



## Career decision-making self-efficacy mediates the effect of social support on career adaptability: A longitudinal study

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In constructivist approaches to research on career adaptability it has been conceptualized that the development of one's career is formed from the interplay between the individual and the environment. In this study we utilized structural equation modeling analysis of longitudinal data obtained from 145 Chinese undergraduate students to examine the effects of social support and career decision-making self-efficacy on career adaptability. Our results provided important evidence regarding the effects of career decision-making self-efficacy, which functions as a significant mediator of the effects of social support on career adaptability. We provide integrative conclusions for explaining the relationships between the environment, the individual, and the individual's career outcome, and have enriched constructivist theories of careers, providing implications for counseling and practice.

### Keywords

social support; career adaptability; career decision-making self-efficacy; career development; self-efficacy

*Career adaptability* is a psychological construct that indicates an individual's readiness and resources for coping with current and anticipated tasks of vocational development, career change, and work-related trauma (Savickas, 2005). Savickas (1997, 2013) proposed that the integrative construct of career adaptability comprises four dimensions of resources that cover one's attitudes, beliefs, and behaviors regarding one's work roles, which he also called *adapt-abilities*: concern about one's own future (*concern*), exhibiting curiosity toward the possible self and prospective circumstances (*curiosity*), one's sense of control and responsibility in regard to one's future career (*control*), and confidence in one's pursuit of an aspiration (*confidence*).

For adolescents, the core of their career preparation and development is career adaptability (Savickas, 2005). In the current, constantly changing occupational environment, career adaptability has become an important ability for undergraduate students facing an uncertain occupational future (Koen, Klehe, & Van Vianen, 2012). Since Savickas (1997) proposed the concept of career adaptability, this topic has attracted considerable academic attention. However, there have been few studies of how external contextual variables influence the internal mental process of career adaptability. Although there are longitudinal studies in which the effects of career decision-making self-efficacy and social support on career outcomes have been examined, there is still a lack of evidence regarding the causal relationships between these three variables. Therefore, we proposed that social support would influence the level of career adaptability through the self-regulating psychological resource of career decision-making self-efficacy.

## Literature Review and Hypotheses

### Social Support and Career Adaptability

*Social support* refers to the psychological or physical assistance received from one's social relationships (Sneed & Cohen, 2014). Social support can alleviate psychological stress and tension and improve social adaptability (Isik, 2013); therefore, it represents an important and potential resource for people in responding to career development and change (Seibert, Kraimer, & Liden, 2001). For adolescents, effective social support comprises educational institutions, workplaces, family, and friends (Isik, 2013). Some support provided in certain contexts, such as support from parents and teachers, is particularly crucial in adolescents' career decisions and career success (Metheny, Hawley McWhirter, & O'Neil, 2008; Simmons, 2008).

Researchers have suggested that social support is a distal variable of career adaptability, whereas self-regulation is a more proximal mediator variable between the distal variable of social support and career adaptability. Self-efficacy possibly functions as a crucial mediator that connects the distal contextual variable (social support) and career adaptability. Some researchers have found that social support can alleviate one's career concerns (anxiety) and enhance self-regulation ability (Creed, Fallon, & Hood, 2009). Therefore, we conducted a longitudinal study to explore the effects of career decision-making self-efficacy as an important mediator of the causal effect of social support on career adaptability.

### The Mediating Effect of Career Decision-Making Self-Efficacy

**Career decision-making self-efficacy and career adaptability.** *Career decision-making self-efficacy* (CDMSE) is defined as an individual's confidence in his/her ability to successfully complete tasks related to career planning and career decisions (Taylor & Betz, 1983). CDMSE represents the cognitive evaluation or judgment of future performance, which is an important self-regulating resource in the process of applying for jobs. It has been posited by some researchers that people who have a stronger (vs. weaker) sense of self-efficacy can better understand changes (such as employment) associated with themselves, predict their own career future and positive working conditions, adjust and regulate their behaviors, and have stronger resolution toward obstacles (Bubic, 2017; Miraglia, Alessandri, & Borgogni, 2015). CDMSE is a predictive factor in enhancing career adaptability (Douglass & Duffy, 2015), in that the individual with a stronger sense of career adaptability not only has more confidence during the job application process, but also has more employment opportunities after graduating from university (Y. Guan et al., 2013).

**Social support and career decision-making self-efficacy.** Some researchers have found that, as contextual variables, career-related activities (e.g., social support) can influence the sense of CDMSE of job applicants (Zikic & Saks, 2009), such that CDMSE has a positive correlation with social support (Vertsberger & Gati, 2015). Wright, Perrone-McGovern, Boo, and White (2014) found that the more support the participants received, the stronger was their reported sense of CDMSE.

Family represents an important source of social support. The role of parental support is crucial in terms of the development of CDMSE, especially during adolescents' developmental stage (Michael, Most, & Cinamon, 2013). Researchers have suggested that there is a positive correlation between parental support and CDMSE, and that parental support can enhance one's CDMSE (Garcia, Restubog, Bordia, Bordia, & Roxas, 2015). Therefore, in the current study we focused on the relationship between parental support and the CDMSE of Chinese university students.

**Career decision-making self-efficacy as a mediator.** Career development is formed from the interplay between individuals and the environment (Savickas, 2013), which emphasizes the integrative function of individual and contextual variables (Lapan, 2004). Ginevra, Nota, and Ferrari (2015) found that the influence of parental support on adolescent career decisions is achieved through the mediating effects of CDMSE. Although many researchers who have conducted cross-sectional studies have demonstrated that efficacy mediates the condition of the external environment affecting the outcome of career development

(Cai & Cheng, 2018; Chen, 2017), Maxwell, Cole, and Mitchell (2011) stated that the use of cross-sectional designs for a mediating effect cannot be conclusively supported with a measurement from a single point in time. Kim and Lee (2018) suggested that researchers turn their attention to finding the causal relationships between variables through longitudinal studies, and focus more on the influence on career development of contextual variables, such as social support.

Although longitudinal research on mediating effects has gradually attracted more attention, to our knowledge there are no studies in which social support has been found to positively influence career adaptability through the mediator of CDMSE. Therefore, we used a three-wave longitudinal study to examine these relationships. Our hypotheses were as follows:

**Hypothesis 1:** Over time, social support will have a significant positive effect on career decision-making self-efficacy.

**Hypothesis 2:** Over time, career decision-making self-efficacy will be a significant positive predictor of career adaptability.

## Method

### Participants and Procedure

We surveyed 252 Chinese undergraduate students three times at intervals of 6 months, with the first survey being completed in the first semester of the academic year. In the baseline assessment (Wave 1), data were collected from the 252 students (191 women, 61 men). The participants' ages ranged from 18 to 22 years ( $M = 20.20$ ,  $SD = .847$ ). In Wave 2, 197 students (143 women, 54 men) completed the survey, and 183 were retained from the Wave 1 sample. In Wave 3, 156 students completed the survey, and 145 (121 women, 24 men) were successfully followed up at all three time-points. The participant retention rates for Wave 2 and Wave 3 were 72.6% and 79.2%, respectively. Attrition was mainly due to absence from college on the day the survey was completed.

### Measures

**Perceived Social Support Scale.** We employed the Chinese revised version (Wang, Wang, & Ma, 1999) of the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988), which is designed to measure the degree of perceived support the respondent receives from three sources: family members, friends, and other significant people. The 12 items are rated on a 5-point Likert-type scale ranging from *very strongly disagree* (1) to *very strongly agree* (5). Cronbach's alpha for Waves 1, 2, and 3 was .90, .93, and .92, respectively.

**Career Decision-Making Self-Efficacy Scale.** We employed the Chinese revised version (Peng & Long, 2001) of the Career Decision-Making Self-Efficacy Scale (Taylor & Betz, 1983), which comprises five subscales: self-appraisal, information gathering, goal selection, planning, and problem solving, which are rated on the same Likert 5-point scale as the previous scale. Cronbach's alpha for Waves 1, 2, and 3 was .94, .96, and .96, respectively.

**Career Adapt-Abilities Scale—International Form 2.0.** We employed the Chinese version (Hou, Wu, & Liu, 2014) of the Career Adapt-Abilities Scale—International Form 2.0 (Savickas & Porfeli, 2012). The scale comprises 24 items rated on 5-point Likert scale (1 = *not strong*, 5 = *strongest*), and items are divided across four subscales: concern, control, confidence, and curiosity. Cronbach's alpha for Waves 1, 2, and 3 was .91, .93, and .93, respectively.

### Data Analysis

First, we tested the longitudinal factorial invariance of perceived social support as indicated by family members, friends, and other significant people and CDMSE as indicated by self-appraisal, information

gathering, goal selection, planning, and problem solving. The use of testing of longitudinal factorial invariance ensures that the fundamental meanings of the latent constructs of perceived social support and CDMSE do not change over time. Later, the longitudinal mediation model is estimated by the structural equation modeling (SEM) method. Within the SEM context, a full autoregressive mediation model with three time periods was utilized to assess the levels of perceived social support and CDMSE used as predictors of career adaptability.

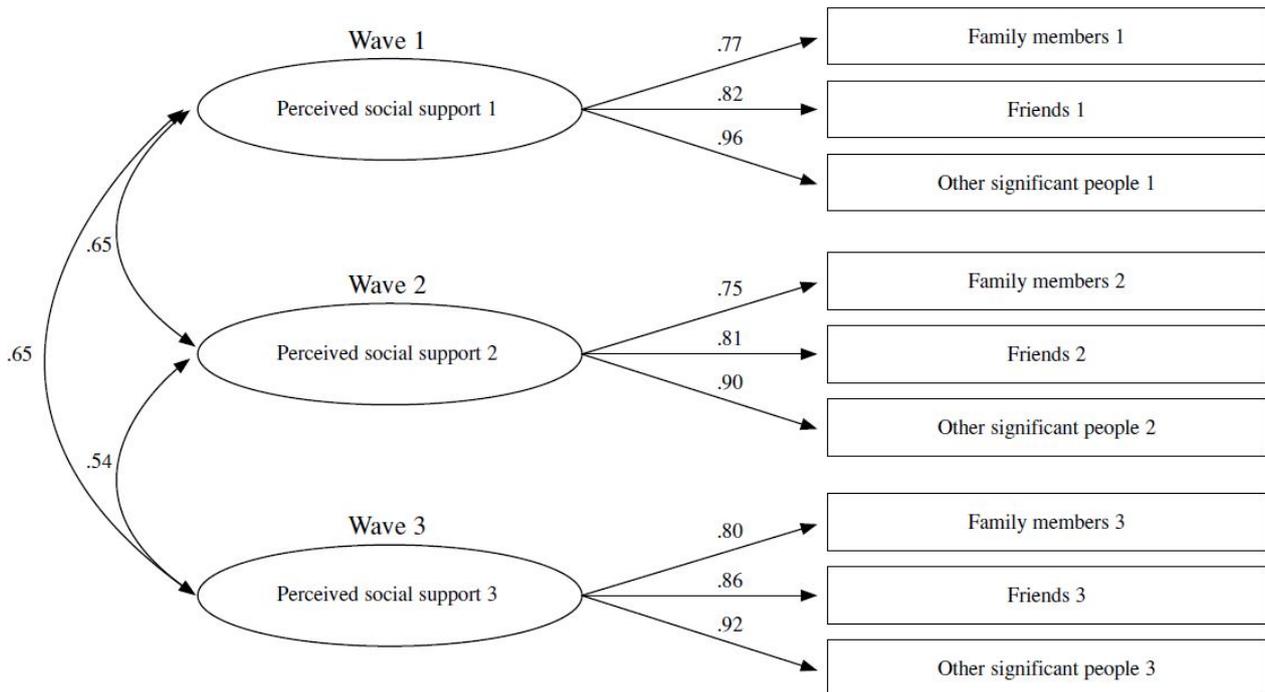
The model with the best fit to the data was evaluated by using several fit indices: the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker–Lewis index (TLI). Acceptable model fit was defined by the following criteria: SRMR below .05, RMSEA less than .08, and CFI and TLI above .90 (Geiser, 2013).

SEM analyses were conducted using Mplus version 7. Missing data were handled by using the multiple imputation method based on expectation maximization.

## Results

### Longitudinal Factorial Invariance Models

The unconstrained model of perceived social support achieved a satisfactory fit: chi square ( $\chi^2$ ) = 16.63, degrees of freedom ( $df$ ) = 13, RMSEA = .044, CFI = .99, TLI = .99, SRMR = .05. Subsequently, a loading invariance model was tested, which also showed a satisfactory fit:  $\chi^2$  = 24.47,  $df$  = 19, RMSEA = .045, CFI = .99, TLI = .99, SRMR = .08. Thus, weak factorial invariance was established for perceived social support across the three waves of assessment. Standardized factor loadings and factor correlations are presented in Figure 1.



**Figure 1.** Standardized factor loadings and factor correlations for the weak factorial invariance model for perceived social support.  $N = 145$ . All factor loadings and factor correlations are significant at  $p < .001$ .

Next, we tested the fit of the unconstrained model of the latent construct of CDMSE. The fit was acceptable:  $\chi^2 = 127.05$ ,  $df = 70$ ,  $RMSEA = .075$ ,  $CFI = .97$ ,  $TLI = .96$ ,  $SRMR = .03$ . The loading invariance model also showed an acceptable fit:  $\chi^2 = 136.17$ ,  $df = 80$ ,  $RMSEA = .070$ ,  $CFI = .97$ ,  $TLI = .97$ ,  $SRMR = .06$ . Standardized factor loadings and factor correlations are presented in Figure 2.

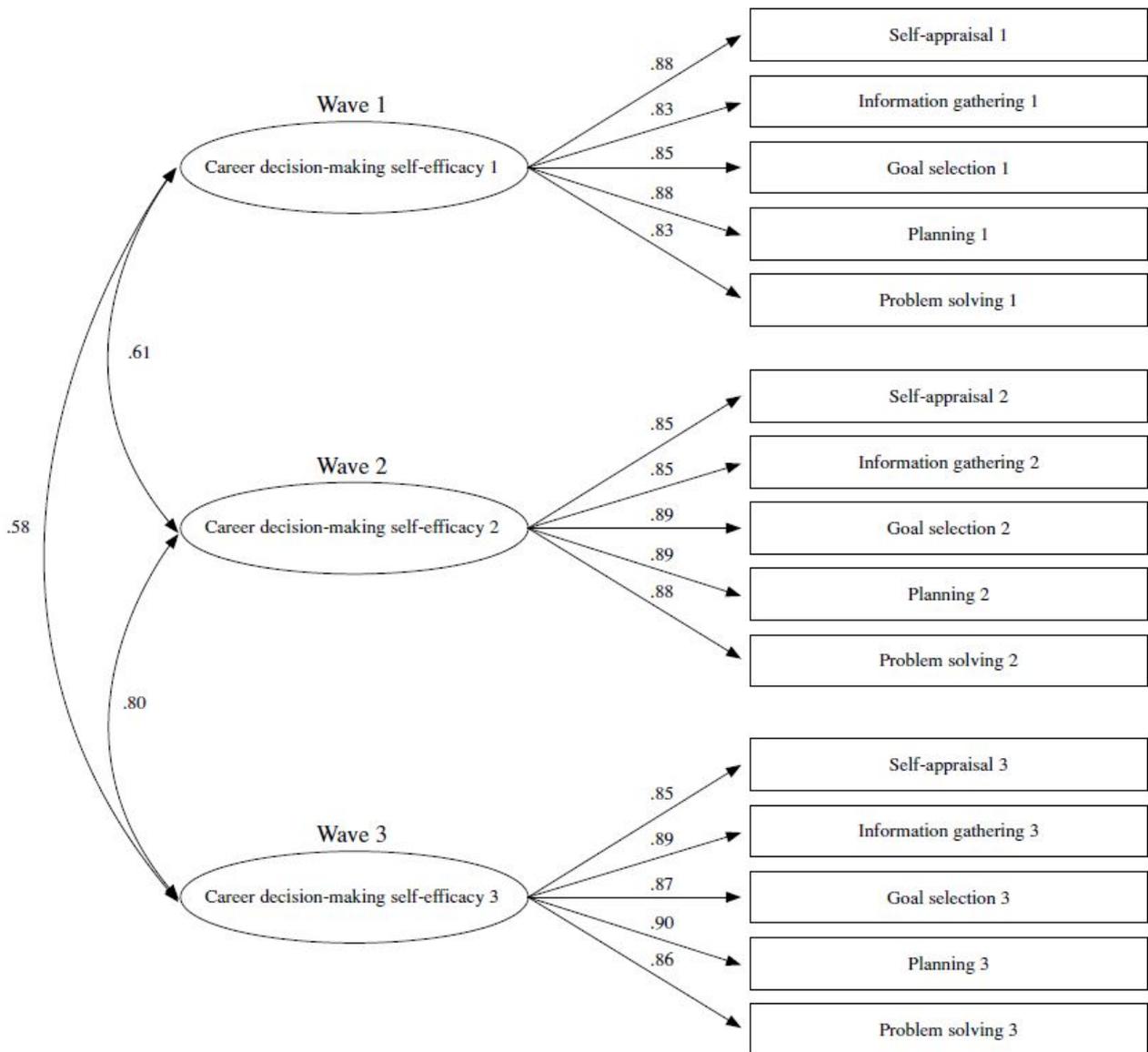


Figure 2. Standardized factor loadings and factor correlations for the weak factorial invariance model for career decision-making self-efficacy.  $N = 145$ . All factor loadings and factor correlations are significant at  $p < .001$ .

### Autoregressive Mediation Model

We used the means from each subscale as the measures for their latent variables. This method helped us to understand the size of each measure. Table 1 shows descriptive analyses of all the study variables at Waves 1, 2, and 3.

Table 1. Mean and Standard Deviation for Each Measure at Time 1, Time 2, and Time 3

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36				
<b>Time 1</b>																																								
1 FM	1																																							
2 Friends	.60	1																																						
3 OSP	.73	.79	1																																					
4 SA	.27	.16	.19	1																																				
5 IG	.30	.22	.25	.73	1																																			
6 GS	.22	.13	.19	.80	.65	1																																		
7 Planning	.30	.17	.24	.76	.78	.74	1																																	
8 PS	.23	.14	.17	.72	.66	.68	.75	1																																
9 Concern	.18	.07	.14	.50	.44	.48	.59	.46	1																															
10 Control	.25	.18	.21	.59	.43	.62	.53	.51	.51	1																														
11 Curiosity	.23	.12	.16	.54	.51	.53	.63	.55	.53	.53	1																													
12 Confidence	.23	.21	.22	.62	.50	.59	.60	.58	.50	.60	.62	1																												
<b>Time 2</b>																																								
13 FM	.66	.38	.45	.36	.42	.32	.38	.30	.21	.27	.22	.34	1																											
14 Friends	.40	.52	.49	.32	.42	.31	.38	.31	.23	.37	.26	.35	.59	1																										
15 OSP	.51	.48	.56	.33	.36	.35	.35	.31	.24	.36	.25	.40	.72	.71	1																									
16 SA	.44	.42	.42	.49	.43	.44	.42	.43	.41	.40	.40	.34	.21	.18	.16	1																								
17 IG	.41	.39	.44	.47	.52	.36	.52	.41	.41	.27	.45	.31	.19	.13	.10	.76	1																							
18 GS	.27	.32	.29	.55	.44	.55	.47	.47	.39	.41	.37	.33	.10	.10	.05	.80	.74	1																						
19 Planning	.30	.37	.30	.49	.49	.41	.51	.40	.35	.30	.42	.33	.13	.14	.05	.68	.79	.77	1																					
20 PS	.33	.40	.35	.50	.42	.46	.45	.50	.35	.33	.40	.39	.18	.21	.14	.73	.71	.80	.79	1																				
21 Concern	.26	.23	.30	.43	.34	.41	.39	.32	.54	.37	.37	.35	.14	.13	.09	.57	.58	.61	.55	.55	1																			
22 Control	.14	.17	.15	.45	.30	.52	.36	.33	.39	.46	.30	.37	.09	.13	.08	.45	.43	.61	.45	.53	.73	1																		
23 Curiosity	.18	.17	.16	.37	.31	.35	.36	.34	.35	.22	.44	.39	.07	.07	.05	.52	.59	.58	.58	.58	.64	.59	1																	
24 Confidence	.24	.23	.26	.35	.23	.29	.33	.33	.33	.28	.36	.38	.09	.07	.03	.51	.56	.54	.58	.55	.60	.62	.67	1																
<b>Time 3</b>																																								
25 FM	.70	.45	.52	.32	.28	.29	.30	.22	.15	.22	.25	.27	.56	.32	.41	.39	.32	.29	.34	.35	.45	.40	.37	.40	1															
26 Friends	.50	.53	.50	.27	.27	.31	.24	.22	.06	.27	.16	.21	.39	.46	.41	.38	.29	.32	.35	.43	.41	.49	.36	.37	.74	1														
27 OSP	.53	.45	.59	.36	.29	.40	.28	.29	.13	.34	.23	.31	.42	.41	.47	.37	.29	.33	.30	.41	.42	.51	.39	.35	.74	.79	1													
28 SA	.35	.34	.31	.54	.42	.45	.46	.45	.46	.41	.41	.40	.23	.13	.15	.62	.61	.63	.55	.61	.72	.63	.58	.57	.43	.43	.47	1												
29 IG	.26	.24	.24	.45	.40	.39	.44	.41	.35	.33	.37	.37	.16	.16	.08	.56	.63	.65	.69	.68	.67	.63	.67	.64	.44	.45	.42	.72	1											
30 GS	.22	.18	.23	.52	.38	.57	.49	.44	.40	.45	.35	.37	.11	.08	.09	.53	.55	.69	.60	.66	.67	.72	.64	.56	.38	.45	.50	.77	.74	1										
31 Planning	.23	.24	.21	.47	.38	.40	.46	.39	.32	.33	.39	.34	.14	.12	.08	.51	.57	.64	.69	.64	.66	.63	.64	.62	.43	.42	.39	.73	.82	.76	1									
32 PS	.31	.26	.23	.48	.35	.38	.43	.45	.39	.38	.41	.37	.23	.13	.11	.56	.54	.62	.61	.65	.63	.62	.62	.61	.45	.44	.41	.76	.77	.71	.79	1								
33 Concern	.30	.36	.36	.42	.36	.34	.38	.25	.51	.37	.36	.30	.13	.13	.10	.63	.54	.61	.58	.49	.65	.45	.47	.54	.41	.35	.36	.60	.52	.55	.53	.48	1							
34 Control	.22	.24	.24	.42	.29	.47	.34	.28	.31	.50	.37	.31	.11	.08	.10	.50	.42	.61	.53	.49	.45	.46	.38	.34	.27	.27	.25	.39	.46	.56	.50	.48	.56	1						
35 Curiosity	.33	.26	.35	.39	.45	.31	.43	.40	.36	.28	.46	.26	.09	.12	.08	.56	.67	.58	.56	.51	.49	.39	.58	.48	.31	.31	.31	.44	.48	.45	.48	.48	.50	.49	1					
36 Confidence	.30	.29	.37	.51	.43	.42	.46	.38	.33	.32	.37	.40	.12	.12	.17	.55	.61	.59	.57	.54	.47	.42	.48	.56	.35	.34	.34	.45	.46	.48	.49	.47	.55	.53	.68	1				
M	3.82	3.84	4.02	3.45	3.42	3.50	3.35	3.33	3.37	3.61	3.51	3.71	3.96	3.92	4.07	3.49	3.52	3.57	3.48	3.42	3.65	3.69	3.68	3.75	3.88	3.87	3.99	3.62	3.63	3.64	3.53	3.57	3.51	3.65	3.64	3.69				
SD	0.79	0.78	0.75	0.63	0.59	0.58	0.54	0.61	0.66	0.59	0.61	0.80	0.71	0.78	0.61	0.60	0.60	0.54	0.54	0.65	0.63	0.55	0.59	0.78	0.75	0.73	0.67	0.60	0.61	0.60	0.60	0.63	0.56	0.56	0.57					

Note. 145 < n < 252. FM = family members, OSP = other significant people, SA = self-appraisal, IG = information gathering, GS = goal selection, PS = problem solving. Correlations above .16 are significant at  $p < .05$ ; correlations above .22 are significant at  $p < .01$ .

In the next step we used a panel model to evaluate the stability and covariance of the latent constructs across time by adding autoregressive and residual covariance paths. Following this analysis, we tested a mediation model to evaluate the hypothesized mediating effect by adding cross-wave indirect paths. The primary paths of interest are denoted by PSS1-CDMSE2 (a) and CDMSE2-CA3 (b). Finally, the product of the a and b paths was used to evaluate the significance and magnitude of the indirect effect. This model and the standardized path coefficients are depicted in Figure 3.

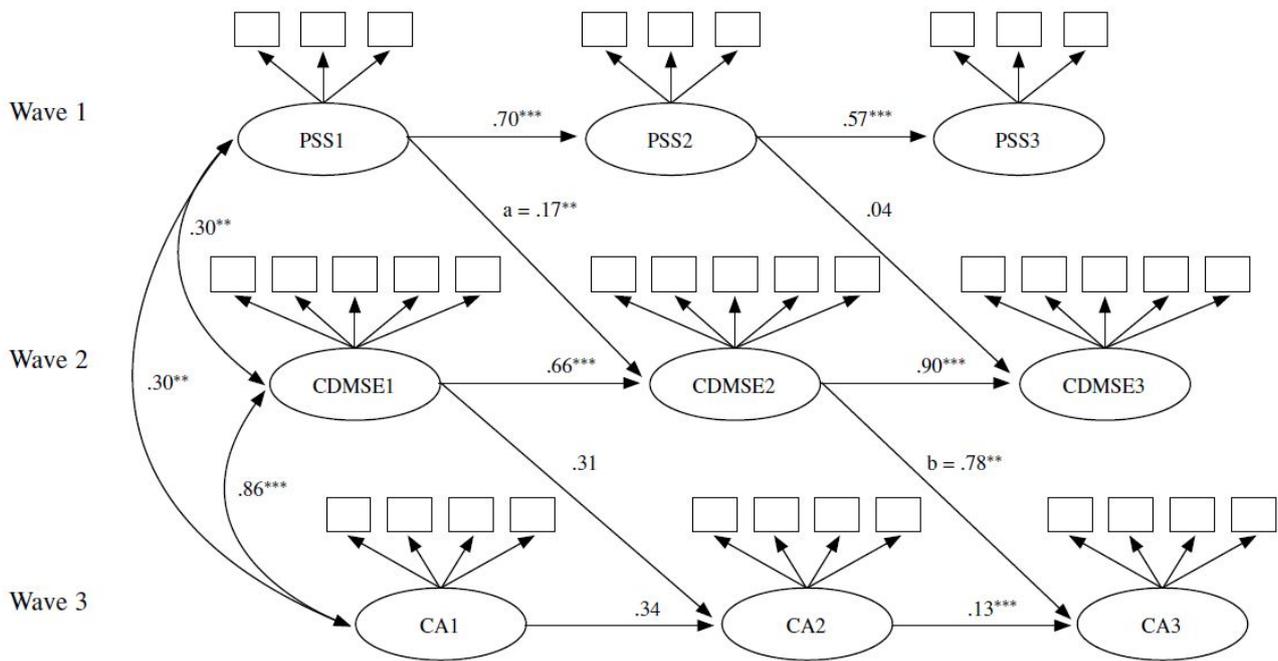


Figure 3. Standardized path coefficients for the full longitudinal mediation model for CA. PSS = perceived social support, CDMSE = career decision-making self-efficacy, CA = career adaptability.  $N = 145$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The indices for the fit of the SEM model were moderately acceptable:  $\chi^2 = 1006.05$ ,  $df = 557$ , RMSEA = .075, CFI = .91, TLI = .90, SRMR = .144. We conducted the mediation analyses by using bootstrapping with 1,000 resamples (see Table 2). The results indicated that the 95% confidence interval (CI) of the indirect effect of PSS1–CDMSE2–CA3 was [0.028, 0.263], which, as it did not include 0, suggests that a significant longitudinal mediation effect was present. The standardized estimation result was  $\beta_{ab} = .13$ ,  $SE = 0.06$ ,  $t = 2.17$ ,  $p < .05$ . The results from the bootstrapping analysis are depicted in Table 2.

Table 2. *Statistics of Each Path for the Autoregressive Mediation Model*

	Wave 1		Wave 2		Wave 3	
	$\beta$ (SE)	<i>t</i>	$\beta$ (SE)	<i>t</i>	$\beta$ (SE)	<i>t</i>
<b>PSS by</b>						
Family members	.77 (.04)	19.53***	.75 (.04)	17.04***	.79 (.04)	19.56***
Friends	.83 (.04)	21.20***	.82 (.04)	21.78***	.86 (.04)	24.75***
Other significant people	.94 (.03)	34.07***	.91 (.04)	21.05***	.92 (.03)	35.30***
<b>CDMSE by</b>						
Self-appraisal	.88 (.03)	29.31***	.87 (.02)	36.49***	.84 (.05)	17.04***
Information gathering	.83 (.03)	26.23***	.88 (.03)	31.05***	.88 (.02)	39.35***
Goal selection	.85 (.03)	28.37***	.90 (.02)	45.84***	.86 (.03)	27.83***
Planning	.88 (.03)	32.06***	.90 (.03)	35.00***	.89 (.02)	37.73***
Problem solving	.83 (.03)	27.18***	.88 (.02)	39.30***	.85 (.03)	3.75***
<b>CA by</b>						
Concern	.70 (.06)	12.85***	.79 (.05)	14.67***	.71 (.05)	13.40***
Control	.71 (.05)	13.68***	.79 (.05)	16.97***	.74 (.04)	18.75***
Curiosity	.75 (.05)	14.93***	.84 (.04)	23.85***	.76 (.05)	16.84***
Confidence	.78 (.05)	15.39***	.82 (.04)	22.27***	.80 (.04)	18.79***
<b>Autoregressive effects</b>						
PSS1 → PSS2	.70 (.08)	8.26***				
PSS2 → PSS3	.57 (.11)	5.28***				
CDMSE1 → CDMSE2	.66 (.05)	14.10***				
CDMSE2 → CDMSE3	.80 (.05)	14.82***				
CA1 → CA2	.34 (.25)	1.33				
CA2 → CA3	.13 (.26)	0.51				
<b>Cross-lagged regression effects</b>						
PSS1 → CDMSE2(a)	.17 (.07)	2.66**				
CDMSE2 → CA3(b)	.78 (.24)	3.21**				
CDMSE1 → CA2	.31 (.24)	1.28				
PSS2 → CDMSE3	.04 (.07)	0.58				
<b>Total indirect effect</b>						
a × b	.13 (.06)	2.17*				

Note. PSS = perceived social support, CDMSE = career decision-making self-efficacy; CA = career adaptability.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

## Discussion

In this longitudinal study we have provided evidence that social support has an indirect effect on career adaptability through the mediator of CDMSE. The study results also provide an integrative explanation for career adaptability.

First, the results generally supported our hypotheses: (a) across time, social support (Time 1) had a significant longitudinal effect on CDMSE (Time 2); (b) across time, social support (Time 2) can significantly predict CDMSE (Time 3). Participants in our study who received more (vs. less) social support had higher levels of CDMSE. Our longitudinal findings provide new evidence for a positive correlation between social support and CDMSE. According to social support theory, the stronger a person's social support network is, the better he or she performs on various challenges in the environment (Glozah & Pevalin, 2014). In terms of career development, social support helps undergraduate students overcome frustration, improve their resistance to stress, and reduce negative effects from career stress (Glozah & Pevalin, 2014). We believe that appropriate use of social resources can help undergraduate students overcome problems and establish confidence when they face career challenges and make career decisions. The results in our longitudinal

model indicate that support from a favorable contextual environment can take time to enhance the ability of self-regulation. This means that the more the individual perceives that he or she is receiving emotional support, the stronger is his or her trust and confidence to face future career challenges and career transitions.

Second, we examined the longitudinal enhancement effect of CDMSE (at Time 2) on career adaptability (Time 3). Our results are consistent with those reported in previous research (Douglass & Duffy, 2015; Hou et al., 2014), in which it was suggested that CDMSE has a significant influence on career adaptability.

The current study has important implications for college counselors. Career adaptability is a dynamic psychological construct and a plastic cognitive element that can be achieved through training, consultation, and education (Coetzee & Harry, 2014). We believe that improving undergraduate students' CDMSE, trust, and confidence in facing career selection and planning and enhancing their ability to self-regulate will be beneficial in improving their adaptability in future career settings.

In addition, we examined a longitudinal predictor of career adaptability and our findings indicate that CDMSE might be an important mediator of the effect of social support on career adaptability, which is consistent with results from previous studies (Douglass & Duffy, 2015; P. Guan et al., 2016; Kim & Lee, 2018); we have reconfirmed these earlier conclusions from the perspective of a longitudinal study. Our study provides more comprehensive ways to understand social support as a predictor of career adaptability, and, as time passes, one's CDMSE develops a sense of adaptability in the work setting, which is influenced by social support to a certain degree. Moreover, compared with the few previous researchers of the relationships between contextual factors, motivation, and career adaptability, we have conducted a more extensive investigation. Therefore, we speculate that, as time passes, social support and CDMSE are instrumental in increasing undergraduate students' career adaptability.

Our conclusions provide definitive guidelines for future career counseling practice. In a practical sense, universities and colleges are preparation stages for one's future career. Our study also provides an important perspective for practice regarding the sense of CDMSE. Counselors need to encourage students to focus on CDMSE related to their career. Internal motivation is the key element in determining career adaptability because it is the fuel for inducing and maintaining behaviors (Ford, Quiñones, Seago, & Speer Sorra, 1992). Internal motivation can be regarded as an element that induces career adaptability through cultivation and intervention. We believe that improving students' CDMSE can help enhance their intrinsic motivation for career development, thus contributing to the improvement of career adaptability, so we posit that improvements in career adaptability begin with improvements in undergraduate students' CDMSE.

However, there are limitations in the present study. First, the sample consisted of undergraduate students in China, most of whom were women. To examine the mediating effect of CDMSE in the influence of social support on career adaptability, it is necessary to expand the sample to include more men and also to conduct cross-cultural research in different cultures and regions to improve the validity of the research in the future and to verify this longitudinal model.

Second, although we conceptualized social support as a contextual variable, it can be also conceptualized as an individual variable. Researchers can also further examine which type of social support best explains the influence of CDMSE on career adaptability.

The longitudinal nature of the study, comprising data that we collected at three time points, was crucial, but other authors have posited that data from three time points is insufficient because the period of time is not long enough to fully investigate the effects (Reichardt, 2011). Therefore, future researchers could expand the length of time, and include more time points.

Finally, attrition was a main concern in our study. Although analysis of data obtained from the participants who dropped out suggests that there were no significant differences between the participants for whom we had data at the three time points and the dropouts, in future studies participant attrition should be reduced and/or avoided.

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