

Self-Esteem and Depression as Mediators between Social Support and Satisfaction with College

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Abstract

College satisfaction is clearly related to student retention. However, satisfaction with the college is likely impacted by factors beyond the objective college experience. Understanding these other predictors may help colleges improve retention outcomes. This study examined the importance of social support in college satisfaction and investigated the potential mediating effects of self-esteem and depression among a sample of Chinese students. Social support was positively correlated with satisfaction with college. Tests of simple mediation indicated that self-esteem and depression may each individually mediate the relationship between social support and satisfaction with college. A test of multiple mediators showed that social support exerted an indirect effect on satisfaction with college through the simple mediating effect of depression and the three-path mediating effect of self-esteem - depression. Further, self-esteem partially mediated the relationship between social support and depression.

Keywords: *College students; Social support; Self-esteem; Depression; Satisfaction with college; China*

1. Introduction

In Satisfaction with college is a well-established determinant of student retention, both in theoretical models and in research examining intent to persist in college [1,2]. Traditionally, predictors of satisfaction with college include satisfaction with one's living environment, college coursework, etc., all of which may be targeted in retention initiatives. Research also points to the importance of social support in satisfaction with college and subsequent retention [3], pointing to a clear need to better understand the relationship between social support and college satisfaction.

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If satisfaction with college shares the same predictors and correlates as overall satisfaction with life, this may have implications for college interventions and policies targeting retention because students who are satisfied with their college experience may be more likely to remain in school and achieve their goals. Thus, this study examined whether well-established predictors of satisfaction with life (social support, self-esteem, and depression) influence satisfaction with college.

2. Social Support, Self-Esteem, Depression and Overall Satisfaction with Life

Social support, defined as a social and psychological support obtained from an individual's environment, includes both perceived and received or actual social support [4]. Perceived support is more consistently linked with positive outcomes than actual outcomes, with numerous studies indicating a robust correlation between perceived social support and life satisfaction [5-9].

Self-esteem is a likely mediator in the association between social support and life satisfaction. According to Mack and Ablon [10], the loving support of parents is of critical importance to self-esteem during adolescence. Studies with children and adolescents have supported robust relations between students' school well-being and perceived social support, including parent support, friend support, and teacher support. Recently, researchers have found that self-esteem acts as a partial mediator of the relationship between social support and life satisfaction [5,11-13].

In a similar way, depression might be hypothesized to mediate the association between social support and life satisfaction. Depression is negatively associated with life satisfaction [14-17] and perceived social support and depression [18-20]. Thus, depression is likely to reduce the positive effect of social support on life satisfaction [21].

Additionally, a large body of research has suggested that social support may increase self-esteem, which in turn reduces depression [22,23]. Self-esteem then mediates the relationships between social support and both life satisfaction and depression. Taylor, MacKinnon, and Tein [24] put forward that in a three-path mediation model, two mediators intervene in a series between an independent and a dependent variable. Methods of testing for mediation in such a model are generalized from the more often used single-mediator model.

3. Social Support, Self-Esteem, Depression, and Satisfaction with College

For students, satisfaction with college is an important component of satisfaction with life. Indeed, researchers have found that academic satisfaction is more predictive of life satisfaction than academic progress. College satisfaction is also important for understanding student academic performance, withdrawal, and attrition. However, multiple studies have found that college satisfaction has a weak but positive relationship with academic success, although it appears to be more strongly related to retention and to the intention to remain at a particular college. It is likely that college satisfaction is influenced by multiple factors, including many institutional ones. From the colleges' perspective, responses to low college satisfaction rates often involve new programming targeting institutional change. However, given its relationship with overall life satisfaction, it is also likely that psychological well-being plays a role in college satisfaction. If this is the case, then different interventions may be warranted.

It is well understood that the transition to and through college is taxing. The consequences of not doing well during college can be severe. Student mental health issues are not uncommon, and students may drop out of school. Thus, it is critical to understand factors that promote resilience and that encourage students to stay in college to complete their goals. Research with younger adolescents supports the importance of examining both well-being and psychological distress in predicting academic success. Further, in a study of first-generation students, adjustment to college was predicted by social support and depression and affected life satisfaction. Given the wealth of research supporting a connection between social support, self-esteem, and depression in predicting life satisfaction and research supporting the importance of similar factors in college success, it is probable that these same factors will play a role in predicting satisfaction with college.

Thus, the purpose of this study is to investigate the role of self-esteem and depression separately as mediators in the relationship between social support and satisfaction with college. Further, social support is expected to have an indirect effect on satisfaction with college through self-esteem and depression together, [24]. Individuals with higher social support will have higher self-esteem, which, in turn, will reduce their levels of depression, and thereby increase their satisfaction with college (See FIG. 1).

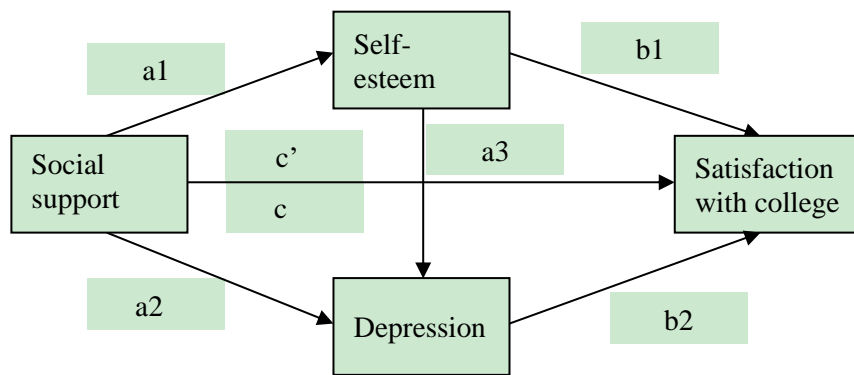


FIG. 1. Full multiple mediator model.

4. Method

4.1 Participants

Data were gathered from a survey conducted at a university campus in Beijing, China between 2007 and 2010. This university is characterized by the disciplines of economics, management, and law and directly under the Ministry of Education. There were about 8,000 full-time undergraduates during the study period from 2007 to 2010. In each of the four years, the same questionnaire survey was administered to about 1,000 randomly selected students in the Fall Semester (October and November). A total of 3,775 students evenly from all the four years (freshman, sophomore, junior, and senior) participated in the questionnaire survey. The sample consisted of 1,407 males (37.3%) and 2,368 females (62.7%) with a mean age of 19.71 years ($SD=1.44$). The gender ratio of the sample exactly represents that of the student population in the university.

4.2 Materials and procedure

The survey, which was approved by the IRB, was administered to students identified through random sampling. The response rate was about 90% every year. There are over 8,000 undergraduate students enrolled in the university. Thus, though it is

possible that some students were randomly selected more than once over the four-year period, this is likely a small group of participants. The survey was completed on paper in large classroom settings with two trained staff members to answer any questions raised by the participants and to ensure their confidential and independent responding. Following written informed consent, students completed demographic items and the following measures:

Social Support: Social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS) [25]. The MSPSS was developed in the United States to assess subjective social support and has been translated into Chinese in prior studies. The scale comprises 12 items assessing three sources of support: Family, friends and significant others and is scored on a seven-choice scale for each item ranging from 1 (very strongly disagree) to 7 (very strongly agree). Higher scores indicate stronger perceived social support. The Chinese version of the MSPSS was found to have excellent reliability and validity in adolescents [26], patients [27] and college students [28]. In the present sample, the Cronbach alpha coefficient was .90 (See TABLE 1 for means and standard deviations of all measures).

TABLE 1. Gender comparison of the major variables: Mean and standard deviation.

Variable	Total (N=3,775)	Male (n=1,407)	Female (n=2,368)	<i>t</i>	<i>p</i>
Gender (% females)	62.7				
Age (year)	19.71 (1.44)	19.80 (1.46)	19.68 (1.45)	2.086	0.037**
Self-esteem	29.67 (3.86)	29.81 (4.05)	29.59 (3.74)	1.402	0.161
Depression	27.68 (20.40)	27.70 (21.65)	27.67 (19.67)	0.032	0.974
Social support	63.90 (11.29)	61.94 (12.00)	65.04 (10.71)	-6.987	<0.001***
Satisfaction with college	19.47 (4.42)	19.07 (4.05)	19.21 (4.56)	-0.043	0.890

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Self-esteem: Self-esteem was measured by the Rosenberg Self-esteem Scale [29], which is a 10-item scale previously translated into Chinese to measure global self-esteem through five positively worded and five negatively worded items with four choices for each item ranging from 1 (strongly disagree) to 4 (strongly agree). Scores range from 10 to 40, with higher scores indicating higher self-esteem. The Chinese version of RSE has shown to be a well-constructed measure in Chinese population [28]. In the present sample, the Cronbach alpha coefficient was .79.

Depression: Depression was measured with the Center for Epidemiological Studies-Depression Scale (CES-D) [30], which is a 20-item self-report scale developed to assess current levels of depressive symptoms in the general population that has been previously translated into Chinese. Each item (four reverse scored) asks how frequently a specific symptom was experienced in the past week with eight choices: 0 none of the time; 1, 1 day; 2, 2 days; 3, 3 days; 4, 4 days; 5, 5 days; 6, 6 days and 7, 7

days. Total scores can range from 0 to 140, with higher scores representing greater depressive symptoms [30]. The Chinese version of CES-D has been shown to have high reliability and validity [31,28]. In the present sample, the Cronbach alpha coefficient was .90.

Satisfaction with College: Satisfaction with college was measured with an 11-item scale developed to assess the undergraduate students' satisfaction with the campus environment of living and learning. The scale involves campus environment, accommodation, canteen, bathhouse, health care services in university hospital, cultural life, campus security, campus network function, classroom environment, sport and entertainment facilities and library. Each item has three options: (1) unsatisfied, (2) satisfied, and (3) very satisfied. Higher scores indicate higher satisfaction. In the present sample, the Cronbach alpha coefficient was .76.

4.3 Analytic strategy

The proposed multiple-mediator model in the present study contains two simple mediator models of the relationship between social support and satisfaction with college: one where self-esteem is the mediator and another where depression is the mediator. We used two different techniques to test the two simple mediator models and one multiple-mediator model. First, we used the Baron and Kenny [32] method to test the two simple mediator models individually. This method is a widely used and understood way to test mediation using only multiple linear regressions.

Referencing the paths in FIG. 1, we used hierarchical linear regression to determine whether social support was related to satisfaction with college (path c), if social support was significantly related to each mediator (paths a1 and a2), and whether each mediator was significantly related to satisfaction with college (paths b1 and b2). Full mediation occurs when the relationship between the predictor variable and the outcome variable is no longer statistically significant once the mediator is entered into the model [32]. Partial mediation is observed if the strength of the association between the predictor and outcome variable is reduced when the mediator is included in the model but is still greater than zero [32].

Second, we used the Amos16.0 statistical package to perform a path analysis to address hypothesis 2. We first interpreted the hypothesized model [33] when conducting the path analysis procedures. The maximum likelihood method was used to test the model's goodness of fit.

The goodness of fit index is expressed by the Chi-square value, the ratio of Chi-square with degrees of freedom, the Normed Fit Index (NFI) [34], the Normed Fit Index (NFI) [35] and Root-Mean-Squared Error of Approximation (RMSEA); [36]. Based on Hou, Wen, and Chen [37], the following criteria were used to determine acceptable fit of the models, with $\chi^2/df < 2$, both NFI and CFI > 0.90 (approximate to 1), and RMSEA < 0.08 .

Then a bootstrap estimation procedure (with a bootstrap sample of 5,000 specified) was used to test the significance of the mediated effects and to produce bias-corrected percentile confidence intervals [38]. Finally, the size of the mediating effect was calculated.

5. Results

5.1 Correlations among variables

Bivariate correlations were completed to examine the relations among all variables to confirm expected relationships (See TABLE 2).

TABLE 2. Correlations among all variables in the study.

Variables	1	2	3	4
1. Social support	1			
2. Self-esteem	.36	1		
3. Depression	-.40	-.50	1	
4. Satisfaction with college	.09	.08	-.12	1

Note: All correlations are significant at the .001 level.

5.2 Simple mediation

First, the direct effect of social support on satisfaction with college was significant (path c; $\beta=0.091$, $p<0.001$).

TABLE 3 presents the results of the regression analysis testing the simple mediator effects of self-esteem and depression. In the model with self-esteem as the only mediator, there were significant effects of social support on self-esteem (path a1: $\beta=0.359$, $p<0.001$) and self-esteem on satisfaction with college (path b1: $\beta=0.075$). The effect of social support on satisfaction with college was reduced, but was still significant, when controlling for the effects of self-esteem (path c'1: $\beta=0.075$, $p<0.001$). This result indicates partial mediation of self-esteem on the relationship between perceived social support and satisfaction with college.

In a model with depression as the only mediator, there were significant effects of social support on depression (path a2: $\beta=-0.393$, $p<0.001$) and depression on satisfaction with college (path b2: $\beta=-0.130$, $p<0.001$). The effect of social support on satisfaction with college was reduced, but was still significant, when controlling for the effects of depression (path c'2: $\beta=0.048$, $p=0.006$), thus indicating partial mediation of depression on the relationship between social support and satisfaction with college. However, when self-esteem and depression were simultaneously entered in the mediation analysis, only depression was found to mediate the relation between social support and satisfaction with college.

TABLE 3. Regression analyses testing the simple mediator effects of self-esteem and depression.

	Dependent variable	Independent variable	B	SE	β	<i>p</i>	R ²
Self-esteem							
step 1	Satisfaction with college	Social support(c)	.035	.006	.092	<0.001	.008
step 2	Self-esteem	Social support(a1)	.119	.005	.359	<0.001	.129
step 3	Satisfaction with college	Self-esteem(b1)	.087	.019	.075	<0.001	.006
	Satisfaction with college	Self-esteem	.056	.020	.048	.006	
		Social support(c'1)	.029	.007	.075	<0.001	.010
Depression							
step 1	Satisfaction with college	Social support(c)	.035	.006	.092	<0.001	.008
step 2	Depression	Social support(a2)	-.357	.014	-.393	<0.001	.155
step 3	Satisfaction with college	Depression(b2)	-.055	.007	-.130	<0.001	.017
	Satisfaction with college	Depression	-.047	.007	-.111	<0.001	
		Social support(c'2)	.018	.007	.048	.006	.019

5.3 Multiple mediation

Path analysis procedures in Amos 16.0 were used to examine the significance of the multiple mediating effects of self-esteem and depression on the relationship between social support and satisfaction with college. For the proposed multiple-mediator model, see FIG. 1.

The examination of parameter estimates indicated that all the direct path coefficients were significant in the proposed directions, except for the path from self-esteem ($\beta=.01$, $SE=.007$, $p=.700$) to satisfaction in college, and these results suggested that self-esteem and depression may play a partial mediating role in the relation between social support and satisfaction with college. This is similar to the regression analysis results, that when self-esteem and depression were simultaneously entered in the mediation analysis, only depression was found to mediate the relation between social support and satisfaction with college. So the path from self-esteem to satisfaction with college was removed, and the results revealed a very good fit to the data: $\chi^2=.149$, $df=1$; $\chi^2/df=.149$, $P=.700$; $RMR=.028$, $TLI=1.003$, $CFI=1.000$, $NFI=1.000$, $AGFI=1.000$ and $RMSEA=.000$. Consequently, the partial mediation model regarding the relation between social support and satisfaction with college was supported. For the standardized path coefficients of the final multiple-mediator model, (See FIG. 2).

The mediating effects of self-esteem and depression were tested for significance using the Bootstrap estimation procedure. If the 95% confidence interval for the indirect effect estimate does not include zero, it can be concluded that the indirect effect is

statistically significant at the 0.05 level [39]. The mediating effects of self-esteem and depression and their associated 95% confidence intervals are displayed in TABLE 4.

The results indicated that social support has a direct effect on satisfaction with college and exerted an indirect effect on satisfaction with college through the simple mediating effect of depression and the three-path mediating effect of self-esteem-depression. Social support exerted its effect on depression through both the direct.

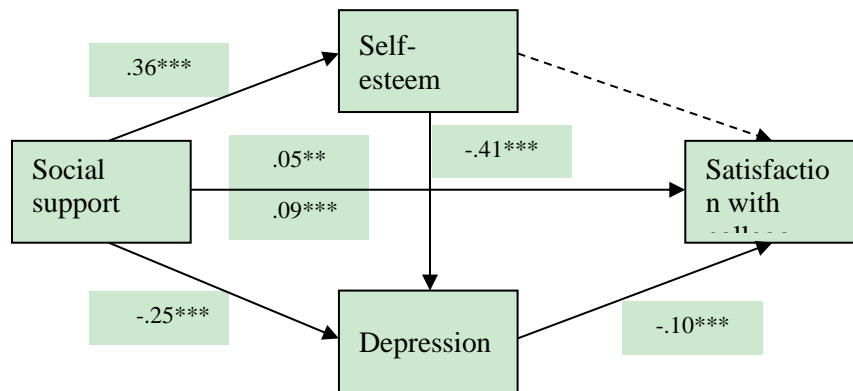


FIG. 2. Multiple-mediator model with path coefficients. ** $p < .01$; *** $p < .001$.

Path coefficients are standardized regression weights. The dashed line indicates insignificant path and the indirect path via self-esteem. Self-esteem did not have a direct influence on satisfaction with college but exerted an indirect effect via depression.

TABLE 4. Bootstrapping indirect effects and 95% confidence intervals (CI) for the multiple-mediator model.

Model pathways	Point estimate	95% CI	
		Lower	Upper
Social support → Self-esteem → Depression	-.148	-0.204	-0.094
Social support → Depression → Satisfaction with college	.025	0.019	0.030
Self-esteem → Depression → Satisfaction with college	.041	0.026	0.058
Social support → Self-esteem → Depression → Satisfaction with college	.015	0.009	0.021

6. Discussion

The current study analyzed the importance of social support in satisfaction with college and tested a multistep mediational model. In the first set of analyses, we used Baron and Kenny’s [32] causal steps approach for simple mediation to test self-esteem and depression separately in single-mediator model. The second set of analyses tested a multiple-mediator models.

Consistent with predictions, the tests of simple mediation indicated a partial mediation effect for self-esteem and depression in the social support and satisfaction with college relationship. However, when self-esteem and depression were simultaneously entered in the mediation analysis, only depression was found to mediate the relation between social support and satisfaction with college.

Results of a bootstrapping approach [40] provided support for the hypothesized multiple-mediation model. It indicated that social support influences satisfaction with college via three pathways: one direct path from social support to satisfaction with college, and two indirect paths:

1. social support→depression→satisfaction with college
2. social support→self-esteem→depression→satisfaction with college.

Findings of the study show the second path is significant. This result is different from the many findings that self-esteem mediates the relationship between social support and overall satisfaction with life [4,10-13]. This path indicates that individuals with high social support are apt to have high levels of self-esteem, which may lower their depression and in turn, lead to high satisfaction with college. That is, self-esteem is a mediator between social support and depression while depression partially mediates the relationship between self-esteem and satisfaction with college. In the current study self-esteem was found to not mediate the link between social support and satisfaction with college. This result may be because self-esteem did not have a significant direct effect on satisfaction with college but exerted a significant positive indirect effect via depression.

The present results indicated that self-esteem significantly predicted depression. This is consistent with the study of Sedikides, Rudich, Gregg, Kumashiro, and Rusbult [41], which reported that self-esteem was a significant mediator between narcissism and psychological health (i.e., depression, loneliness, subjective well-being, anxiety).

Overall, then, the results of this study supported the hypothesized extension of research on overall satisfaction with life to satisfaction with college more specifically. The present study also extends prior work examining college student adjustment and mental health from clinical to non-clinical samples. Thus, results suggest that these measures of psychological well-being have an important effect on student satisfaction in a diagnosed sample. This study, then, provides additional evidence for the need for colleges to address student well-being in a proactive manner. Interventions that promote social support, reduce depression, and increase self-esteem, which are, of course, worthy goals unto themselves, may also promote student success and satisfaction with college, potentially leading to increased academic performance and likelihood of degree completion.

7. Limitations and Future Directions

Several limitations to the present study must be acknowledged. First, the present study tested mediation in a cross-sectional design; a prospective study would provide a stronger test of the hypothesized mediating relationships, especially testing the assumed directional link between self-esteem and depression. Further, such a model could also examine the hypothesized relationships with college retention and success in college. Second, although the study did find significant effects for the hypothesized model, the observed effects were small, which may imply that there are other factors that also mediate the relationship between social support and satisfaction with college. There may also be potential moderators of these mediated

relationships. Future studies could hypothesize and test other potential mediators and moderators. In this case, academic ability and success in college coursework may also influence self-esteem, depression, and satisfaction in college. Finally, the data in this study were collected only through self-report scales. Future studies should integrate multiple assessment methods to further strengthen the validity of the findings.

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