

Social Support as a Moderator Between Career Decision Making Self-Efficacy, Professional Commitment and Mental Health: A Structural Equation Modeling Approach



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Abstract

Career decision-making self-efficacy (CDMSE) is important for choosing a career and constructing a career path. Our cross-sectional study was designed to estimate the relationship between CDMSE and professional commitment, social support, and mental health among Chinese undergraduate nursing students. A total of 1227 nursing students were selected from a medical university during the academic year 2017-2018. We measured career self-efficacy using CDMSE, professional commitment using the Professional Commitment Questionnaire (PCQ), and social support using the Multidimensional Scale of Perceived Social Support (MSPSS). Additionally, we used the Multidimensional Health Locus of Control Scale (MHLIC) and Trait Anxiety Inventory (TAI) to assess mental health. Relationships were examined using multivariate structural equation modeling. Results indicated that social support among nursing students is a moderator between CDMSE, professional commitment, and mental health. However, perceived social support did not have a direct effect on CDMSE and the effect of MSPSS, as the latent variable, on professional commitment, as the mediator variable was also significant. This study suggested that the factors influencing CDMSE were professional commitment, social support, and mental health. Hence, nursing education and career advisory services should adopt effective measures to improve nursing students' confidence in engaging and committing to a nursing career.

Keywords: Career decision-making self-efficacy; Social support; Mental health; Professional commitment; Undergraduate nursing students

Introduction

China is facing a shortage of nurses having a bachelor's degree and an insufficient number of nurses overall, given its population size and health care needs [1]. A previous study showed that most undergraduate nursing students are less likely to choose nursing as a career after graduation because of notions that it entails being undervalued, heavy work stress, poor working conditions, low salary, and challenging nurse-patient relationships in China [2]. Furthermore, students chose a nursing career either as a quick pathway to employment or when it is recommended by parents and peers [3]. Students lacking career self-efficacy may result in a high dropout rate in nursing and lead to difficulties during the decision-making process [4]. Importantly, low career decision-making self-efficacy (CDMSE) causes higher dissatisfaction and evokes career worries and negative dysfunctional emotions

among nursing students [5]. Thus, CDMSE is considered an important factor in choosing a career and the proper career path.

CDMSE is the individual's confidence in making career decisions. Some studies found that low self-efficacy regarding a task or behavior leads to avoidance of that task or behavior [6], while high self-efficacy causes initiation and maintenance of the task or behavior [7]. Moreover, career self-efficacy indecision contributes to psychological distress and mental health problems [6]. Previous research has demonstrated that CDMSE serves as an important indicator of individual pursuits and employability factors such as job satisfaction [8,9], intrinsic satisfaction [10], career choice commitment [11], and career exploration [12], ensuring sustainable careers. Studies have shown that CDMSE leads to negative emotional consequences in many cases, which

affect nursing students' coping ability during their education years [13,14]. Recent studies concerning CDMSE have focused on high school students, post-graduate students, and occupational groups, especially teachers and nurses [15,16]. However, thus far in China, no modeling study has been conducted on CDMSE-related factors in undergraduate nursing students.

In this modeling study, we first analyzed the factors that potentially influence CDMSE in undergraduate nursing students. We used exploratory and confirmatory factor analysis to establish structural equation modeling (SEM) to conduct an empirical analysis among Chinese undergraduate nursing students. Our results might provide valuable reference material for building a development strategy that enables improving career decision-making and self-efficacy and, consequently, the number of nurses in China.

Method

Design

To investigate the relationship between variables, our study used a cross-sectional, descriptive, and correlational design. Data were collected during the year 2017-2018.

Participants

We selected undergraduate student participants ($N=1227$) in a four-year education program from four medical universities in Shannxi Province, China.

Variables Studied

To evaluate the direct and indirect effects of ILC, professional commitment (PC), and trait anxiety (TA) on CDMSE, we established a theoretical structural model. ELC and MSPSS as the mediator variables are presented in Figure 1.

Procedure

All students were informed that their participation was entirely voluntary and anonymous, and they could withdraw from the study anytime. The questionnaires were distributed by teachers during class time and were completed in approximately 25 minutes. No compensation was offered to the students.

Measurements

Demographic Characteristics Form

We designed the demographic characteristics form according to the research objectives and relevant literature, including sociodemographic characteristics such as age, sex, and family structure.

Career Decision-Making Self-Efficacy Scale (CDMSE)

For this study, the CDMSE was modified according to Taylor and Betz's CDMSE Scale [17]. The CDMSE scale has 39 items, including five subscales: self-appraisal (six items), gathering information (nine items), goal selection (nine items), planning (eight items), and problem solving (seven items). The responses are recorded on a 5-point Likert scale, with anchors 1(no confidence at all) and

5 (complete confidence). The scale scores are the sums of means for all the items. Higher scores indicate higher career decision-making self-efficacy. The CDMSE has theoretical and construct validity, and an overall good internal consistency according to the Cronbach's alpha scores.

Professional Commitment Questionnaire (PCQ)

Wu et al. designed the PCQ to assess the career attitudes of undergraduate students, such as identifying and committing to the major [18]. The PCQ scale has 27 items in four subscales: affective commitment (nine items), continuance commitment (six items), ideal commitment (seven items), and normative commitment (five items). Furthermore, in our study the Cronbach's alpha was reported as 0.937 for the total PCQ, and the four subscales were better fitting for each index confirmatory factor analysis (CFA) and ranged from 0.817 to 0.858.

Multidimensional Scale of Perceived Social Support (MSPSS)

The original MSPSS was developed by Zimet [19]. The Chinese version of the MSPSS has been considered a highly useful instrument by many Chinese researchers [20]. The MSPSS consists of 12 items, including a subjective evaluation of the sufficiency of perceived social support from three sources: family, friends, and others. The higher the score, the higher the PSS.

Psychological Status

The psychological status of the students' was measured using the Multidimensional Health Locus of Control Scale (MHLC) and Trait Anxiety Inventory (TAI). The MHLC Scale consists of four subscales: ability (eight items), effort (six items), background (six items), and opportunity (seven items) [21]. The scales for effort and ability assess the internal locus of control (ILC), and background and chance scales assess the external locus of control (ELC). Higher scores on a subscale indicate greater belief in that specific domain.

The Trait Anxiety Scale (TAI)

TAI evaluates relatively stable aspects of "anxiety proneness," including general states of calmness, confidence, and security. TAI has 20 items, 11 items describe negative emotions, and nine items assess positive emotions [22].

Ethical Considerations

This study was approved by the Ethics Committee of the Fourth Military Medical University Ethics Committee. Participants provided written informed consent prior to the survey.

Statistical Analysis

We anonymized all completed questionnaires using an identification number and performed double data entry using Epidata Version 3.1 (EpiData Association, Odense, Denmark). Computer and manual checks ensured accurate data coding. Data were analyzed using SPSS 17.0 for Windows (SPSS Inc., Chicago, IL, USA) and AMOS software (version 24.0; SPSS Inc., Chicago, IL, USA).

Furthermore, SEM was used to examine the relationships among the constructs and several statistics ascertained the goodness of fit of each model, including chi-square, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), and root-mean-square error of approximation (RMSEA). Subsequently, exploratory (minimal residual method [MINRES]) and confirmatory factor analysis (maximum likelihood estimation [MLE]) were performed to support the validity of the scales in the recommended structural model and determine the most appropriate measurement models. Additionally, Cronbach's

alpha coefficients representing the internal consistency of each scale and subscale were calculated. All analyses were conducted using the AMOS software.

Exploratory and Confirmatory Factor Analysis was performed to explore the validity of the scales in the recommended structural model and ascertain the most appropriate measurement models. Table 2 provides information regarding each scale and subscale included in the model based on Cronbach's alpha coefficients and mean inter-correlation (MIC).

Result

Table 1: Students' sociodemographic characteristics.

Items		N	X±SD	F/T	P
Sex				0.577	0.14
	Male	128	137.13±29.31		
	Female	1099	130.66±28.09		
Family type				2.121	0.034 a
	Core family	359	134.01±29.29		
	Large family	868	130.25±27.79		
The place you lived before coming to university education				-2.141	0.032 a
	Country	991	130.51±27.82		
	City	236	134.89±29.92		
Family's economic status				3.201	0.041 b
	Income is less than expense	354	133.96±28.05		
	Income is equal to expense	732	130.93±27.74		
	Income is more than expense	141	127.05±31.02		
Do you like nursing major				26.652	≅0.001 b
	Very Like	213	144.72±28.97		
	Like	703	130.98±27.09		
	A little	273	123.51±27.25		
	Hate	38	119.66±26.66		
Satisfied with clinical teaching				6.605	≅0.001 b
	I am satisfied	630	136.46±28.70		
	I am not satisfied	597	125.99±26.81		
Father's education level				2.987	0.030 b
	Elementary school and below	293	127.15±28.12		
	Secondary school	741	132.48±27.83		
	High school	140	132.80±29.94		
	College/university	53	135.02±29.30		
Mather's education level				5.498	0.001 b
	Elementary school and below	405	127.43±26.73		
	Secondary school	660	132.32±28.28		
	High school	121	138.36±29.60		
	College/university	41	133.85±34.15		

a represents t- test.

b represents analysis of variance (ANOVA) test.

Table 1 Participants' Sociodemographic Characteristics The mean age of the 1227 nursing students who participated in the study was 21.22±1.25 years. Of these students, 128 (10.4%) were male, 1099 (89.6%) were female. Students' sociodemographic characteristics are detailed in Table 1.

Figure 1 Variables studied. The theoretical structural model that was established to evaluate the direct and indirect effects of ILC, PCQ, and TAI on CDMSE by using ELC and MSPSS as the mediator variable is presented in Figure 1.

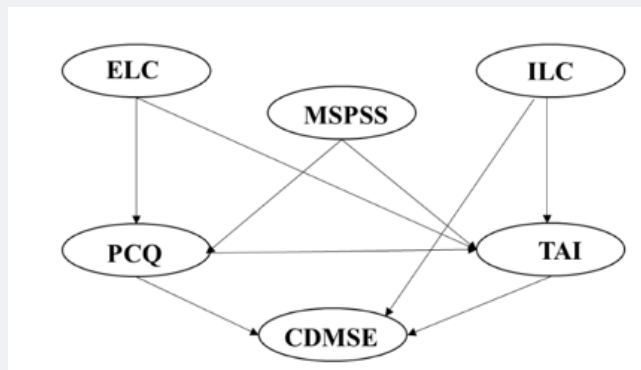


Figure 1: variables studied CDMSE: career Decision-making self-efficacy scale, ELC: external locus of control, ILC: internal locus of control, MSPSS: Multidimensional scale of perceived social support, TAI: Trait Anxiety scale, MHLC: Multidimensional health locus of control scale, PCQ: Professional commitment questionnaire.

Table 2: Validity of each scale and its subscales.

Variables		Cronbach's α	MIC
CDMSE	Self-appraisal	0.865	0.212
	Gathering information	0.864	0.213
	Goal selection	0.756	0.324
	Planning	0.672	0.176
	Problem solving	0.759	0.271
MSPSS	CDMSE scores	0.974	0.241
	Family support	0.801	0.235
	Friends support	0.87	0.248
	Others support	0.768	0.327
PCQ	MSPSS scores	0.932	0.218
	Affective commitment	0.858	0.282
	Ideal commitment	0.844	0.242
	Normative commitment	0.817	0.255
TAI	Continuance commitment	0.857	0.232
	PCQ scores	0.937	0.179
	TAI scores	0.839	0.346
	MHLC	Ability	0.683
Effort		0.649	0.195
Background		0.475	0.181
Opportunity		0.606	0.275
	ILC	0.657	0.204
	ELC	0.73	0.247
	MHLC scores	0.801	0.288

Table 2 Exploratory and Confirmatory Factor Analysis was performed to explore validity of the scales in the recommended structural model and to reach the most appropriate measurement

models. Table 2 provides information regarding each scale and subscale that was included in the model following Cronbach's alpha coefficients and mean inter-intercorrelation (MIC).

Table 3 SEM analysis showed that the research model had a high significance level ($\chi^2=145.76$; degree of freedom=124; probability level<0.001). Furthermore, the χ^2/df value of 1.17 met the criteria of less than 3 as suggested by Kline [23]. Further, the statistical analysis showed a good model fit according to the fit standards; all the values except adjusted goodness of fit index (AGFI) were within reasonable ranges. Specifically, the goodness of fit index (GFI) of 0.91 and the normed fit index (NFI) of 0.91 were above the acceptable value of 0.9 while the comparative fit

index (CFI) of 0.98 was above the criteria of 0.95. Even though the AGFI was below acceptable level (0.82), it was close to the threshold (0.9) and this has been shown to be acceptable in past research [24]. In addition, the root mean residual (RMR) was 0.06 and root mean-squared error of approximation (RMSEA) was 0.04. These values meet the guidelines of less than 0.10 for RMR [25] and 0.05 or below for RMSEA [26] further providing support that the model was a good fit with the data.

Table 3: Structural model results and parameter estimates for the hypothesized model.

Structural Model Results								
Model fit indices	χ^2	χ^2/df	GFI	NFI	CFI	AGFI	RMSEA	RMR
Values	1145.76	1.17	0.91	0.91	0.98	0.82	0.04	0.06

Table 4 The standardized path coefficients between CDMSE to ILC ($\beta = 0.086$, $p < 0.05$), PCQ ($\beta = 0.761$, $p < 0.01$) were significant. The standardized path coefficients between PCQ to ELC ($\beta = 0.447$, $p < 0.001$), MSPSS ($\beta = 0.277$, $p < 0.001$) were significant. The standardized path coefficients between TAI to ELC ($\beta = 0.448$,

$p < 0.05$), MSPSS ($\beta = 0.317$, $p < 0.001$) were also significant. However, we did not find association between CDMSE and TAI and MSPSS. These results are shown in Table 4. Moreover, path diagrams for the model are provided in Figure 2.

Table 4: Standardized path estimates.

Paths		Standardized β	Standard Error	p
N=1227				
ILC	CDMSE	0.086	0.042	0.040*
PCQ	CDMSE	0.761	0.055	<0.001**
TAI	CDMSE	0.078	0.053	0.142
ELC	PCQ	0.447	0.029	<0.001***
MSPSS	PCQ	0.277	0.026	<0.001***
ELC	TAI	0.448	0.184	0.015
MSPSS	TAI	0.317	0.045	<0.001***
ILC	TAI	-0.048	0.145	0.741

Note: CDMSE: Career Decision-Making Self-Efficacy Scale; ELC: External Locus of Control; ILC: Internal Locus of Control; MSPSS: Multidimensional Scale of Perceived Social Support; TAI: Trait Anxiety Scale; PCQ: Professional Commitment Questionnaire.

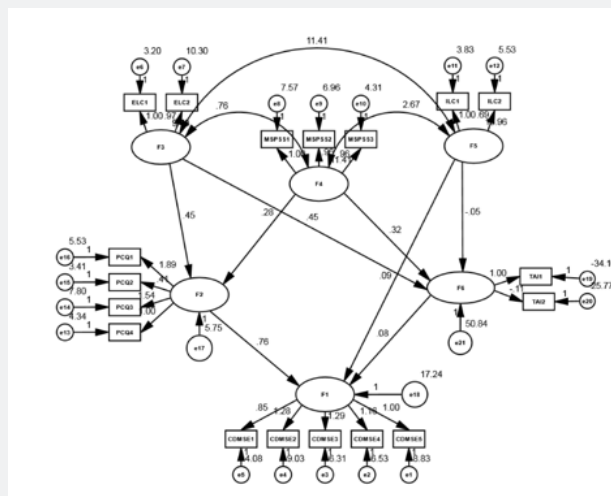


Figure 2: Presents the result of our hypothesized model's path analysis. F1: CDMSE (career Decision-Making Self-Efficiency Scale), F2: PCQ (Professional Commitment Questionnaire), F3: ELC (External locus of control), F4: MSPSS (Multidimensional scale of perceived social support), F5: ILC (Internal locus of control), F6: TAI (Trait Anxiety Scale).

Table 5 The standardized direct, indirect, and total effects of each factor included in the structural equation model are presented in Table 5. The total effect of the CDMSE independent latent variable on PCQ, locus of control (LOC), and MSPSS factors

was found to be significant. However, MSPSS did not have a direct effect on CDMSE a direct effect on PCQ. The MSPSS latent variable on the PCQ mediator variable was found also significant.

Table 5: Standardized direct, indirect, and total effects of each factor in structural equation model.

	Factors								
	PCQ			LOC			MSPSS		
	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
CDMSE	0.461	0	0.461*	0.116	0	0.116*	0	0.163	0.163*
PCQ	0	0	0	0	0	0	0.316	0	0.316

Note: CDMSE: Career Decision-Making Self-Efficacy Scale, PCQ: Professional Commitment Questionnaire □ LOC: Locus of Control, MSPSS: Multidimensional Scale of Perceived Social Support.

Discussion

Our study investigated the relationships between CDMSE and PC, social support, TA, and mental health, and the measurement model was statistically confirmed among undergraduate nursing students in China. The results showed that nursing students' CDMSE was affected by PC and TA. Social support as a mediator variable was also found to affect self-efficacy associated with PC. Tracey [27] indicated that interest and efficacy congruence were related to career certainty. However, only a few students chose to go to nursing school for their interest in pursuing nursing careers in China [2], which further indicates that lower interest in nursing will possibly lead to lower scores in CDMSE. Exploring the predictors of CDMSE was crucial to improve nursing students' career commitment and ensure sustainable careers.

PC is important for career development. Our study found that PC was positively associated with the level of CDMSE and can directly affect CDMSE. An earlier study demonstrated a significant association between high CDMSE and strong PC among college students in the U.S. [28,29]. Nursing students scoring high on PC and CDMSE exhibit a greater sense of responsibility and seize opportunities. They perceive everything in a positive and optimistic way, which stimulates professional or academic achievement, thus, realizing their ideal life with ease [2]. In our investigation, students had lower PC scores in nursing than those in other studies [2] which could be due to, fewer students opting for a career in nursing in China or perceived low social status of the nursing profession, and low pay scale despite being a labor-intensive job, contributing to lower levels of PC and CDMSE. Hence, CDMSE and PC should be studied as the breakthrough points to reduce human resource loss in nursing, especially for nurses having a bachelor's degree, in China.

Mental health problems have a complex association with career decisions because negative emotions may cause career indecision, and career indecision may lead to negative emotions. LOC is defined as one's belief that one's ability, effort, or actions will determine what would happen [30]. LOC includes two factors: internal and external locus of control. Internal LOC directly affects

CDMSE, and external LOC can indirectly affect TA and PC. LOC is often a mediator, of the association, between CDMSE and mental health [31]. A study found that students with greater internal LOC have greater job satisfaction and better job performance [32]. CDMSE difficulties or low CDMSE scores are related to psychological problems [33]. Duffy et al. also found that nursing students with a greater sense of personal control have more career adaptability [34]. Another study indicated that undecided college students were found to have more external LOC [35]. Thus, improving internal LOC is essential for increasing career decision self-efficacy among undergraduate nursing students.

Social support is an important factor in the continuity of human health and the enactment of healthy behaviors [36]. Research shows that social support can indirectly affect CDMSE through PC, and CDMSE has a positive correlation with social support [37]. Social support can alleviate psychological stress and tension and improve social adaptability [38]; therefore, it represents an important and potential resource for people in responding to career development and change [39]. For nursing students, effective social support comprises educational institutions, workplaces, family, and friends [38]. Therefore, educators should provide social support by giving students constructive and timely feedback to help nursing undergraduates overcome frustration, improve their stress resistance, and reduce negative effects from career stress.

Conclusion

Our study demonstrated a significant relationship between CDMSE, PC, mental health, and social support among Chinese nursing undergraduates. It is evident from the results that the total effect of PC and mental health on CDMSE was significant. In light of these results, additional measures should be taken to improve CDMSE in nursing education. First, specific employment guidance should be provided to those with low PC scores to improve their CDMSE towards their profession, promoting the career development opportunities for nurses. Second, locus of control is an important construct in personality psychology and

career satisfaction. The mental health of nursing students needs monitoring to facilitate coping with stressful situations during training. Additionally, strategies for coping with mental distress should be included as a component in the curricula of nursing departments. Third, the focus on increasing social support for effective coping with mental stress and the score of CDMSE should be developed and implemented. CDMSE has been empirically proven as a significant predictor of vocational outcomes. More recently, academic researchers and career counselors have begun to closely investigate the causes for CDMSE, not only to contribute to the literature on career development, but also to provide better career interventions according to the predictors of CDMSE.

Author Contributions

Study design: Xiangni Su, Hongjuan Lang, Chunping Ni.

Data collection: Cuicui Li, Pei Shao, Shanbo Hu, Jing Wang, Xiaoming Li, Meng Xu, Haixiao Fang.

Data analysis: Xiangni Su, Wenchen Wang.

Manuscript writing: Xiangni Su.

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