subscale scores were converted to t-scores for both employment status and age groupings (Tables 4 and 5, respectively). Scores within one standard deviation can be considered to be in the

Table 4*Normative Reference t-scores by Employment Status*

Employment Status	Hope	Self-Reflection	Self-Clarity	Visioning	Goal Setting and Planning	Implementing	Adapting	HAI Total
Unemployed, not looking for work	50.52 ± 9.71	51.51 ± 10.20	49.78 ± 9.67	49.68 ± 10.53	48.58 ± 10.20	46.58 ± 10.86	50.91 ± 8.98	50.02 ± 10.16
Unemployed, looking for work	47.76 ± 10.32	53.27 ± 9.46	47.34 ± 9.80	49.21 ± 11.30	47.63 ± 10.18	46.95 ± 9.64	50.28 ± 10.71	47.63 ± 10.18
Employed Part-Time	49.75 ± 8.38	49.88 ± 10.36	49.30 ± 9.81	49.01 ± 10.10	48.91 ± 10.07	49.28 ± 9.60	49.43 ± 10.63	49.16 ± 9.17
Employed Full-Time	50.33 ± 10.33	49.27 ± 9.86	50.62 ± 10.08	50.42 ± 9.67	50.87 ± 9.84	50.72 ± 9.93	49.95 ± 9.90	50.47 ± 10.14

Note. See Appendix A for the equation to calculate individual respondent t-scores. Scores above one standard deviation are considered objective strengths and scores below one standard deviation are considered objective weaknesses.

average range. Scores above one standard deviation are considered objective strengths and scores below one standard deviation are considered objective weaknesses compared to others in one's subgroup. Additionally, HAI total and subscale raw scores were converted to percentile ranks across the total sample (Table 6).

Discussion

Past research has supported the psychometric qualities of the HAI and its usefulness for guiding counselling recommendations and assessing one's degree of hopefulness about career and employment. This study expanded on previous research and provided normative data and percentile ranks for individuals with a history of substance misuse.

Strengths of the Study

This study has several strengths including the large sample size and the relatively unique type of clinical sample being investigated. Norm referencing scores have not previously been developed with the HAI and doing so further justifies its use with this population.

Limitations

The majority of the sample was of European descent (77.91%) and working full-time (63.98%). The demographic breakdown of the sample means the results are likely more representative of those who are working because unemployed individuals represented only 20.3% of the sample.

Implications for Practice

The findings from the current study provide important information and considerations for practitioners who conduct employment evaluations and counselling with individuals with a history of problematic substance use. The normative scores for the HAI provided should prove useful for better understanding how a client's career competencies are comparable to others with a history of problematic substance use. They can also aid in objectively identifying which career competencies are normative strengths or weaknesses for the client, thereby allowing the practitioner to provide more targeted interventions that will likely make the counselling more efficient.

Table 5

Normative Reference t-scores by Age

Age	Hope	Self-Reflection	Self-Clarity	Visioning	Goal Setting and Planning	Implementing	Adapting	HAI Total
18-25	49.41 ± 9.05	49.13 ± 10.93	45.83 ± 10.25	49.78 ± 9.99	48.55 ± 9.93	48.23 ± 9.76	48.74 ± 10.52	48.11 ± 9.95
26-30	50.55 ± 9.46	49.62 ± 10.22	48.79 ± 9.72	51.26 ± 9.15	50.31 ± 9.84	50.55 ± 9.05	49.04 ± 9.83	50.11 ± 9.52
31-35	50.85 ± 9.78	49.59 ± 10.05	49.60 ± 10.27	50.39 ± 9.96	51.41 ± 9.99	50.52 ± 10.53	50.32 ± 11.02	50.58 ± 10.88
36-40	50.27 ± 10.50	49.43 ± 10.15	51.23 ± 10.20	48.24 ± 10.44	49.77 ± 10.77	49.69 ± 10.64	49.84 ± 9.53	49.72 ± 10.40
41-45	49.92 ± 10.85	51.13 ± 10.25	52.65 ± 9.37	51.34 ± 10.37	49.91 ± 9.78	50.86 ± 10.30	51.52 ± 9.64	51.27 ± 10.29
46-50	47.27 ± 10.82	51.66 ± 8.61	50.42 ± 8.50	49.69 ± 11.18	48.61 ± 10.53	48.88 ± 10.25	49.97 ± 0.09	49.15 ± 0.36
51-55	49.44 ± 11.55	49.80 ± 7.97	54.58 ± 8.34	48.73 ± 9.15	49.97 ± 9.42	51.53 ± 10.32	51.87 ± 8.74	51.00 ± 8.72
56-60	52.54 ± 10.13	49.93 ± 8.38	55.48 ± 8.05	51.05 ± 9.29	53.22 ± 8.35	51.77 ± 8.58	53.99 ± 9.17	53.38 ± 8.76
61-65	45.77 ± 8.27	52.11 ± 9.81	51.65 ± 8.23	45.00 ± 11.31	45.06 ± 7.69	47.43 ± 5.32	47.94 ± 8.27	46.85 ± 7.04
66-70	47.83 ± 9.46	56.90 ± 7.44	54.11 ± 9.94	47.25 ± 11.51	52.07 ± 8.89	50.06 ± 9.79	46.18 ± 9.24	50.60 ± 9.87

Note. See Appendix A for the equation to calculate individual respondent t-scores. Scores above one standard deviation are considered objective strengths and scores below one standard deviation are considered objective weaknesses.

References

<p>Amundson, N., Goddard, T., Niles, S., Yoon, H. J., & Schmidt, J. (2016). <i>Hope centred career interventions</i>. https://ceric.ca/wp-content/uploads/2012/10/Hope-Project-Final-Report.pdf</p>	<p>Amundson, N., Niles, S., Yoon, H. J., Smith, B., In, H., & Mills, L. (2013). <i>Hope-centered career development for university/college students</i>. http://ceric.ca/wpcontent/uploads/2012/10/CERIC_Hope-Centered-Career-Research-Final-Report.pdf</p>	<p>pdf Bauld, L., McKell, J., Carroll, C., Hay, G., & Smith, K. (2012). Benefits and employment: How problem drug users experience welfare and routes into work. <i>Journal of Social Policy</i>, 41(4),</p>
---	--	--

Table 6

Raw Scale and Percentile Equivalents for the HAI for Individuals with a History of Substance Use Issues

%	Hope	Self-Reflection	Self-Clarity	Visioning	Goal Setting and Planning	Implementing	Adapting	HAI Total
95	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.92
90	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.79
85	3.75	4.00	4.00	3.75	3.75	3.75	4.00	3.68
80	3.75	3.75	3.75	3.75	3.50	3.75	3.75	3.57
75	3.50	3.75	3.75	3.75	3.50	3.50	3.75	3.46
70	3.25	3.75	3.75	3.75	3.50	3.25	3.50	3.42
65	3.25	3.75	3.50	3.50	3.25	3.25	3.50	3.32
60	3.25	3.50	3.50	3.25	3.25	3.25	3.50	3.25
55	3.00	3.50	3.25	3.25	3.00	3.00	3.25	3.18
50	3.00	3.25	3.25	3.25	3.00	3.00	3.25	3.11
45	3.00	3.25	3.25	3.00	3.00	3.00	3.25	3.07
40	2.75	3.25	3.00	3.00	2.75	3.00	3.00	3.00
35	2.75	3.25	3.00	3.00	2.75	2.75	3.00	2.93
30	2.75	3.00	3.00	2.75	2.50	2.75	3.00	2.89
25	2.50	3.00	2.75	2.75	2.50	2.75	3.00	2.82
20	2.50	3.00	2.75	2.50	2.50	2.50	2.75	2.75
15	2.25	2.75	2.50	2.50	2.25	2.25	2.75	2.64
10	2.00	2.75	2.50	2.25	2.00	2.25	2.50	2.54
5	1.50	2.50	2.25	2.00	1.75	2.00	2.25	2.36

751–768. <https://doi.org/10.1017/S004727941200030X>

Brown, R. L., & Rounds, L. A. (1995). Conjoint screening questionnaires for alcohol and other drug abuse: Criterion validity in a primary care practice. *Wisconsin Medical Journal, 94*(3), 135–140.

Currie, L. N., Bedi, R. P., & Hubley, A. M. (2023). *Factor Structure of the Hope-Action-Inventory with a Problematic Substance Use Sample*. Measurement and Evaluation in Counseling and Development. <https://doi.org/10.1080/07481756.2>

[023.2185157](https://doi.org/10.1002/joec.12095)

Clarke, A., Amundson, N., Niles, S., & Yoon, H. J. (2016). Action-oriented hope: An agent of change in internationally educated professionals. *Journal of Employment Counseling, 55*(4), 155–165. <https://doi.org/10.1002/joec.12095>

Niles, S. G., Yoon, H. J., & Amundson, N. E. (2010). *Career flow index: Hope-centered career development competencies [Unpublished Manuscript]*. University Park.

Niles, S. G., Yoon, H. J., Balin,

E., & Amundson, N. E. (2010). Using a hope-centered model of career development in challenging times. *Turkish Psychological Counseling & Guidance Journal, 4*(34), 101–108. <https://dergipark.org.tr/en/pub/tpdrd/issue/21454/229791>

Santilli, S., Ginevra, M. C., Ferrari, L., Sgaramella, T. M., Niles, S., Nota, L., & Soresi, S. (2020). Using the hope-centered career inventory (HCCI): Italian version with healthcare professionals. *International Journal for Educational and*

- Vocational Guidance*, 21(1), 145–159. <https://doi.org/10.1007/s10775-020-09433-4>
- Schindler, N., Schreiber, M., & Schäfer, Y. (2014, July). *The construct validity of the German Hope-Centered Career Inventory (HCCI)*. [Paper presentation]. International Congress of Applied Psychology, Paris, France.
- Schreiber, M., Yoon, J. H., & Schindler, N. (2013, September). *The German version of the Hope-Centered Career Inventory*. [Poster presentation]. IAEVG Conference, Montpellier, France.
- Statistics Canada. (2013). *Canadian Community Health Survey*. <https://www150.statcan.gc.ca/n1/daily-quotidien/130617/dq130617b-eng.htm>
- West, S. L. (2008). The utilization of vocational rehabilitation services in substance abuse treatment facilities in the U.S. *Journal of Vocational Rehabilitation*, 29 (2), 71–75. <https://content.iospress.com/articles/journal-of-vocational-rehabilitation/jvr00434>
- Yoon, H. J. (2017, March 2–4). *Psychometric properties of the Hope-Centered Career Inventory: An update after six years of administration* [Poster presentation]. Academy of Human Resource Development International Research Conference, San Antonio, Texas, United States.
- Yoon, H. J., Bailey, N., Amundson, N., & Niles, S. (2019). The effect of a career development programme based on the Hope-Action Theory: Hope to work for refugees in British Columbia. *British Journal of Guidance & Counselling*, 47(1), 6–19. <https://doi.org/10.1080/03069885.2018.1544827>
- Yoon, H. J., In, H., Niles, S. G., Amundson, N. E., Smith, B. A., & Mills, L. (2015). The effects of hope on student engagement, academic performance, and vocational identity. *The Canadian Journal of Career Development*, 14(1), 34–45. <https://cjscd-rcdc.ceric.ca/index.php/cjcd/article/view/176>
- Yoon, H. J., Oh, E. G., & Mitchell, W. (2020). *The effect of Employment Works Canada program for individuals with ASD: A Hope-Action Theory perspective* [Manuscript submitted for publication]. Department of Learning and Performance Systems, The Pennsylvania State University.

Appendix A

Equations to Calculate t-Scores from Raw HAI Values

$$\text{HAI subscale or total scale } t\text{-score} = \left(\frac{\text{Raw subscale or scale score} - \text{mean}^a}{\text{standard deviation}^b} \right) \times 10 + 50$$

^{ab} Mean and standard deviation values can be found in Tables 2 and 3.

Example for an individual who is unemployed, not looking for work.

$$\text{Hope } t\text{-score} = \left(\frac{\text{Raw Hope subscale score} - 3.01}{.74} \right) \times 10 + 50$$