

RESEARCH ARTICLE

Measuring “Career Decision-Making Profile”: Validation of a Novel Model

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ABSTRACT

This study was conducted in the academic year 2025 with the aim of validating the Persian version of the Career Decision-Making Profile questionnaire (CDMP) among 6159 students at Shahrekord University. The sample consisted of 447 students (213 male and 234 female) selected using Sample-to-item ratio of 10:1 (Kline, 2016), and convenience sampling. Data collection instruments included the Career Decision-Making Profile questionnaire and the Career Decision-Making Difficulties Questionnaire. Data were analyzed using SPSS version 27 and AMOS version 24. The results of confirmatory factor analysis indicated that the initial model of the questionnaire (36 items and 11 factors) did not have an acceptable fit. Therefore, after removing five items with weak factor loadings, the final structure consisting of 28 items and 11 factors achieved a desirable fit. The reliability of the test was also obtained at a desirable level through Cronbach's alpha coefficients, test-retest, McDonald's omega, Guttman, and composite reliability for the entire instrument and all factors (ranging from 0.73 to 0.98). Divergent validity was confirmed through a negative correlation with the Career Decision-Making Difficulties Questionnaire. In addition, all items had appropriate discrimination and difficulty coefficients, and normative tables were developed for the statistical population. Finally, it can be stated that the Persian version of the Career Decision-Making Profile questionnaire possesses appropriate factor structure, validity, reliability, and discrimination coefficients and can be used as a valid tool in career guidance and counseling as well as related research in Iran.

Introduction

Decision-making, as a fundamental process in human life, has profound and extensive effects on individuals' paths and destinies. Among these, choosing a career path is one of the most important and complex decisions at various stages of life and holds special importance (Maree, 2020). This choice is not only influenced by cognitive and psychological aspects but also plays a key role in shaping individuals' professional behaviors and orientations (Tabatabaei & Lesani, 2016). From a cognitive perspective, the career decision-making process depends on analyzing information, evaluating options, and predicting the consequences of choices. Additionally, behavioral dimensions—including individuals' reactions to information, social interactions, and receiving counseling in this path—hold high importance. The economic, social, and psychological impacts of this decision-making also highlight the necessity of counseling interventions in this domain (Zhang, 2025).

Career counseling, by utilizing various measurement tools such as checklists, questionnaires, inventories, and different scales, helps individuals gain a better understanding of themselves and make more informed decisions (Vertsberger & Gati, 2016). This process can contribute to cognitive improvement in evaluating options, reducing psychological pressures caused by decision-making, and increasing satisfaction in career (Hartung, 2010). In fact, valid measurement and assessment tools provide the possibility of identifying individuals' strengths, weaknesses, and potentials and assist them in setting realistic and achievable career goals (Bikos et al., 2013). Therefore, the development of assessment tools in the field of career decision-making is of great importance.

Early studies on decision-making styles mainly referred to more general classifications such as systematic-spontaneous styles, internal-external styles (Johnson, 1978) logical, intuitive, and avoidant styles (Harren, 1979). With the advancement of studies, more diverse models for analyzing decision-making styles were presented (Nevo, 1989). Additionally, more comprehensive approaches emerged, the most prominent of which is a model that introduces five distinct decision-making styles: rational, intuitive, dependent, avoidant, and spontaneous (Scott & Bruce, 1995). These findings indicate that experience and learning play an important role in the formation and change of these styles over time. Furthermore, research has shown that individuals' decision-making styles are influenced by various factors, including personality, experiences, and the social environment. Therefore, traditional tools for assessing decision-making styles, due to their limited approaches, have been unable to cover the diversity and complexities of this process (Akkermans et al., 2021). These tools often measured

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general decision-making styles and did not pay sufficient attention to the complexities and unique dimensions of the career decision-making process. They are incapable of fully understanding psychological and social variables and cannot adequately meet individuals' needs in choosing a career path. Therefore, the development of newer tools that can cover these complexities is essential (Duffy et al., 2015).

In response to this need, the Career Decision-Making Profile questionnaire (CDMP), designed by Gati et al. (2010), was introduced as a comprehensive and novel tool for assessing various dimensions of career decision-making. This tool is based on the principle that individuals are not limited to a single decision-making style but possess a unique profile of different types of decision-making within their career context. This tool is designed based on a multidimensional model and includes 11 dimensions of decision-making: 1. Information Gathering: the degree of accuracy and comprehensiveness with which individuals collect and organize information; 2. Information Processing: the degree to which individuals break down information into its components and process information based on these components; 3. Locus of Control: the degree of individuals' belief in their control over their occupational future and the feeling that their decisions affect their career opportunities, or that these are mainly determined by external forces such as fate or luck; 4. Effort Invested: the amount of time and mental effort individuals invest in the decision-making process; 5. Procrastination: the degree of individuals' avoidance or delay in starting or progressing in the career decision-making process; 6. Speed of Final Decision: the length of time individuals need to make their final decision after collecting and formulating information; 7. Consulting with Others: the degree to which individuals consult with others at various stages of the decision-making process; 8. Dependence on Others: the degree to which individuals accept full responsibility for decision-making (even if they consult with others) versus expecting others to make decisions for them; 9. Desire to Please Others: the degree of individuals' effort to meet the expectations of important people (such as parents, spouse, friends); 10. Aspiration for an Ideal Career: the degree of individuals' effort to achieve a job that is ideal for them; and 11. Willingness to Compromise: the degree of individuals' willingness to be flexible regarding their preferred option when facing difficulties in realizing it (Ginevra et al., 2012).

The high validity and reliability of this questionnaire in various societies have increased its importance in career-related research. Previous psychometric studies have successfully confirmed the validity and reliability of the CDMP questionnaire in diverse societies with different cultures and social structures, including individualistic Western and collectivistic Eastern societies (Levin & Lipshits-Braziler, 2022).

The main advantage of the CDMP is its focus on individual differences and the influence of the environment on career decision-making. By providing a decision-making profile, this tool enables the design of targeted and personalized counseling interventions and helps achieve a deeper understanding of the complexities of career decision-making (Gadassi et al., 2012). One of the strengths of this assessment tool is that identifying the impaired dimension in decision-making can indicate which intervention paradigm is more suitable for supporting the individual; thus, interventions are not only more efficient but also designed according to the specific needs of each person (Payne et al., 2018). The importance of this feature is particularly doubled for students, as they are in the transition stage from university to the job market and face specific challenges in career decision-making. This sensitive stage requires choosing options consistent with abilities, interests, and available opportunities, and it is obvious that incorrect decisions can lead to consequences such as increased stress, reduced job satisfaction, and inefficiency in future professional life (Maree, 2020).

On the other hand, career decision-making, as one of the essential stages in the path of individual and career development, is often accompanied by challenges and difficulties that can have significant effects on individuals' future choices, especially during the study period (Tehrani et al., 2013). Yaghi and Alabed (2021) identify three core factors in the emergence of these problems: lack of information, conflict of options, and lack of readiness. Each of these factors, in its own way, complicates the career decision-making process. To accurately identify these problems, tools such as the Career Decision-Making Difficulties Questionnaire (CDDQ) are used, which, by assessing various dimensions—including problems related to lack of information (about self and occupations), internal and external conflicts, and psychological unreadiness—enable career counselors and researchers to identify the causes of problems and design appropriate intervention strategies. These tools also have extensive applications in evaluating the effectiveness of career counseling programs and professional development interventions (Sagone & Indiana, 2022; Tian et al., 2014). The ultimate goal is to empower individuals to make informed and responsible career decisions that lead not only to professional success but also to personal satisfaction and alignment with their values (Levin et al., 2024).

Given what has been stated, one of the fundamental challenges in the field of career decision-making is the lack of valid and comprehensive tools that can provide a complete profile of how individuals make decisions in their careers while considering cultural and social differences. Existing tools are often designed based on assumptions that, in addition to measuring decision-making styles in a general manner, may not be applicable to all societies and may fail to examine individual and situational complexities. For this reason, validating a tool specifically suitable for career decision-making of individuals in the cultural context of Iranian society is of special importance. This tool, by covering various dimensions of career decision-making, provides the possibility of measuring decision-making styles and difficulties in the cultural context of Iran. Comprehensiveness in dimensions, attention to individual and situational differences, and applicability in educational, research, and counseling environments are among its most important features. It is expected that the results of this study, while filling the existing gap in the domestic literature, will provide a foundation for utilizing valid tools in evaluation, counseling, and career intervention processes in Iran. Therefore, the present study was conducted with the aim of examining the psychometric properties of the Persian version of the Career Decision-Making Profile questionnaire (P-CDMP).

Since 2012, various studies have been conducted on the psychometric properties of the CDMP in different cultures, the results of which are referred to below.

Ginevra et al. (2012) conducted a study to precisely evaluate the psychometric properties of the Italian version of the CDMP. The findings of this study showed that the questionnaire has appropriate reliability and validity from a psychometric perspective. Specifically, the results also indicated the existence of a positive and significant correlation between scores related to problem-solving and the informational dimensions of the CDMP.

Tian et al. (2014), in a pioneering study, aimed to precisely determine the psychometric properties and validate the Chinese version of the CDMP by systematically implementing this tool in a sample of Chinese participants. The analytical results of their study were not only consistent and similar to the findings of previous research in different cultural contexts but also convincingly demonstrated that the Chinese

version of the questionnaire possesses a high level of validity (construct and content validity) and reliability (internal consistency) in this specific population. However, the results of factor analyses and cultural examinations showed that, due to cultural differences in Chinese society, one of the questionnaire items did not have sufficient compatibility with the expected conceptual structure and was therefore removed from the final Chinese version of the CDMP.

Guan et al. (2015), in a complementary and parallel study, simultaneously subjected the Chinese and English versions of the CDMP questionnaire to comprehensive psychometric testing in completely different and independent population groups. The results of their supplementary research also explicitly indicated that the CDMP is a tool with confirmed construct validity and reliable reliability for objective measurement and comprehensive examination of career decision-making styles in a wide range of different cultural contexts and global societies.

Willner et al. (2015), in a comparative and cross-cultural study, examined patterns of career decision-making profiles and difficulties associated with this process in samples from two culturally different countries, including the United States and China. The results revealed significant and meaningful differences in career decision-making patterns among samples belonging to the three cultures studied. In particular, it was found that the level of difficulties experienced in career decision-making has a meaningful link with the specific combination of career decision-making styles used by individuals as well as their personality traits.

Payne et al. (2018) conducted a study on Australian university students. In this study, researchers used exploratory and confirmatory factor analysis methods and correlation analysis to precisely evaluate the claimed 11-factor structure of the CDMP. The results of the analyses clearly showed that this tool has a high ability to measure various dimensions of career decision-making in an accurate and distinct manner and, overall, possesses an appropriate level of validity.

Ebner et al. (2018), focusing on a comprehensive examination of the psychometric properties of the German version of the CDMP questionnaire using confirmatory factor analysis, demonstrated that the proposed multidimensional model of the CDMP in the German version also has an appropriate and acceptable degree of fit, and all predicted factors were correctly identified and extracted in the collected data. In addition, the evidence from this research showed that the CDMP can effectively and efficiently evaluate the different and complex dimensions of individuals' career decision-making in this cultural context and possesses acceptable internal reliability and appropriate construct validity in this evaluation. However, the researchers conducted supplementary analyses that led to the identification of a distinct component. This additional component reflected an aspect of career decision-making that held special importance in the German cultural context and was not fully covered in the initial 11-factor structure. Accordingly, after empirical confirmation of the eleven main factors, the final German version of the CDMP was revised and presented as a 12-factor model that possessed higher explanatory power, conceptual distinction, and cultural sensitivity.

Levin et al. (2024), in a structured and comprehensive psychometric research conducted in the cultural context of Switzerland, developed and validated the French version of the CDMP-F. In this study, researchers used a purposeful and multi-stage sample consisting of traditional groups of French-speaking adolescents and young adults to systematically examine the structural and functional relationships between career decision-making strategies and difficulties associated with the decision-making process. The analytical results of this novel research clearly showed that the proposed model has a desirable and statistically significant fit with the data collected in this specific cultural context. In addition, the construct validity of this tool was confirmed through multiple psychometric indicators (including internal correlations of factors and convergent analyses). In other words, the findings indicated that the CDMP-F not only displays a strong factor structure in the French-speaking population but also has a high diagnostic ability in evaluating decision-making patterns and problems associated with them.

Method

This study used a descriptive-correlational design to validate the Persian version of the CDMP by examining its psychometric properties, including validity, reliability, and factor structure.

The statistical population of this research included all students of Shahrekord University in the academic year 2025, totaling 6,159 individuals (2,506 male and 3,653 female). This university was selected due to practical accessibility, diversity of academic fields, and the possibility of examining career decision-making patterns in a multidisciplinary environment. To determine the sample size, a parametric method based on a minimum of 10 samples per item was used (Kline, 2016). Although the initial sample size based on the determined method was 360 individuals, the final number of participants reached 447. The composition of this sample was based on gender variables (213 male and 234 female), educational level (284 bachelor's, 130 master's, and 33 doctoral), and faculty (121 literature and humanities, 81 technical and engineering, 37 mathematical sciences, 58 basic sciences, 39 agriculture, 42 natural resources, 38 arts, and 31 veterinary medicine).

Measures

Two questionnaires were used in this research: the Career Decision-Making Profile questionnaire was used to examine its psychometric properties, and the Career Decision-Making Difficulties Questionnaire to estimate divergent construct validity.

Career Decision-Making Profile Questionnaire (CDMP). This is a tool designed to measure 11 key dimensions related to career decision-making process. This questionnaire consists of 36 items, with each dimension assessed by three items. The item numbers related to each dimension are as follows: Information Gathering: items 3, 15, and 27; Information Processing: items 2, 14, and 26; Dependence on Others: items 9, 21, and 33; Effort Invested: items 5, 17, and 29; Procrastination: items 7, 19, and 31; Speed of Final Decision: items 6, 18, and 30; Consulting with Others: items 8, 20, and 32; Desire to Please Others: items 10, 22, and 34; Aspiration for an Ideal Career: items 11, 23, and 35; Willingness to Compromise: items 12, 24, and 36; Locus of Control: items 4, 16, and 28. In addition, the structure of the questionnaire is designed to begin with a warm-up item to prepare the participant's mind for responding. Also, two validity-check items (13 and 25) are embedded in the questionnaire. Respondents answer the questions on a 7-point Likert scale (completely agree: 7 to completely disagree: 1). In a study conducted by Gati et al. (2010) with 2,764 participants, the average Cronbach's alpha coefficient was reported as

0.81, indicating acceptable reliability and desirable internal consistency of this tool. Furthermore, in another sample of 281 participants, the average two-week test-retest coefficient for assessing the temporal stability of the CDMP questionnaire was 0.82 (ranging from 0.76 to 0.86). To examine construct validity, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used, which well confirmed the 11-dimensional structure of the CDMP questionnaire by the data, and the model fit indices were at an acceptable level (Jia et al, 2022).

Career Decision-Making Difficulties Questionnaire (CDDQ). This questionnaire was designed by Gati and Levin (2014) and includes 44 questions to measure difficulties related to decision-making in career. This tool examines three main subcategories: 1) Lack of Readiness, 2) Lack of Information, and 3) Inconsistent Information. Lack of Readiness includes lack of motivation, indecisiveness, and dysfunctional beliefs. Lack of Information refers to the absence of information related to career processes, resources, and the individual themselves. In addition, Inconsistent Information includes uncertainty, internal conflict, and external conflict. Individuals respond to each question using a 9-point Likert scale from 1 (does not describe me at all) to 9 (completely describes me). Gati and Levin (2014) and Babarović and Šverko (2019) examined and confirmed the reliability and validity of this tool. In Iran, Mabsam and Farahbakhsh (2010) reported the reliability coefficient of the questionnaire using Cronbach's alpha as 0.83 for the entire test, 0.52 for the lack of readiness subscale, 0.73 for the lack of information subscale, and 0.83 for the inconsistent information subscale.

Procedure

This study was carried out by following a systematic and multi-stage process for preparing and implementing the research tool. The first step was dedicated to the accurate translation of the CDMP questionnaire into Persian, which was done by a bilingual translator to ensure that the concepts were correctly transferred. To increase accuracy, the Persian version was back-translated into the original language. Adaptation was reviewed by 5 professors to correct any inconsistencies or ambiguities (face and content validity). In the next stage, the initial version of the questionnaire was evaluated in a pilot study with the participation of 10 students. This sample group provided feedback on the clarity of the questions, fluency of sentences, and comprehensibility of the items so that necessary modifications could be applied before final implementation. After final approval of the plan by experts and obtaining ethical and administrative permits, the data collection process began. The questionnaires were distributed among the statistical sample with university coordination and after receiving the research ethics code (IR.SKU.REC.1403.058). In this stage, research ethics principles were observed; the objectives and nature of the research were explained to participants, informed consent was obtained, the confidentiality of information and the identity of respondents was guaranteed, and the possibility of withdrawal at any stage was provided. The collected data were used solely for scientific purposes and, after initial review, were prepared for statistical analysis. Data were analyzed using SPSS version 27 and AMOS version 24.

Results

To examine construct validity, confirmatory factor analysis was used (it should be noted that, according to Kline (2016), when a questionnaire is existing and pre-designed, there is no need to perform exploratory factor analysis in other cultural studies). In the first stage of factor analysis, all factor loadings of the items were at a good level and above 0.40, except for item 28 from the third factor, item 29 from the fourth factor, item 31 from the sixth factor, item 32 from the seventh factor, and item 34 from the ninth factor, which were below the desired level. Also, the model fit indices were CFI = 0.73, TLI = 0.68, IFI = 0.73, NFI = 0.65, CMIN.DF = 8.43, and RMSEA = 0.13, all of which were at a weak and unacceptable level (Kline, 2016). Therefore, the structural model was refitted after removing five items that had low or negative factor loadings. The secondary and final fitted model is shown in Figure 1.

The secondary model of the Career Decision-Making Profile scale, after removing inappropriate items, with 28 items and the factors of Information Processing, Information Gathering, Locus of Control, Effort Invested, Speed of Final Decision, Procrastination, Consulting with Others, Dependence on Others, Desire to Please Others, Aspiration for an Ideal Career, and Willingness to Compromise, was fitted.

The model fit indices were CFI = 0.91, TLI = 0.89, IFI = 0.91, NFI = 0.90, CMIN.DF = 4.36, and RMSEA = 0.078 (0.072 – 0.082), all of which were at a good and acceptable level (Kline, 2016). Therefore, the construct validity of the secondary model of the Career Decision-Making Profile scale (CDMP) with 11 factors and 28 items was confirmed. Next, the names of the factors, item numbers for each factor, factor loadings, and difficulty and discrimination coefficients of the items are reported in Table 1. The difficulty coefficient and discrimination coefficient are basic indices of item analysis in psychometrics that respectively indicate the level of item difficulty and its ability to differentiate between individuals with different levels of the measured construct. A balanced difficulty coefficient indicates appropriate distribution of responses and avoidance of floor and ceiling effects, thereby increasing measurement accuracy. In contrast, a high discrimination coefficient shows that the item is effectively able to distinguish respondents with high and low scores on the career decision-making construct and has appropriate alignment with the overall scale structure. The simultaneous possession of appropriate difficulty and discrimination coefficients by the items is a sign of desirable psychometric quality, increased internal reliability, and strengthening of the questionnaire's construct validity, and confirms the adequacy of the tool for research and practical use (Kline, 2016).

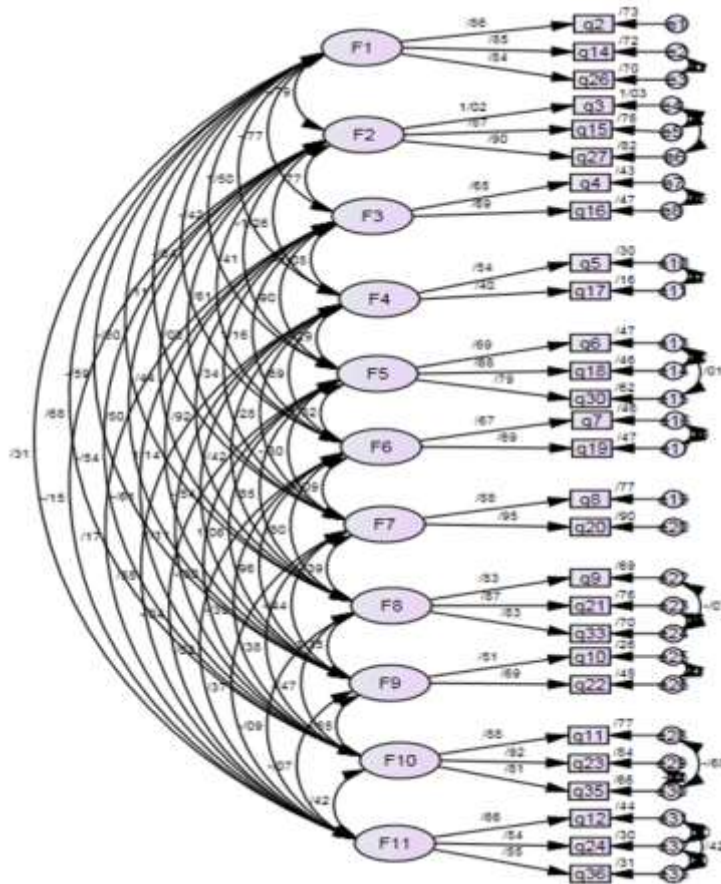


Figure 1.
Confirmatory Factor Analysis of the Career Decision-Making Profile

Table 1.
Standardized factor loadings, S.E., C.R., and Significance levels of items

Factors	Question Number	Factor Loading	S.E.	C.R.	Significance Level	Difficulty index	Discrimination Coefficients
Information Processing	2	0.86	--	--	0.01	0.77	0.69
	14	0.85	0.04	22.78	0.01	0.81	0.68
	26	0.84	0.04	22.28	0.01	0.79	0.68
Information Gathering	3	0.95	--	--	0.01	0.53	0.45
	15	0.87	0.06	15.39	0.01	0.74	0.53
Locus of Control	27	0.90	0.07	16.26	0.01	0.77	0.57
	4	0.65	--	--	0.01	0.75	0.60
Effort Invested	16	0.69	0.05	21.82	0.01	0.75	0.58
	5	0.54	--	--	0.01	0.58	0.69
Speed of Final Decision	17	0.40	0.05	15.81	0.01	0.58	0.60
	6	0.69	--	--	0.01	0.79	0.58
Procrastination	18	0.68	0.04	27.47	0.01	0.78	0.57
	30	0.79	0.07	16.73	0.01	0.56	0.57
	7	0.67	--	--	0.01	0.73	0.53
Consultation with Others	19	0.69	0.04	23.20	0.01	0.73	0.56
	8	0.88	--	--	0.01	0.83	0.57
Dependence on Others	20	0.95	0.05	21.05	0.01	0.83	0.56
	9	0.83	--	--	0.01	0.74	0.46
Desire to Please Others	21	0.87	0.04	23.57	0.01	0.82	0.55
	33	0.83	0.05	21.26	0.01	0.78	0.57
Aspiration for an Ideal Career	10	0.51	--	--	0.01	0.65	0.57
	22	0.69	0.08	18.00	0.01	0.65	0.54
Willingness to Compromise	11	0.88	--	--	0.01	0.75	0.67
	23	0.92	0.05	22.56	0.01	0.80	0.64
	35	0.81	0.06	13.60	0.01	0.58	0.67
	12	0.66	--	--	0.01	0.71	0.63
	24	0.54	0.08	9.97	0.01	0.75	0.61
	36	0.55	0.08	9.43	0.01	0.71	0.65

** $p < 0.01$, * $p < 0.05$

Table 2.*Descriptive Findings of the Career Decision-Making Profile Questionnaire Factors and Divergent Validity with the Career Decision-Making Difficulties Questionnaire*

Decision-Making Styles		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
Decision-Making Difficulties	CDMP Factors											
Mean	--	14.33	10.49	8.22	9.04	12.01	7.64	7.88	10.97	7.74	13.87	13.27
Standard Deviation	--	4.51	4.54	3.40	2.96	4.98	3.62	3.35	4.78	3.33	4.60	4.36
Career Decision-Making Difficulties	Information Processing	-0.28**	-0.04	-0.20**	-0.04	-0.08*	-0.22**	-0.13	-0.24**	-0.08	-0.22**	0.02
Lack of Motivation	Information Gathering	-0.27**	-0.12	-0.15	-0.09	-0.02	-0.11	-0.13	-0.18*	-0.09	-0.21**	0.05
Indecisiveness	Locus of Control	-0.23**	0.11	-0.23**	-0.04	-0.15	-0.24**	-0.03	-0.25**	-0.15	-0.16*	0.01
Dysfunctional Beliefs	Effort Invested	0.06	0.00	0.00	0.06	0.00	-0.03	-0.07	0.03	0.03	0.26**	-0.01
Lack of Readiness	Speed of Final Decision	-0.24**	0.01	-0.21**	-0.05	-0.10	-0.21**	-0.11	-0.22**	-0.11	-0.10	0.02
Lack of Information about Decision-Making Steps	Procrastination	-0.24**	0.04	-0.26**	-0.09	-0.17*	-0.16*	-0.02	-0.29**	-0.19*	-0.20**	0.15
Lack of Information about Self	Consultation with Others	-0.25**	-0.07	-0.18*	-0.05	-0.14	-0.16*	-0.14	-0.20**	-0.04	-0.23**	0.02
Lack of Information about Occupations	Dependence on Others	-0.22**	0.09	-0.17*	-0.14	-0.13	-0.15	-0.04	-0.18*	-0.05	-0.25**	0.03
Lack of Information Acquisition	Desire to Please Others	-0.20**	0.06	-0.16*	-0.06	-0.10	-0.08	-0.04	-0.19*	-0.05	-0.25**	0.07
Lack of Information	Aspiration for an Ideal Career	-0.27**	0.01	-0.22**	-0.09	-0.16*	-0.17*	-0.10	-0.24**	-0.08	-0.27**	0.06
Unreliable Information	Willingness to Compromise	-0.23**	-0.07	-0.13	-0.02	-0.11	-0.13	-0.11	-0.12	0.05	-0.18*	0.02
Internal Conflicts		-0.19*	-0.08	-0.05	0.10	-0.22**	-0.22**	-0.17*	-0.20**	-0.06	-0.09	-0.12
External Conflicts		-0.19*	-0.13	-0.20**	-0.04	-0.23**	-0.27**	-0.11	-0.22**	-0.16	-0.18*	0.04
Inconsistent Information		-0.23**	-0.10	-0.13	0.02	-0.20**	-0.22**	-0.15	-0.20**	-0.05	-0.17*	-0.03

With regard to Table 1, all factor loading values of the items on the factors of the Career Decision-Making Profile questionnaire (CDMP) are at a good level and mostly above 0.50, except for item 17, which is 0.40 and still at an acceptable level. All factor loadings are acceptable at $p < 0.01$. Also, the difficulty coefficients of the items were at a good level. The lowest difficulty coefficient belonged to item 3 with a coefficient of 0.53, and the highest belonged to item 20 with a coefficient of 0.83. The discrimination coefficients of the items were also at a moderate to good level. The lowest discrimination coefficient belonged to item 3 with a coefficient of 0.45, and the highest belonged to items 2 and 5 with a coefficient of 0.69. Overall, the discrimination and difficulty coefficients of the items of the Career Decision-Making Profile questionnaire were at a good level. To confirm the divergent validity of the Career Decision-Making Profile questionnaire (CDMP), the correlation of this scale with the Career Decision-Making Difficulties Questionnaire was examined (see Table 2)

With regard to Table 2, the factors of Information Processing, Locus of Control, Speed of Final Decision, Procrastination, Dependence on Others, and Aspiration for an Ideal Career had significant negative relationships with career decision-making difficulties and its dimensions ($p < 0.05$), but the factors of Information Gathering, Effort Invested, Consulting with Others, Desire to Please Others, and Willingness to Compromise did not have a significant relationship with career decision-making difficulties ($p > 0.05$). Based on the obtained results, it can be stated that the divergent validity of the Career Decision-Making Profile questionnaire (CDMP) with the Career Decision-Making Difficulties Questionnaire is relatively confirmed. Next, the reliability coefficients of the Career Decision-Making Profile factors are presented. For each factor with 3 or more items, Cronbach's alpha (α), test-retest (r_{11}), composite reliability (CR), McDonald's omega (ω), and Guttman (λ^2) coefficients were calculated, and for factors with only 2 items, due to computational limitations, only Cronbach's alpha (α), test-retest (r_{11}), and composite reliability (CR) were reported (Table 3).

Table 3.*Reliability Coefficients of the Career Decision-Making Profile Questionnaire (CDMP) Factors*

Factor	Cronbach's α	Test-retest r_{11}	Composite Reliability (CR)	McDonald's ω	Guttman λ^2
Information Processing	0.89	0.98	0.90	0.89	0.89
Information Gathering	0.82	0.96	0.86	0.85	0.83
Locus of Control	0.86	0.98	0.90	--	--
Effort Invested	0.73	0.96	0.75	--	--
Speed of Final Decision	0.84	0.97	0.89	0.85	0.85
Procrastination	0.84	0.98	0.88	--	--
Consultation with Others	0.91	0.97	0.94	--	--
Dependence on Others	0.89	0.98	0.92	0.89	0.89
Desire to Please Others	0.79	0.97	0.85	--	--
Aspiration for an Ideal Career	0.84	0.96	0.88	0.86	0.85
Willingness to Compromise	0.85	0.97	0.89	0.85	0.85

Table 4.*Normative Table for the Career Decision-Making Profile Questionnaire (CDMP) Factors*

Raw Score	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
2	-	-	32	26	-	34	32	-	33	-	-
3	25	34	35	30	32	37	35	33	36	26	27
4	27	36	38	33	34	40	38	35	39	29	29
5	29	38	41	36	36	43	41	38	42	31	31
6	32	40	44	40	38	46	44	40	45	33	33
7	34	42	46	43	40	48	47	42	48	35	36
8	36	45	49	47	42	51	50	44	51	37	38
9	38	47	52	50	44	54	53	46	54	39	40
10	40	49	55	53	46	57	56	48	57	42	43
11	43	51	58	57	48	59	59	50	60	44	45
12	45	53	61	60	50	62	62	52	63	46	47
13	47	56	64	63	52	65	65	54	66	48	49
14	49	58	67	67	54	68	68	56	69	50	52
15	52	60	-	-	56	-	-	58	-	52	54
16	54	62	-	-	58	-	-	61	-	55	56
17	56	64	-	-	60	-	-	63	-	57	59
18	58	67	-	-	62	-	-	65	-	59	61
19	60	69	-	-	64	-	-	67	-	61	63
20	63	71	-	-	66	-	-	69	-	63	65
21	65	73	-	-	68	-	-	71	-	65	68

With regard to Table 3, all Cronbach's alpha coefficients were at an excellent level, and only the Cronbach's alpha coefficient for the Effort Invested factor was at a good level. Also, all test-retest reliability coefficients were at a very good to excellent level, and finally, the reliability coefficients calculated with composite reliability, McDonald's omega, and Guttman methods were at a good to excellent level. All these results indicate very high and excellent stability of the CDMP. Therefore, it can be stated that the stability and reliability of the CDMP and its factors are at a very good level. Finally, the norm and standardized scores of the CDMP factors were examined. In this table, factors with 2 items had a score range between 2 and 14, and factors with 3 items had a score range between 3 and 21 (Table 4).

With regard to Table 4, the lower limit of standardized T-scores for most factors was close to 25, and the upper limit of standardized T-scores for the factors was close to 65, except for the second and eighth factors. This is consistent and related to the results obtained from Table 1 regarding the negative and positive skewness values of the factors.

Discussion

Career decision-making, as one of the most destiny-shaping aspects of life, has profound and long-term effects on individuals' professional paths and quality of life in the 21st century. In addition, decision-making is considered one of the most important tasks in individuals' career, and in this path, measuring constructs related to this topic is essential for pathology and also for specifying the path of career counseling interventions. Among the related constructs in this field are decision-making styles, the measurement and extraction of a profile of which among students (as a group at risk of choice) is essential both for self-awareness and for receiving professional interventions. In fact, a tool for measuring this construct can be very practical in helping career counselors who aim to assist individuals in improving the career decision-making process. Therefore, the present study was conducted with the aim of examining the factor structure, validity, reliability, and norming of the Career Decision-Making Profile questionnaire among students.

In this study, the factor structure of the CDMP was confirmed through confirmatory factor analysis. In the analysis process, five items were removed due to lacking appropriate factor loadings; these items included item number 28 from the "Locus of Control" dimension, item number 29 from the "Effort Invested in the Process" dimension, item number 34 from the "Desire to Please Others" dimension, item number 31 from the "Procrastination" dimension, and item number 32 from the "Consulting with Others" dimension, which were scattered across different dimensions. Removing these items helped improve the model fit indices, and finally, the final model consisting of 28 items across eleven career decision-making dimensions was established. The fit indices after modification were elevated to a desirable level (CFI = 0.91, RMSEA = 0.08), and the 11-factor structure of the questionnaire was confirmed in the Iranian student sample. It is noteworthy that the removal of some items, especially those focusing on "Consulting with Others" and "Desire to Please Others," can be a reflection of cultural differences. In collectivistic societies such as Iran, consulting with family members and friends and also paying attention to their satisfaction when making career decisions is considered a strong cultural norm; therefore, items that measure these dimensions directly or in opposition may have statistically high cross-correlations with other factors and may not have appropriate structural factor separability. In other words, in Iranian culture, the concepts of "Consulting with Others" and "Pleasing close ones" probably overlap with other dimensions of career decision-making and are less measurable independently. These findings, while emphasizing the universality of the multidimensional structure of career decision-making, also highlight the necessity of localization and adjustment of psychometric tools to achieve valid construct validity in different cultural contexts. In this regard, international studies also show that adjustment in the factor structure of this questionnaire is common. For example, the study by Tian et al. (2014) in China confirmed a 10-factor structure by removing one item, while Ebner et al. (2018) in Germany arrived at a new 12-factor structure. In contrast, Ginevra et al. (2012) on Italian adolescents, the original 11-factor structure was confirmed without removing any items.

Next, the findings of the present study in the field of divergent validity yield two important and different results. The divergent validity of the CDMP was confirmed through a negative and significant correlation with the Career Decision-Making Difficulties Questionnaire. This finding, which is completely consistent with theoretical assumptions, can be analyzed from two key perspectives: a) Theoretical analysis and construct distinction: The results of Pearson correlation analysis showed that there is a negative and significant relationship between the total CDMP score and the total career decision-making difficulties score ($p < 0.01$). This strong correlation confirms that the more efficient individuals' decision-making profiles are, the fewer perceived challenges and difficulties they naturally face in their career choice process. This inverse relationship effectively shows that these two tools are located at two opposite points of a spectrum and measure different but related constructs, with the CDMP focusing on the quality of the decision-making profile and career decision-making difficulties focusing on the intensity of perceived difficulties. This key conceptual distinction prevents measurement overlap and increases the credibility of the CDMP tool as an independent scale. b) Generalizability and cross-cultural validity: This pattern of negative correlation is not unique to this cultural context but has also been confirmed in numerous cross-cultural studies. For example, the study by Ginevra et al. (2012) on Italian adolescents also reported a significant negative correlation ($r = -0.58$) between the decision-making profile and career decision-making difficulties. Also, the study by Tian et al. (2014) in China showed that CDMP dimensions significantly predict career decision-making difficulties, and strong negative correlations have been observed in similar studies. This consistency indicates a general psychological principle that is observable and generalizable beyond a specific cultural context. However, as mentioned in the factor structure as well, cultural differences may affect the strength of this correlation, but they do not change the direction and overall principle of the relationship, and this adds to the credibility of the findings of the present study.

The examination of the reliability of the CDMP questionnaire showed that the results of Cronbach's alpha coefficients (α) indicated that all factors of the questionnaire, except for the "Effort Invested" factor whose α coefficient was at a good level, had very good internal consistency and were in the range of 0.80 to 0.90. In addition, the stability of the tool was confirmed using test-retest reliability coefficients (at a very good to excellent level) and also composite reliability, McDonald's omega, and Guttman methods (at a good to excellent level). These results clearly indicate high stability and internal consistency of the CDMP questionnaire. These findings are consistent with the results of studies conducted in other countries and confirm the international validity of the tool. For example, in studies by Ginevra et al. (2012) in Italy, Ebner et al. (2018) in Germany, and Tian et al. (2014) in China, Cronbach's alpha coefficients were reported in the acceptable to excellent range (0.70 to 0.90), indicating high internal stability of this questionnaire in different cultures. This consistency of results strengthens the validity and capability of the CDMP questionnaire in measuring constructs related to career decision-making in various cultural contexts and is a confirmation of the stability and consistency of its main dimensions.

Based on the analysis results, the final items of the CDMP questionnaire possessed desirable psychometric properties. Discrimination coefficients indicate the ability of each item to effectively differentiate between respondents with overall high and low scores and confirm their key role in precise measurement of the intended construct. Also, difficulty coefficients (mean responses) were in the optimal range, indicating the absence of items that were too easy or too difficult and preventing the occurrence of ceiling or floor effects. These results, obtained after removing items with poor performance, provide strong evidence of the adequacy and efficiency of the remaining items in the statistical sample. The consistency of the findings with previous studies (Ebner et al., 2018; Ginevra et al., 2012) that reported desirable psychometric quality of the CDMP items strengthens the cross-cultural validity of this tool and confirms its efficiency in measuring constructs related to career decision-making in diverse cultural contexts.

Finally, the findings from the norming of the CDMP in the studied cultural context were provided. The distribution of scores in most factors fell within the standard range of 25 to 65, indicating a normal and balanced distribution of data and, consequently, the robustness of the tool's multi-factor structure. These results indicate that the CDMP questionnaire can also be used efficiently in the present culture for measuring career decision-making strategies. The consistency of these findings with the results of studies by Ginevra et al. (2012) in Italy and Levin et al. (2024) in Switzerland, both of which confirmed the 11-factor structure of the CDMP, indicates the cross-cultural capability of this tool. Such results show that the questionnaire can well represent the complexity and multidimensionality of the career decision-making process in various cultural contexts. However, some differences were also observed, including score ranges and asymmetric skewness values in the second and eighth factors. These distinct patterns may have roots in the specific cultural, social, or demographic characteristics of the studied sample and, therefore, draw researchers' attention to deeper examination of the underlying constructs of these factors in future studies. In fact, such differences provide an opportunity for further enrichment of the research literature and can lead to more precise revision or localization of some dimensions of the questionnaire. Overall, the preparation and presentation of normative tables based on the data of this study will play an important role in enhancing the clinical and research application of the CDMP. These tables provide specialists with the possibility of meaningful interpretation of raw scores and can be used as a practical tool in career counseling, academic guidance, and career planning. This research, with the aim of localizing and norming the CDMP in the Iranian student community, was able to achieve important accomplishments. Despite cultural challenges, the psychometric adequacy of this tool was confirmed. The findings showed that the adjusted version of this questionnaire with an 11-factor structure and 28 items possesses desirable construct validity and internal reliability. Also, the divergent validity of the tool was confirmed through a negative correlation with career decision-making difficulties, which demonstrates its credibility in distinguishing constructs.

Given that this research was conducted on the community of Persian-speaking Iranian students, caution should be exercised in generalizing the results of this study to other linguistic groups in Iran as well as to other age groups exposed to decision-making (such as students, job seekers, and individuals seeking to change careers). As mentioned, in addition to university students, school students and job seekers also face decision-making challenges; therefore, examining the psychometric properties of this scale among other groups related to decision-making is essential. On the other hand, since the fit indices of the final extracted model were at the threshold of desirability, the use of these results should be accompanied by some caution. Also, due to the influence of the decision-making process on cultural, social, and economic contexts, it is suggested that decision-making profiles also be explored qualitatively.

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