Article

Journal of Career Development
2014, Vol. 41(4) 282-300

DOI: 10.1177/0894845313495590
jcd.sagepub.com

Predictive Validity of Career Decision-Making Profiles Over Time Among Chinese College Students

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Abstract

Two studies were conducted to validate the Chinese version of the Career Decision-Making Profiles (CDMP) questionnaire, a multidimensional measure of the way individuals make career decisions. Results of Study 1 showed that after dropping 1 item from the original CDMP scale, the 11-factor structure was supported among Chinese college students ($N = 334$). Results of Study 2 ($N = 372$) replicated this factor structure and revealed that the CDMP accounted for 25% and 32% of the variances in participants' career decision-making efficacy and career decision-making difficulties, respectively, across a time lag of 2 months. Among the CDMP dimensions, comprehensive information gathering, analytic information processing, greater speed of making the final decision, internal locus of control, and less dependence on others were the most significant predictors of positive career-related outcomes.

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These findings carry implications for career decision-making research and counseling practices in different cultural groups.

Keywords
career decision-making profiles, career decision-making efficacy, career decision-making difficulties

A central theoretical perspective in the field of vocational psychology is the career decision-making approach that investigates how individuals differ in their way of collecting, perceiving, and processing information throughout the career decision-making process (cf., Gati, 2013). To characterize the typical way each individual makes his or her career decisions, a concept of career decision-making *styles* was initially developed (e.g., Driver, 1979; Harren, 1979; Phillips & Pazienza, 1988). This concept provided a parsimonious way to categorize individuals into different types based on their most dominant decision-making style. However, as individuals often adopt different career decision-making strategies across different situations, researchers soon suggested that the typology approach may not reflect this dynamic nature of career decision-making process (Driver, Brousseau, & Hunsaker, 1990; Payne, Bettman, & Johnson, 1993). In addition, the concept of career decision-making styles has been criticized for not being able to fully capture the complicated strategies in individuals' career decision-making process (Gati, Landman, Davidovitch, Asulin-Peretz, & Gadassi, 2010). To overcome these limitations, Gati, Landman, Davidovitch, Asulin-Peretz, and Gadassi(2010) developed a multidimensional measure of Career Decision-Making Profiles (CDMP).

The CDMP represents a multifaceted set of career decision-making strategies identified in previous research, some of which are presumed to be personality related (e.g., locus of control), while others are hypothesized to be situation dependent (e.g., willingness to compromise; Gati et al., 2010). These dimensions include information gathering (comprehensive vs. minimal), information processing (analytic vs. holistic), locus of control (internal vs. external), effort invested in the process (much vs. little), procrastination (high vs. low), speed of making the final decision (fast vs. slow), consulting with others (frequent vs. rare), dependence on others (high vs. low), desire to please others (high vs. low), aspiration for an ideal occupation (high vs. low), and willingness to compromise (high vs. low).

To date, the psychometric properties of the CDMP questionnaire were tested only within Western cultures, namely, among participants from the United States, Israel, and Italy (Gati et al., 2010; Ginerva, Nota, Soresi, & Gati, 2012). Thus, it remains to be seen whether the factor structure underlying this new measure could be generalized to Eastern cultures. The current research aims to address this gap by validating the CDMP among Chinese college students. Despite prevalent cultural differences, previous research has found that the structures of various career decision-making styles were equivalent between Chinese and Americans (e.g., Mau, 2000). These

results suggest that Chinese share a similar sense of basic career decision-making characteristics with participants from Western cultures. In light of these findings, we expect that the factor structure of the CDMP is likely to be replicated in the Chinese context, although significant cross-cultural differences on the endorsement of CDMP may be revealed.

A Chinese version of a multidimensional measure of career decision-making typical behavior, such as the CDMP, is much in need, as the supply of Chinese college graduates to job market has exceeded 6 million per year since 2004, with an unemployment rate of over 27% (Su & Meng, 2011). With this in mind, the lack of career decision-making skills (e.g., information collection, information analysis) has been identified as one of the major problems faced by Chinese college graduates (Su & Meng, 2011). By investigating the psychometric properties and predictive validity of the CDMP among Chinese college students, the current research will provide important information on how to help millions of future Chinese college graduates understand the adaptive ways of making career decisions. Specifically, in Study 1, we examined the psychometric properties of the CDMP questionnaire.

Study 1: The Structure of the CDMP

Method

Procedure

Participants were recruited by advertising the study in the classes of eight professors. Participants were asked to complete the questionnaires in a large classroom. Data collection was completed in September 2011. Each participant was awarded a present costing 3 renminbi (RMB; around US$0.5).

Participants

The responses of 346 undergraduate students from various departments at the Renmin University of China were included in the analyses. Preliminary analysis revealed that four participants reported identical scores to all questions on a 7-point Likert-type scale, and eight other participants did not finish the questionnaire. After excluding the responses of these 12 participants, further analyses were based on the data from 334 Chinese undergraduates (120 males and 214 females). Their average age was 20.28 years (standard deviation [*SD*] = 1.79).

Instruments

The CDMP questionnaire. The original version of the CDMP was developed by Gati et al. (2010) and included 36 statements. Participants are asked to rate on a 7-point Likert-type scale the degree to which they agreed with each statement (1 = *don't*

agree at all; 7 = *highly agree*). In addition to a "warm-up" item ("I am currently concerned about my future field of study or occupation") and 2 validity items (i.e., "I try to choose the option that is best for me," "It makes no difference to me what career I will have in the future"), which are included in the questionnaire to ensure that individuals reply only after reading the items attentively and considering their responses, the remaining 33 statements represent the 11 dimensions of the CDMP (3 statements for each dimension). Previous studies have supported the internal reliability (median Cronbach's α of the 11 dimensions was .81) and the 2-week test–retest reliability (all above .70 across the 11 dimensions; Gadassi, Gati, & Dayan, 2012; Gati et al., 2010). All the items of the CDMP were translated into Chinese by a Chinese bilingual translator. A native English speaker with good Chinese proficiency was then asked to back translate these items. After the two translators compared the back translated version with the original questionnaire and refined the Chinese translation through discussion, thereby the final Chinese version was produced.

Results and Discussion

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was conducted to examine whether the original 11-factor structure of CDMP can be generalized to the Chinese sample. Model fit was assessed using the χ^2 test statistic, the comparative-fit index (CFI), the Tucker–Lewis index (TLI), the incremental fit index (IFI), the parsimony goodness-of-fit index (PGFI), parsimony adjustment to the normed fit index (PNFI), standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Fit indicators of the model were $\chi^2 = 1{,}127.14$, degrees of freedom (df) = 440, $\chi^2/df = 2.56$, CFI = .88, TLI = .86, IFI = .89, PGFI = .65, PNFI = .69, SRMR = .08, RMSEA = .07. We further examined the factor loadings of each item to identify problematic items. The results showed that item 3 ("Generally, I am thorough in gathering information") had a low and nonsignificant loading on its main factor, *information gathering* (.06). Moreover, reliability analysis showed that the Cronbach's α for the factor *information gathering* was .50 when including Item 3, but it increased to .70 after dropping it. Therefore, Item 3 was excluded from the Chinese version of the CDMP. After dropping Item 3, the factor loadings for all items were found to be significant and above .54. Subsequently, the model fit indicators were significantly improved: $\chi^2 = 915.64$, $df = 409$, $\chi^2/df = 2.24$, CFI = .91, TLI = .89, IFI = .91, PGFI = .66, PNFI = .70, SRMR = .06, RMSEA = .06. These results suggested that the model fit indices were satisfactory (Byrne, 2001).

We further compared the hypothesized model underlying the CDMP (Model 1) with an alternative model (Model 2). The hypothesized model (Model 1) suggests that all 11 dimensions are required to adequately characterize an individual's CDMP, but that the 11 dimensions cannot be combined into a single total score. The

alternative model (Model 2) hypothesizes that the 33 items can be clustered into the 11 factors and that the 11 factors represent a single second-order factor. The model fit indicators for Model 2 were $\chi^2 = 1{,}374.49$, $df = 453$, $\chi^2/df = 3.03$, CFI = .84, TLI = .83, IFI = .84, PGFI = .66, PNFI = .71, SRMR = .11, RMSEA = .08. These results showed that the hypothesized model fits the data better than the alternative model ($\Delta\chi^2 = 458.85$, $df = 44$, $p < .01$).

Descriptives and Correlations

The descriptive statistics and correlations among CDMP dimensions are shown in Table 1. The median Cronbach's α coefficient for the 11 dimensions was .81 (ranging from .70 to .92). The intercorrelations among the 11 dimensions were all below .53, which did not compromise with the essential independence of the 11 dimensions (Gati et al., 2010).

In sum, the results of Study 1 showed that after dropping Item 3, the 11-factor structure of the CDMP was supported by the data collected among Chinese college students. Study 2 aims to examine whether the factor structure obtained in Study 1 could be replicated in another Chinese sample. In addition, Study 2 aims to further investigate the predictive validity of the CDMP by examining its relations with two important career-related outcomes.

Study 2: The Predictive Validity of the CDMP

According to Parsons (1909), an ideal career is based on a good match between personal characteristics (e.g., aptitude, abilities, interests, resources) and job factors (e.g., wages, labor market). To achieve desirable career outcomes, individuals need to effectively collect and analyze relevant information to assess such degrees of match of different occupations during their career exploration and planning (Gati, Gadassi, & Mashiah-Cohen, 2012). As each dimension of the CDMP represents a distinctive way in which individuals understand and use relevant personal and job information, these dimensions may play different roles in predicting important career outcomes (Gati et al., 2010). At present, the adaptability of the CDMP has been examined only among Israeli and Italian participants (Gadassi et al., 2012; Ginerva et al., 2012). In the Gadassi, Gati, and Dayan's (2012) study, for example, the CDMP dimension scores were analyzed by assessing their associations with general personality factors assessed by the NEO Personality Inventory–Revised (Costa & McCrae, 1992) and career-specific personality factors assessed by the Emotional and Personality-related Career Decision-Making Difficulties questionnaire (Saka, Gati, & Kelly, 2008). The results of this study showed that comprehensive information gathering, analytic information processing, internal locus of control, more effort invested, greater speed of making the final decision, less procrastination, less dependence on others, less desire to please others, and higher aspiration for an ideal occupation were more adaptive in making career decisions (Gadassi et al., 2012), and

Table 1. Descriptive Statistics, Reliabilities, and Intercorrelations Among Variables in Study 1.

	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. IG	4.22	1.38	**.70**										
2. IP	5.53	0.88	.25**	**.74**									
3. LC	3.66	1.36	−.36**	−.17**	**.83**								
4. EI	4.49	1.12	.02	.29**	.33**	**.72**							
5. PR	4.01	1.33	−.19**	−.03	.40**	.32**	**.92**						
6. SP	3.30	1.22	−.06	−.17**	−.42**	−.53**	−.52**	**.81**					
7. CO	4.95	1.26	.33**	.16**	−.43**	−.28**	−.23**	.09	**.85**				
8. DO	3.85	1.20	−.16**	−.09	.51**	.35**	.50**	−.42**	−.20**	**.77**			
9. DP	4.81	1.07	.09	.16**	.27**	.42**	.34**	−.42**	−.11**	.50**	**.70**		
10. AI	4.35	1.60	−.05	.10	.19**	.37**	.09	−.10	−.39**	.26**	.31**	**.93**	
11. WC	5.35	0.89	.03	.30**	-.05	.17**	.08	−.25**	.10	.13*	.26**	-.04	**.86**

Note. IG = information gathering; IP = information processing; LC = locus of control; EI = effort invested; PR = procrastination; SP = speed of making the final decision; CO = consultation with others; DO = dependence on others; DP = desire to please others; AI = aspiration for an ideal occupation; WC = willingness to compromise; SD = standard deviation. Reliability coefficients appear on the diagonal in boldface.
*$p < .05$. **$p < .01$.

similar results were also reported among a sample of Italian students (Ginerva et al., 2012).

Based on previous research, we tested the predictive validity of the CDMP among Chinese college students in Study 2. For the most part, previous studies on the adaptability of the CDMP used a cross-sectional design (e.g., Gadassi et al., 2012), leaving the possibility that the results may be affected by the systematic error variance shared among variables measured at the same time point (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In contrast, the present study adopted a time lag design to better estimate the predictive validity of the CDMP. Furthermore, we also extended the scope of outcome measures beyond personality-related variables to process-related variables by assessing participants' career decision-making difficulties (Gati, Krausz, & Osipow, 1996) and career decision-making efficacy (Betz & Luzzo, 1996). Career decision-making difficulties, on one hand, tap three broad categories of difficulties (i.e., clusters) that individuals may encounter in their decision-making process, namely, lack of readiness, lack of information, and inconsistent information (cf., Gati et al., 1996). Career decision-making self-efficacy, on the other hand, refers to the extent to which an individual believes that he or she has the ability to perform well on various career decision-making tasks, including self-appraisal, goal selection, gathering occupational information, making plans for the future, and problem solving (Betz & Luzzo, 1996). Next, the relations of the 11 CDMP dimensions and these two outcome variables will be discussed and hypothesized.

As information gathering refers to the extent to which individuals are meticulous in collecting and organizing information. It is likely that those who score higher on this dimension will obtain more useful information on their own characteristics and the career options they can choose. Therefore, more comprehensive information gathering should result in more positive career outcomes (Gadassi et al., 2012). Accordingly, we argue that individuals scoring higher on information gathering might become more confident about their ability of making good career decisions (Hypothesis 1a) and encounter less difficulties in the career decision-making process (Hypothesis 1b). Information processing refers to the degree to which an individual analyzes information into its components and processes the information according to these components. Since career decision making involves a comprehensive analysis of relevant individual and job information, more analytic information processing is likely to help individuals achieve a better match between their personal characteristics and career options (Gadassi et al., 2012). Therefore, we propose that analytic information processing would be positively related to career decision-making efficacy (Hypothesis 2a) and negatively related to career decision-making difficulties (Hypothesis 2b).

Locus of control represents the degree to which individuals believe that their decisions are mainly determined by external forces, such as fate or luck. According to the locus of control theory (Rotter, 1966), when people believe that their life is controlled by these factors, they may regard their life as out of control and may develop negative expectancy for their future. Indeed, external locus of control has

been found to be associated with higher career decision-making difficulties (Lease, 2004). We thereby propose that an external locus of control would be negatively related to career decision-making efficacy (Hypothesis 3a) and positively related to career decision-making difficulties (Hypothesis 3b). Effort invested in the process refers to the amount of time and mental efforts individuals invest in the decision-making process. The more time and efforts individuals spend on their career decision-making process, the more likely they will obtain the knowledge and skills to make good decisions (Gadassi et al., 2012). Therefore, we propose that effort invested in the process would be positively related to career decision-making self-efficacy (Hypothesis 4a) and negatively related to career decision-making difficulties (Hypothesis 4b).

Procrastination refers to the degree to which individuals avoid or delay the career decision-making process. Previous research has showed that delaying of task initiation or task completion is associated with more negative consequences in career decision making (Gadassi, et al., 2012). Thus, we propose that procrastination would be negatively related to career decision-making efficacy (Hypothesis 5a) and positively related with career decision-making difficulties (Hypothesis 5b). Speed of making the final decision refers to the length of time individuals need to make their final decision once the information has been collected and compiled. We argue that when individuals obtain the necessary information for decision making, greater speed of making the final decision will enable them to quickly take further follow-up actions (Gadassi et al., 2012; Gati et al., 2012). Thus, we propose that speed of making final decision would be positively related to career decision-making efficacy (Hypothesis 6a) and negatively related to career decision-making difficulties (Hypothesis 6b).

Consulting with others represents the extent to which individuals turn to others for advice during the different stages of the decision process. Mixed findings on the adaptability of this factor were found; more frequent consulting with others was associated with being less advanced in the career decision-making process but was not significantly associated with career decision-making difficulties among Israeli participants (Gadassi et al., 2012). We argue that since Chinese generally endorse collectivistic values (Hofstede, 2001), they may regard consulting with others as an important way to obtain important information on their career development from different perspectives. Therefore, we propose that consulting with others would be positively related to career decision-making efficacy (Hypothesis 7a) and negatively related to career decision-making difficulties (Hypothesis 7b).

Dependence on others refers to the degree to which individuals expect others to make the decisions for them. When individuals expect others to make decisions for them, the career choices selected by others may not match their personal characteristics, which may result in negative consequences (Gadassi et al., 2012). Previous research has also shown that individuals with a dependent decision-making style have identity diffusion, since they are reluctant to process relevant information by themselves (Blustein & Phillips, 1990). Therefore, we hypothesize that dependence

on others would be negatively related to career decision-making efficacy (Hypothesis 8a) and positively related to career decision-making difficulties (Hypothesis 8b). Desire to please others represents the degree to which individuals attempt to satisfy the expectations of significant others (e.g., parents, partner, friends). Since individuals scoring high on this dimension have to adjust their career choices by considering the preferences of significant others, their final career decisions may not reflect their own preferences, which may result in lower level of person–organization, person–job fit, or other negative consequences (Gadassi et al., 2012). Therefore, we hypothesize that desire to please others would be negatively related to career decision-making efficacy (Hypothesis 9a) and positively related to career decision-making difficulties (Hypothesis 9b).

Aspiration for an ideal occupation refers to the extent to which individuals strive for an occupation that is perfect for them. It is likely that individuals scoring higher on this dimension may continuously motivate themselves to collect and analyze relevant information so as to achieve their career goals, resulting in higher level of career decision-making efficacy and lower level of career decision-making difficulty (Gadassi et al., 2012). Therefore, we hypothesize that aspiration for an ideal occupation would be positively related to career decision-making efficacy (Hypothesis 10a) and negatively related to career decision-making difficulties (Hypothesis 10b). Finally, willingness to compromise refers to the extent to which individuals are willing to be flexible about their preferred alternative when they encounter difficulties in actualizing it. It is argued that individuals scoring higher on this dimension may be easily satisfied and less likely to directly solve the problems in their career decision-making process (Gati et al., 2012). Therefore, we hypothesize that willingness to compromise would be negatively related to career decision-making efficacy (Hypothesis 11a) and positively related to career decision-making difficulties (Hypothesis 11b).

Method

Procedure

Participants in this study were recruited by circulating advertisement among students from Renmin University of China. Students were instructed not to participant in this study if they had participated Study 1. A time lag design was adopted to reduce common method bias (Podsakoff et al., 2003). Participants were asked to complete the CDMP measure in a big classroom in September 2011 and an outcome questionnaire in the same room in November 2011. Each participant received a present costing 5 RMB (around US$0.8) after completing both waves of the survey.

Participants

A total of 450 participants finished the first-wave questionnaire; of these, 372 (82.7%) Chinese undergraduates (150 males and 222 females) completed the

second-wave questionnaire. Their average age was 18.32 ($SD = 0.78$). Among these participants, 47% were from School of Economics, 11% from School of Environment, 3% from School of Philosophy, 8% from School of Agriculture, and 31% from School of Journalism.

Instruments

The Chinese version of the CDMP. The CDMP measure was adopted from Study 1. The Cronbach's αcoefficients for all the dimensions ranged from .71 to .94 in Study 2 (see Table 2).

Career Decision-Making Difficulties Questionnaire. The Career Decision-Making Difficulties Questionnaire (CDDQ) consists of 44 items. Participants were asked to rate the degree to which the difficulty represented by each item described them (from 1= *strongly disagree* to 7= *strongly agree*). The Chinese version of the CDDQ was used in the current study, which showed good reliability in previous research (Tien, 2005). The validity of this scale has been supported by its significant relationships with career decision status and other outcome variables (e.g., Tien, 2005). For the current investigation, the overall internal consistency reliability using Cronbach's αcoefficient was .92. Therefore, all the items were averaged to form a single score representing the overall level of difficulty.

Career decision-making self-efficacy scale. Career decision-making self-efficacy was measured by the 25-item scale developed in previous research (Betz & Luzzo, 1996). This scale has been validated in Chinese context and showed good reliability (Wang, Zhang, & Liu, 2010). The validity of the scale has been supported by its significant relationships with career indecision, career exploration intentions, and emotional intelligence (Betz & Luzzo, 1996; Wang et al., 2010). Responses are rated on a 7-point scale from 1 (*not at all confident*) to 7 (*complete confidence*). In Study 2, the overall internal consistency reliability using Cronbach's αcoefficient was .92. Therefore, all the items were averaged to form a single score representing the overall self-efficacy in making good career decisions.

Results and Discussion

CFA

CFA was conducted to examine whether the 11-factor structure of the CDMP was also supported in the sample of Study 2. Fit indicators of the model were $\chi^2 = 678.70$, $df = 409$, $\chi^2/df = 1.66$, CFI = .96, TLI = .95, IFI = .96, PGFI = .70, PNFI = .74, SRMR = .05, RMSEA = .04. All items were significantly loaded on the expected dimensions, and all factor loadings were higher than .50. These results suggested that this model fits the data very well.

Table 2. Descriptive Statistics, Reliabilities, and Intercorrelations Among Variables in Study 2.

	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. IG	3.40	1.41	**.71**												
2. IP	5.64	0.98	−.45**	**.72**											
3. LC	3.07	1.24	.15**	-.21**	**.78**										
4. EI	3.88	1.16	−.30**	.41**	.11*	**.73**									
5. PR	3.72	1.54	.05	−.10*	.36**	.25**	**.94**								
6. SP	3.65	1.45	.13*	−.14**	−.27**	−.49**	−.55**	**.87**							
7. CO	5.57	1.09	−.15**	.24**	−.11*	.09	−.06	−.16*	**.85**						
8. DO	3.26	1.15	.06	−.11*	.36**	.13*	.45**	−.37**	.11*	**.72**					
9. DP	4.45	1.20	−.16**	.12*	.23**	.28**	.17**	−.22**	.06	.42**	**.70**				
10. AI	3.64	1.67	.01	.02	.05	.08	.07	.06	−.19**	.07	.21**	**.91**			
11. WC	5.16	1.09	.04	.09	.12*	.04	.09	−.12*	.23**	.13*	.12*	−.04	**.89**		
12.CDMSE	5.12	0.69	.03	.23**	−.25**	−.02	−.32**	.35**	−.02	−.30**	−.10*	.07	−.02	**.92**	
13.CDDQ	3.83	0.66	−.00	−.19**	.32**	.14**	.40**	−.43**	−.03	.39**	.14**	−.02	.09	−.54**	**.92**

Note. IG = information gathering; IP = information processing; LC = locus of control; EI = effort invested; PR = procrastination; SP = speed of making the final decision; CO = consultation with others; DO = dependence on others; DP = desire to please others; AI = aspiration for an ideal occupation; WC = willingness to compromise; *SD* = standard deviation; CDDQ, career decision-making difficulties; CDMSE, career decision-making efficacy. Reliability coefficients appear on the diagonal in boldface.

*$p < .05$. **$p < .01$.

Descriptives and Correlations

As shown in Table 2, among Chinese participants, career decision-making self-efficacy was positively related to analytic information processing, $r(372) = .23$, $p < .01$, and *s*peed of making the final decision, $r(372) = .35$, $p < .01$ while negatively related to external locus of control, $r(372) = -.25$, $p < .01$, procrastination, $r(372) = -.32$, $p < .01$, dependence on others, $r(372) = -.30$, $p < .01$, and desire to please others, $r(372) = -.10$, $p < .05$. These results provide support for our hypothesis involving these dimensions and career decision-making self-efficacy (i.e., Hypothesis 2a, Hypothesis 3a, Hypothesis 5a, Hypothesis 6a, Hypothesis 8a, and Hypothesis 9a). The overall score of the CDDQ was positively related to external locus of control, $r(372) = .32$, $p < .01$, procrastination, $r(372) = .40$, $p < .01$, dependence on others, $r(372) = .39$, $p < .01$, and desire to please others, $r(372) = .14$, $p < .01$ while negatively related to analytic information processing, $r(372) = -.19$, $p < .01$, and speed of making the final decision, $r(372) = -.43$, $p < .01$, supporting our respective hypotheses (i.e., Hypothesis 2b, Hypothesis 3b, Hypothesis 5b, Hypothesis 6b, Hypothesis 8b, and Hypothesis 9b).

Regression Analysis

To better estimate the unique contribution of these dimensions in predicting the outcome variables, hierarchical regression analysis was conducted using career decision-making efficacy and career decision-making difficulties as dependent variables, respectively. In Step 1, participants' gender (dummy coded; male = 0, female = 1) and age were entered to control for their effects (Becker, 2005). In Step 2, the scores of the 11 CDMP dimensions were entered to examine their relations with the outcome variables. The results showed that the CDMP accounted for 25% variance of career decision-making efficacy and 32% variance of overall career decision-making difficulties (see Table 3).

Specifically, career decision-making efficacy was significantly related to information gathering, $\beta = .18$, $t = 3.40$, $p < .001$, analytic information processing, $\beta = .26$, $t = 4.56$, $p < .001$, external *locus of control*, $\beta = -.09$, $t = 1.71$, $p < .10$, effort invested in the process, $\beta = .13$, $t = 2.16$, $p < .05$, speed of aking final decision, $\beta = .30$, $t = 4.84$, $p < .001$, and dependence on others, $\beta = -.11$, $t = 1.96$, $p < .10$. These results are in line with our initial hypotheses (i.e., Hypothesis 1a, Hypothesis 2a, Hypothesis 3a, Hypothesis 4a, Hypothesis 6a, and Hypothesis 8a). The overall score of career decision-making difficulties was significantly related to information gathering, $\beta = -.12$, $t = -2.43$, $p < .05$, analytic information processing, $\beta = -.21$, $t = -3.87$, $p < .001$, external locus of control, $\beta = .10$, $t = 2.07$, $p < .05$, speed of making final decision, $\beta = -.32$, $t = -5.21$, $p < .001$, and dependence on others, $\beta = .20$, $t = 3.67$, $p < .001$. These results supported hypotheses Hypothesis 1b, Hypothesis 2b, Hypothesis 3b, Hypothesis 6b, and Hypothesis 8b.

Table 3. Hierarchical Regression: Gender, Age, and Career Decision-Making Profiles as Predictors of Career Decision-Making Difficulty and Career Decision-Making Efficacy in Study 2.

	Career decision-making efficacy ($N = 372$)		Career decision-making difficulties ($N = 372$)	
Predictors	Step 1	Step 2	Step 1	Step 2
Gender (male = 0, female = 1)	−.16***	−.13***	.07	.02
Age	−.01	−.03	.08	.10*
Information gathering (IG)		.18***		−.12*
Information processing (IP)		.26***		−.21***
Locus of control (LC)		−.09†		.10*
Effort invested (EI)		.13*		−.02
Procrastination (PR)		−.09		.09
Speed of making the final decision (SP)		.30***		−.32***
Consultation with others (CO)		.01		−.06
Dependence on others (DO)		−.11†		.20***
Desire to please others (DP)		−.01		−.03
Aspiration for an ideal occupation (AI)		.06		.−.02
Willingness to compromise (WC)		.03		.05
R^2	.03	.28	.01	.33
F	4.70*[a]	10.62***[b]	1.59[c]	13.54***[d]
ΔR^2	.03	.25***	.01	.32***

Note. df = degrees of freedom. The coefficients are standardized β weights.
[a]$df = 2, 369$. [b]$df = 13, 358$. [c]$df = 2, 369$. [d]$df = 13, 358$.
*$p < .05$. **$p < .01$.***$p < .001$. † $p < .10$.

General Discussion

We conducted two studies to examine the psychometric properties and predictive validity of the CDMP questionnaire among Chinese college students. The results showed that though 1 item from the original questionnaire did not work well, the 11-factor structure of the CDMP was supported in two Chinese samples. In addition, it was found that after controlling for the effects of gender and age, CDMP dimensions accounted for 25% variance in career decision-making efficacy and 32% variance in the overall level of career decision-making difficulties across a time lag of 2 months. These findings carry important theoretical and practical implications for research on career decision making and career counseling practices.

Factor Structure of the CDMP

The use of CDMP has advanced career decision-making research to incorporate different career stages and situational demands into the assessment of individual differences (Gati, 2013). Although the CDMP was developed in Israel and supported

among samples from the United States and Italy (Gati et al., 2010, 2012, Ginerva et al., 2012), the current research showed that its 11-factor structure could be generalized to the Chinese context as well. These findings suggest that Chinese participants share similar understandings on the basic career decision-making characteristics with participants from Western cultures. The Chinese version of the CDMP will serve as a useful tool for further research on how different ways of career decision making affect individuals' career development in Chinese context.

By establishing the structural equivalence of the CDMP in the Chinese context, the current research also paves the way for further research on how culture shapes the way individuals make their career decisions. Previous cross-cultural research often used the measure of career decision-making styles (e.g., Mau, 2000) to investigate this question, but the limited dimensionality of career decision-making styles may lead to inconclusive results. For example, the descriptive results of current research showed that willingness to compromise, which was not covered by the measure of career decision-making styles, was highly endorsed by Chinese participants, but the score of this dimension was relatively low among participants from the United States and Israel (Gati et al., 2010, 2012). These results are consistent with the cross-cultural differences in individualistic/collectivistic values as revealed in previous research (Hofstede, 2001). Future cross-cultural research may adopt this new CDMP scale to systematically investigate how individuals in different cultural groups are socialized to develop their decision-making profiles.

Predictive Validity of the CDMP Among Chinese College Students

The current research further examined the relationships between the CDMP and two important career-related outcomes among Chinese college students. Consistent with previous research (Gadassi et al., 2012), correlation analysis showed that more analytical information processing, greater speed of making the final decision, less procrastination, internal locus of control, less dependence on others, and less desire to please others predicted higher level of career decision-making efficacy and lower level of overall career decision-making difficulty. These findings suggest that the adaptability of these factors could be generalized to different outcomes as well as to different cultural groups. Interestingly, information gathering was not correlated with these two outcomes, but results of regression analysis revealed significant effects of this dimension on the two outcomes. Therefore, when controlling for the effects of other dimensions, the positive effects of information gathering are more salient.

On the other hand, correlation analysis also showed that effort invested in the process was positively related to overall career decision-making difficulty and not related to career decision-making efficacy, which is inconsistent with previous findings and contrary to our hypotheses. It is plausible that individuals who experience difficulty in making career choices spend more time collecting information and make more efforts to process information and that investing more time and efforts

does not make them more efficacious. As such, the direction of influence may be reciprocal. Future studies may use a cross-lagged panel or experimental design to disentangle the direction of causal influence among these variables. In addition, the results of the regression analysis showed that when putting all the dimensions together, the effects of desire to please others, aspiration for an ideal occupation, and procrastination on the outcome variables diminish. In part, these dimensions are conceptually overlapping with other dimensions; for example, procrastination is closely related to slower speed of making the final decision, and those with greater desire to please others may have more dependence on others. As a result, the unique contributions of these variables did not stand out among all the predictors.

The adaptability of the above-mentioned dimensions may also vary across cultures. As Chinese culture is characterized as collectivistic, Chinese people are more likely to consider significant others' opinions when making important decisions (Hofstede, 2001). In collectivistic cultures, group goals are prioritized over individual goals, so Chinese students are more willing to fulfill the expectations of significant others, which may reduce the negative effects of desire to please others on career outcomes. Research into these questions will carry substantive implications for career counseling practices in different cultural groups, and these questions should be addressed in future cross-cultural research.

Practical Implications

The findings of the current research also provide some practical implications. Results of regression analysis showed that the CDMP accounts for more than 25% variance for the two outcome variables; therefore, it may serve as a useful tool to diagnose the problems individuals encounter in their career decision-making process. When putting all the dimensions together, it was found that comprehensive information gathering, analytic information processing, greater speed of making the final decision, less external locus of control, and less dependence on others were the most powerful predictors of positive outcomes among Chinese college participants. These results suggest that counselors should pay more attention to these dimensions and help their clients improve these aspects when conducting career consultations and interventions in Chinese context. Most importantly, the content areas of CDMP are more changeable than dispositional styles, making specific guidance more useful and effective.

Limitations and Future Directions

Despite the theoretical and practical implications discussed above, there are possible limitations associated with the current research. First, when testing the predictive validity of the CDMP, the results of the current research are correlational in nature and could not reveal causal relationships despite the use of a significant time lag between measurements. It is possible that individuals' CDMP affects their

understandings of information related to their career decisions and result in different levels of career decision-making efficacy and overall career decision-making difficulties. It is also possible that different levels of career decision-making efficacy and career decision-making difficulty give rise to different CDMP. Future research should address this possible limitation by corroborating the current findings using experimental study designs. In addition, as the current research was conducted among two small samples of students in Beijing, China, it remains to be examined in future research whether the findings discussed above could be generalized to other Chinese groups.

Second, recent work by Gati and Levin (2012) suggested that a new dimension, using intuition (the degree to which individuals rely on internal gut feelings when making a decision), should also be added to the CDMP, since this dimension taps a distinctive aspect that is not covered in the original measure. Since our two studies were mainly based on the original 11-factor model, we could not provide evidence on whether the new dimension also exists in Chinese context. However, the promising results of current research suggest that the new 12-factor structure of the CDMP is likely to be generalized to the Chinese context. This possibility should be examined in future research.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Project 71102107 was supported by National Natural Science Foundation of China (NSFC).

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