

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

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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

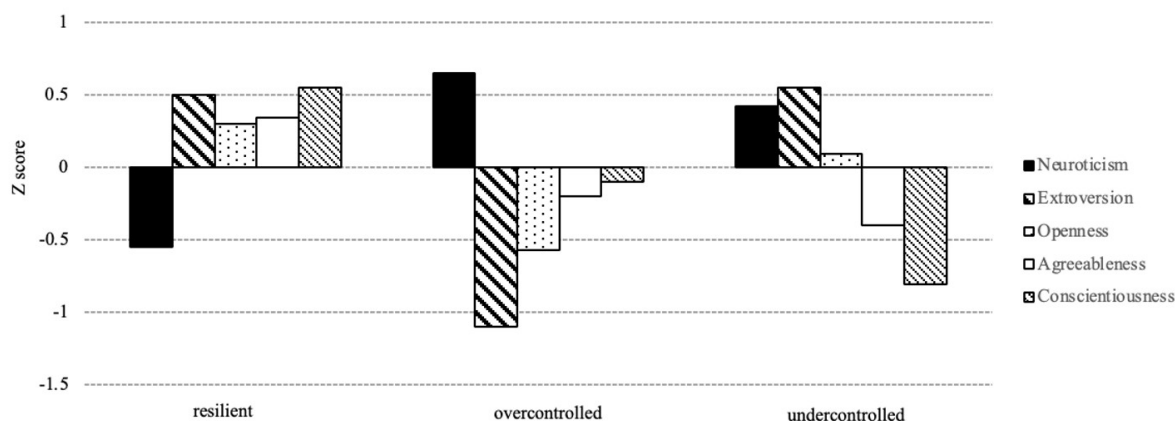
CDMSE has often been mentioned in relation to individual personality traits, particularly the five-factor model (FFM) proposed by Costa and McCrae (2009). The FFM classifies personality into the following five typical traits: extraversion, neuroticism, openness, agreeableness, and conscientiousness. 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 ($\alpha = .88$) 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: $\alpha = .89$; VE: $\alpha = .94$, VP: $\alpha = .91$; EA: $\alpha = .87$).

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: $\alpha = .87$; neuroticism: $\alpha = .92$; openness: $\alpha = .87$; agreeableness: $\alpha = .78$; and conscientiousness: $\alpha = .86$).

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

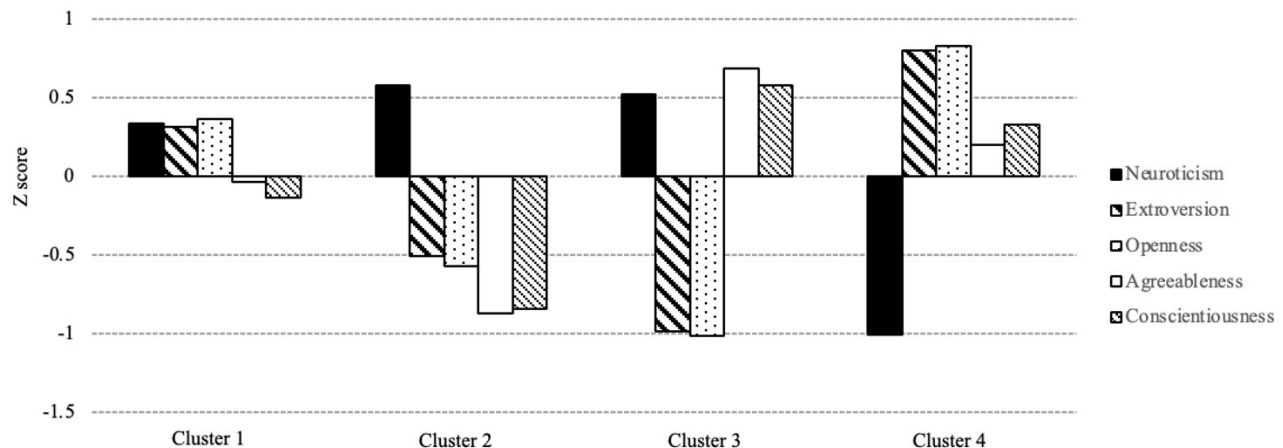
	n (%)	CDMSE Mean (SD)	ME Mean (SD)	VE Mean (SD)	VP Mean (SD)	EA Mean (SD)	Neuroticism Mean (SD)	Extroversion Mean (SD)	Openness Mean (SD)
Sex									
Male	89(35.89)	79.39(14.88)	23.76(4.97)	15.75(3.62)	16.10(2.93)	19.15(5.13)	22.78(6.96)	21.38(7.45)	24.91(6.60)
Female	161(64.92)	78.68(14.12)	24.36(5.06)	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 Experiences; 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 Experiences; 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: $F[3, 244] = 40.53$, $\eta^2_p = .33$
- ME: $F[3, 244] = 15.09$, $\eta^2_p = .16$
- VE: $F[3, 244] = 35.00$, $\eta^2_p = .30$

- VP: $F[3, 244] = 21.20, \eta_p^2 = .21$
- EA: $F[3, 244] = 15.96, \eta_p^2 = .16, p_s < .001$

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_p^2	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 Experiences; 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 ($\rho = 0.41$), openness ($\rho = 0.35$), agreeableness ($\rho = 0.23$), and conscientiousness ($\rho = 0.48$); only neuroticism had a significant negative association ($\rho = -0.33$). 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 Caprara (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 through 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 performamnce
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 Experiences; 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.

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