



How Social Support Influences Negative Emotions in College Students: The Mediating Role of Intentional Self-regulation and Dispositional Hope

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Abstract: Objective—To explore the relationship between individual social support and negative emotions on the basis of understanding the depression, anxiety and stress of college students in the new era, and to further explore the functional path between the two. Methods A questionnaire survey was conducted among 437 randomly selected college students using the short-form version of the Depression Anxiety Stress Scales (DASS-21), the Perceived Social Support Scale (PSSS), the Intentional Self-Regulation Questionnaire, and the Adult Dispositional Hope Scale (ADHS). Results—(1) The scores of DASS-21, PSSS, Intentional Self-Regulation Questionnaire and ADHS were (14.780±10.046), (63.183±10.559), (36.144±4.093) and (22.238±3.255), respectively; (2) Perceived social support, intentional self-regulation, and dispositional hope exhibited significant positive correlations with one another ($r=0.547 \sim 0.680$; $P_s<0.001$). Additionally, these variables were significantly negatively correlated with negative emotions ($r=-0.596 \sim -0.482$; $P_s<0.001$). Conclusion—The perceived social support among college students in the new era has a significant impact on their negative emotions. Meanwhile, intentional self-regulation and dispositional hope play a chain mediating role between perceived social support and negative emotions.

Keywords: perceived social support, intentional self-regulation, dispositional hope, negative emotions, college students.

1. Introduction

The new era not only presents college students with increased opportunities but also introduces a range of challenges. With the rapid development of the social economy and the ongoing occurrence of health-related incidents, college students face heightened pressures and conflicts during their growth and development, leading to an increasing prevalence of mental health issues. As a cornerstone for the future development of the nation, the mental health of college students has consistently been a focal point for both the government and society. According to the 2022 report on the Mental Health of College Students released by the Institute of Psychology of the Chinese Academy of Sciences and Social Sciences Academic Press, approximately 21.48% and 45.28% of college students in China experience risks associated with depression and anxiety, respectively[1]. If college students are unable to alleviate the internal and external sources of stress, depression, and anxiety over an extended period, they are likely to experience mental health issues[2,3], which can increase the risk of self-harm and suicide[4] and significantly hinder their growth and development. Therefore, it is both necessary and important to address the negative emotional states prevalent among college students in the new era and to investigate their protective factors and underlying mechanisms. This study aims to explore these aspects and provide valuable insights for mental health education targeted at college students.

Social support encompasses both the quantity and quality of assistance that an individual receives from their social network[5]. Social support can mitigate anxiety, depression, and other negative emotional states as well as sleep disorders[6]. Furthermore, social support not only directly fosters positive coping mechanisms in individuals but also serves to buffer against fear, anxiety, and other detrimental psychological effects, thereby indirectly enhancing an individual's capacity for positive coping[7]. Additionally, adopting a positive coping style has been shown to diminish physiological and psychological stress responses while promoting healthy mental development[8]. Hence, this study proposes hypothesis H1: Social support exerts a negative predictive effect on negative emotions.

Hope, as a positive psychological quality, is a personality trait that significantly influences emotional well-being[9]. Previous researches indicated that hope can serve as a negative predictor of anxiety and depression[10], while simultaneously enhancing individuals' resilience against these conditions by elevating their levels of hope[11,12]. Furthermore, hope is believed to contribute to the development of psychological capital and mitigate individual stress responses[13]. Xiang et al. demonstrated through a cross-lagged model that perceived social support and hope exhibit both stable horizontal correlations and mutually predictive vertical relationships[14]. Consequently, this study proposes hypothesis H2: Hope serves as an

intermediary variable in the relationship between social support and negative emotions.

Snyder et al. defined hope as a motivational state within the framework of the cognitively dynamic model, which comprises agency thinking and pathways thinking[15]. The former pertains to an individual's belief in their ability to achieve a goal through a planned approach, while the latter refers to the conviction that one is capable of identifying ways to attain that goal. Intentional self-regulation (ISR) refers to a series of actions in which individuals select strategies based on their capabilities and actively coordinate various resources within their context to exercise self-control while pursuing their goals. It is evident from this that both hope and ISR are associated with the attainment of individual goals. From the perspective of social cognitive theory, Yi et al. posited that hope, as an adaptive positive cognitive mode, precedes ISR in influencing behavior[16]. While research by Lerner et al. demonstrated that the ability for ISR serves as an intrinsic strength that aids adolescents in developing positive personality traits[17]. From the perspective of hope as a positive psychological attribute, ISR is expected to facilitate the development of an individual's sense of hope. Moreover, Zhao et al.'s study provided more direct evidence that social support can serve as a positive predictor for ISR[18]. Thus, this study proposes hypothesis H3: Intentional self-regulation and hope may play a chain mediating role between social support and negative emotions.

2. Materials and methods

2.1 Participants and procedures

A total of 450 questionnaires were distributed to college students via the online platform "Credamo". All participants volunteered to take part in the study after signing informed consent forms. After excluding respondents who failed in attention test questions, 437 valid responses were obtained, resulting in an effective response rate of 97.111%. Among the valid responses, there were 108 male students and 329 female students, including 17 vocational college students, 306 undergraduate students, and 114 postgraduate students. The age range of participants was from 18 to 30 years old, with a mean age of (21.823 ± 2.075) years.

2.2 Measures and analyses

2.2.1 Measures

2.2.1.1 Basic Information Questionnaire

The Basic Information Questionnaire was used to collect demographic information, including gender, age, education background, family situation, etc.

2.2.1.2 Perceived Social Support Scale (PSSS)

This study utilized the Chinese version of the PSSS, which was translated and revised by Jiang[19]. It comprised 12 items, including 3 dimensions of family support (3, 4, 8, 11), friend support (6, 7, 9, 12) and other support (1, 2, 5, 10), and rated on a 7-point Likert scale ("1" = "strongly disagree", "7" = "strongly agree"), without reverse scoring items. The total score for all twelve items represented the overall perceived social support. The higher the total score, the better the degree of social support felt by the individual. In consideration of the fact that the research subjects were college students, the accompanying items were adjusted accordingly. The phrase "such as leaders, colleagues, relatives, etc." was revised to "such as teachers, classmates, relatives, etc." The internal consistency coefficient of this scale in this study was 0.912, and the internal consistency coefficient for each subscale ranged from 0.863 to 0.888.

2.2.1.3 The short-form version of the Depression Anxiety Stress Scales (DASS-21)

This study adopted the simplified Chinese version of the DASS-21 revised by Gong[20]. The scale consisted of 21 items, with each of the three dimensions of depression (3, 5, 10, 13, 16, 17, 21), anxiety (2, 4, 7, 9, 15, 19, 20), and stress (1, 6, 8, 11, 12, 14, 18) containing 7 items. It adopted a 4-point Likert scale, ranging from "0-3" to indicate "does not meet", "sometimes meets", "often meets", and "always meets". The total score of the 21 items was used to measure an individual's negative emotional state (depression, anxiety, and stress) in the past week, with higher scores indicating stronger negative emotional experiences. The sum of the scores of the 7 items in each dimension multiplied by 2 given the score of the subscale. The higher the score, the more severe the depression, anxiety, or stress. The internal consistency coefficient of the scale in this study was 0.930, and the internal consistency coefficients of each subscale ranged from 0.809 to 0.858.

2.2.1.4 Intentional Self-regulation Questionnaire

The Chinese version of the Intentional Self-Regulation Questionnaire, revised by Dai et al. [21], was utilized in this study. This questionnaire reflected an individual's behavior over the past six months in relation to goal achievement. It comprised 9 items rated on a 5-point Likert scale ("1" = "very inconsistent", "5" = "very consistent"), with no reverse scoring items. A higher score indicated better intentional self-regulation ability. The internal consistency coefficient of this questionnaire in this study was 0.784.

2.2.1.5 Adult Dispositional Hope Scale (ADHS)

The simplified Chinese version of the ADHS translated by Ren[22] was utilized. The scale comprised 12 items, employing a 4-point Likert scale ranging from "1" to "4" which correspond to "absolutely wrong", "mostly wrong", "mostly right" and "absolutely right." Notably, there were no reverse-scoring items included. Among these items, four (1, 4, 6, and 8) evaluated pathways thinking; another four (2, 9, 10, and 12) assessed agency thinking; the remaining four served as filler items designed to redirect participants' attention and were excluded from the total score calculation. The higher scores indicated a greater level of individual trait hope. In this study, the internal consistency coefficient for the entire scale was 0.808, and the internal consistency coefficients for the two subscales were 0.578 and 0.792, respectively.

2.2.2 Data analysis

Analyses were conducted using SPSS 27.0 and the built-in Andrew F. Hayes macro program PROCESS V4.1.

3. Results

3.1 Testing common method biases

The Harman single factor test was employed to assess common method bias for each variable. The results of the exploratory factor analysis revealed that a total of 10 factors with eigenvalues greater than 1 were extracted. Notably, the variance explained by the first factor was 30.926%, which is below the critical threshold of 40%. This finding indicated that there was no significant common method biases present in this study.

3.2 Descriptive statistics and correlation analysis

3.2.1 Descriptive statistical analysis

The average scores of the DASS-21, PSSS, Intentional Self-Regulation Questionnaire and ADHS among college students participating in this study were presented in Table 1. In addition, the corresponding averages for the three sub-dimensions of depression, anxiety, and stress were (8.439±7.559), (8.860±6.829) and (12.261±7.656), respectively. Further statistical analysis indicated that only the average score for anxiety was significantly higher than its critical value ($t(436) = -4.748, P < 0.001$; a score of ≤ 9 for depression, ≤ 7 for anxiety, and ≤ 14 for stress is considered normal). This finding suggested that while college students in the new era exhibited favorable conditions regarding depression and stress levels, they do showed a mild tendency towards anxiety. Additionally, results from independent sample T-test revealed that male students reported significantly higher social support within their family dimension compared to female students ($t(435) = 3.320, P < 0.001$).

Table 1. Descriptive statistics and correlation analysis of variables(N=437)

Variables	M±SD	1	2	3	4
1 Social support	63.183±10.559	1			
2 Negative emotions	14.780±10.046	-0.489***	1		
3 Intentional self-regulation	36.144±4.093	0.547***	-0.482***	1	
4 Dispositional hope	22.238±3.255	0.587***	-0.596***	0.680***	1

Note: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, M: mean, SD: standard deviation, same below.

3.2.2 Analysis of correlations

Pearson rank correlation analysis was performed on the total scores of each variable, with the results presented in Table 1. A significant correlation among the variables was observed. Specifically, perceived social support, intentional self-regulation, and dispositional hope exhibited significant negative correlations with negative emotions, while these same variables demonstrated significant positive correlations with one another. These findings fulfilled the criteria necessary for further testing of mediating effects.

3.3 Testing mediating model

The PROCESS V4.1 plug-in of SPSS 27.0 was employed to examine the mediating effects of intentional self-regulation and dispositional hope, following Model 6, while controlling for relevant confounding factors such as gender, age, education, and family situation. As presented in Table 2, the results from the stepwise regression analysis revealed that in the first step of the regression test, social support exhibited a significant negative predictive effect on negative emotions ($\beta = -0.378, P < 0.001$). In the second step, social support demonstrated a significant positive predictive effect on intentional self-regulation ($\beta = 0.194, P < 0.001$). In the third step, social support also showed a significant positive predictive effect on dispositional hope ($\beta = 0.068,$

P<0.001), while intentional self-regulation had a notable positive predictive effect on dispositional hope ($\beta=0.393$, $P<0.001$). In the fourth step, when social support, intentional self-regulation, and dispositional hope were considered together to predict negative emotions, intentional self-regulation did not exhibit a statistically significant predictive effect on negative emotions ($\beta=-0.182$, $P>0.05$). Conversely, dispositional hope displayed a significant negative predictive effect on negative emotions ($\beta=-1.274$, $P<0.001$), and notably, the regression coefficient for social support regarding negative emotions changed and remained statistically significant ($\beta=-0.158$, $P<0.01$). In conclusion, both intentional self-regulation and dispositional hope served as chain mediators between social support and negative emotions.

Further, the Bootstrap estimation was employed to validate the aforementioned mediating effects, with 1000 sampling iterations. As illustrated in Table 3, both intentional self-regulation and dispositional hope served as mediators in the relationship between social support and negative emotions. The direct effect value was -0.158, while the total indirect effect value was -0.220. The direct effect accounted for 41.799% of the total effect value, whereas the total indirect effect represented 58.201% of this overall impact. Specifically, there were two pathways through which the indirect effects occurred: (1) an indirect path from "social support→dispositional hope→negative emotions", which constituted 23.016% of the total effect; (2) an indirect path from "social support→intentional self-regulation→dispositional hope→negative emotions", accounting for 25.661% of the total effect. Based on these findings, a chain mediating effect model can be constructed, as depicted in Figure 1.

Table 2. Test results of the mediating effect by PROCESS stepwise regression(N=437)

Outcome variables	Predictor variables	R	R ²	F	β	t
Negative emotions	Social support	0.520	0.270	26.572	-0.378	-7.936***
Intentional self-regulation	Social support	0.584	0.342	37.172	0.194	10.547***
Dispositional hope	Social support	0.745	0.555	76.500	0.068	5.045***
	Intentional self-regulation				0.393	12.467***
Negative emotions	Social support	0.630	0.397	35.286	-0.158	-3.154**
	Intentional self-regulation				-0.182	-1.376
	Dispositional hope				-1.274	-7.340***

Table 3. Bootstrap estimation results for the chain mediating effect of the model (N=437)

Effect type	Paths	Effect size	BootSE	Bootstrap 95%CI		Percentage of relative effect
				Lower limit	Upper limit	
Direct effect	Social support→Negative emotions	-0.158	0.050	-0.256	-0.060	41.799%
	Social support→Dispositional hope→Negative emotions	-0.087	0.023	-0.135	-0.046	23.016%
Indirect effect	Social support→Intentional self-regulation→Dispositional hope→Negative emotions	-0.097	0.022	-0.146	-0.056	25.661%
Total indirect effect		-0.220	0.040	-0.305	-0.146	58.201%
Total Effect		-0.378	0.048	-0.471	-0.284	

Note: CI:confidence interval.

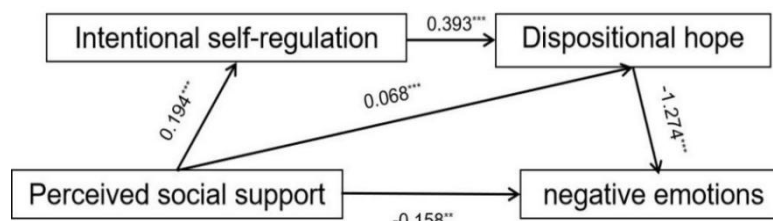


Figure 1. The chain mediating effect model of social support on negative emotions

4. Discussion

4.1 The relationship between social support and negative emotions

As is widely known, social support, as an external resource, plays a crucial role in influencing an individual's mental health. Numerous studies have demonstrated that perceived social support has a more direct impact on negative emotions—

such as anxiety and depression—compared to objective social support[23,24]. The findings of this study further corroborate the conclusion that perceived social support can serve as a negative predictor of negative emotions. High-perceptive social supporters are capable of recognizing and receiving greater psychological support and assistance. This ability not only enables them to better cope with emergency situations and mitigate the occurrence of negative emotions but also facilitates a quicker psychological recovery from such emotions. The findings of this study indicated that the overall score for perceived social support among college students fell within the high support range[25]. This suggested that they experienced a favorable level of social support, contributing to their positive emotional well-being. Although the anxiety scores were significantly higher than the critical threshold, subsequent in-depth interviews conducted after the survey revealed that most students were still able to study and live normally. Furthermore, they demonstrated a positive understanding and mindset when confronted with current competitive pressures. This resilience can be attributed to the increasing emphasis on mental health education nationwide in recent years, particularly the relatively well-established mental health education systems within colleges and universities. Meanwhile, the findings of this study indicated that male college students reported significantly higher levels of family social support compared to their female counterparts. This suggests that greater emphasis should be placed on researching the family support systems of female college students. It is essential to initiate more efforts at the familial level when to enhance their perceived social support.

4.2 The mediating role of dispositional hope

Previous studies have demonstrated that social support during adolescence can serve as a positive predictor of self-esteem[26]. Specifically, stronger social support is associated with higher levels of self-esteem, which in turn influences an individual's sense of hope[27]. Hope, recognized as a positive psychological attribute, plays a crucial role in mitigating negative emotions such as anxiety and depression[28,29]. The findings of this study indicated that dispositional hope served as an independent mediator between perceived social support and negative emotions. On one hand, hope can mitigate the psychological impact of adverse life events[10], as it can enable individuals to focus on higher-value goals and adopt a more proactive stance in response to current challenges. Individuals with a strong sense of hope are more inclined to perceive life's difficulties as challenges to be confronted[30]. On the other hand, hope can foster happiness through positive expectations[31], thus diluting negative experiences, helping them to preserve a healthy psychological state. Undoubtedly, not all individuals can attain this ideal state. Previous studies have demonstrated that individuals with low levels of hope tend to exhibit relatively low levels of self-esteem, which may impede their social activities and contribute to negative psychological states such as increased anxiety and depression[32]. Therefore, in the endeavor to cultivate positive psychological qualities among college students in the new era, it is essential to consider relevant influencing factors and implement comprehensive psychological quality education.

4.3 The chain mediating effect of intentional self-regulation and dispositional hope

The findings also indicated that intentional self-regulation and dispositional hope functioned as a chain mediating mechanism between perceived social support and negative emotions. However, it was observed that intentional self-regulation alone does not serve as an independent mediator in the relationship between the two. It can be seen that, first of all, perceived social support, as an external protective factor, can not only directly predict negative emotions, but also partly affect negative emotions through internal positive psychological qualities. In other words, the more college students perceive social support, the higher the level of intentional self-regulation, and then the higher the level of dispositional hope, which can better alleviate negative emotions. This once again confirmed the results of Zhao et al. that social support positively predicts intentional self-regulation[18]. At the same time, it also reinforced the conclusion of Lerner et al., that intentional self-regulation ability can help adolescents form good personality qualities[17]. Secondly, intentional self-regulation does not directly influence negative emotions; rather, it must be integrated with dispositional hope to exert an impact on negative emotions. Furthermore, in examining the effect of social support on negative emotions, intentional self-regulation was found to have a preceding effect relative to hope. This finding contrasts with the research results of Yi et al., who posited that hope would precede intentional self-regulation[16]. The discrepancy may arise from the differing outcome variables: this study focused on emotional outcomes, while their study concentrated on behavioral outcomes. Intentional self-regulation is fundamentally a behavioral construct, whereas hope serves as a motivational factor; thus, their interactive relationship varies depending on the nature of the outcome variables involved. This highlights the significance of fostering positive psychological qualities among college students. Compared with regulating behavior, positive psychological qualities can more directly mitigate individual emotional responses and enhance mental health.

4.4 Limitations

Although the findings of this study possessed significant theoretical and practical implications, several limitations must

be acknowledged. Firstly, this study primarily examined the relationships between variables through self-report scales and questionnaires. Future studies should incorporate experimental designs to further validate these associations. Secondly, as a cross-sectional study, it was unable to establish causal relationships; thus, subsequent research could benefit from longitudinal time-series analyses. Lastly, based on the statistical results obtained, there remained certain effects that cannot be accounted for by the mediating roles of intentional self-regulation and hope. Further exploration is warranted to develop a new model in future investigations.

5. Conclusion

(1) Perceived social support exhibited a significant negative correlation with negative emotions. (2) Dispositional hope functioned as an independent mediator between perceived social support and negative emotions. (3) Perceived social support indirectly predicted negative emotions through the chain mediating effect of intentional self-regulation and dispositional hope. Therefore, colleges and universities should pursue effective strategies aimed at enhancing the positive psychological strengths and attributes of college students to alleviate their negative emotions.

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