

The Relationship between Social Support and Suicidal Ideation Among College Students: A Moderated Mediation Model

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Abstract: *Objective:* To investigate the relationship and its mechanism between social support and suicidal ideation among college students. *Methods:* A total of 530 college students were surveyed using the Social Support Rating Scale, Beck Suicidal Ideation Scale, Self-Control Scale and Reasons for Living Inventory for Adolescents. *Results:* (1) Self-control was a mediating variable between social support and suicidal ideation, with an effect value of -0.80, accounting for 37.91% of the total effect; (2) Reasons for living moderated the second half of the mediating effect of self-control ($\beta = 0.436, t = 3.647, P < 0.003$). *Conclusion:* Social support influences suicidal ideation through the mediating role of self-control and the moderating role of reasons for living.

Keywords: Social support, Suicidal ideation, Self-control, Reasons for living, Moderated mediation.

1. Introduction

Suicide is a global public health challenge. According to the latest statistics from the World Health Organization, approximately 800,000 people worldwide lose their lives by suicide each year [1]. In China, suicide is also a leading cause of unnatural death among university students [2]. Suicidal behaviour usually involves three stages: suicidal ideation, suicide attempt and suicide death. Among them, suicidal ideation, as one of the most common mental health problems among college students, has a detection rate as high as 10.72% [3], which occupies a crucial position in the field of suicide prevention research among college students and is an important early warning signal before the occurrence of suicidal behaviour. Suicidal ideation refers to an individual who has developed a suicidal thought or plan, but has not yet acted on it [4]. According to the suicidal stress-vulnerability model, researchers generally believe that the development of suicidal ideation is the result of the intertwined and combined effects of stressors, protective factors (e.g. social support, etc.) and individual characteristics.

However, much of the previous research has focused on identifying risk factors for suicidal ideation, and protective factors for reducing suicidal ideation have been less well explored. Currently, several studies have demonstrated that social support, reasons for living, and self-control can reduce suicidal ideation, yet few studies have explored the relationship between these protective factors. Social support, as an important protective factor, encompasses care, understanding, and help from family, friends, and other social relationships [5]. It includes not only objective material assistance and the presence of social networks, but also involves the individual's subjective experience of support and the degree of utilisation [6]. Research has shown that social support is closely related to the mental health of college students, and enhancing social support is an effective strategy for reducing suicidal ideation [7]. Self-control refers to an individual's ability to adhere to long-term goals and restrain immediate impulses in the face of temptation [8]. Studies have shown that developing self-control before adulthood

contributes to physical and mental health in adulthood [9]. Also, individuals with greater self-control have a relatively lower propensity for suicidal ideation [10]. In addition, social support can indirectly contribute to problematic behaviours such as suicidal ideation by influencing an individual's self-control [11]. Reasons for living, as another important protective factor, refers to the belief system that enables individuals to maintain positive cognition and prevent suicidal ideation or behaviour in the face of setbacks [12]. It not only buffers against suicidal risk factors, but also interacts with many factors that collectively influence an individual's suicidal ideation [13]. Studies have shown that enhanced reasons for living are closely related to reduced suicidal ideation and are an important resource for suppressing suicidal ideation in college students [14,15].

In summary, although existing studies have separately explored the effects of social support, self-control and reasons for living on suicidal ideation, no study has yet delved into the possible roles of self-control and reasons for living in the relationship between social support and suicidal ideation. In view of this, the present study plans to construct a moderated mediation model (Figure 1) with college students as the research object to explore the relationship among these four in depth, aiming to provide scientific basis for improving the mental health of college students and reducing the suicide rate.

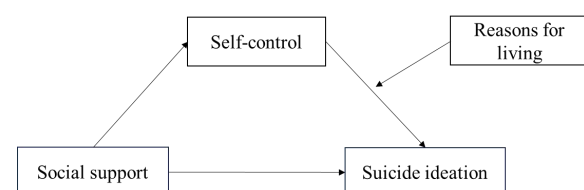


Figure 1: Moderated mediation model

2. Materials and Methods

2.1 Participants

In this study, a total of 557 questionnaires were distributed using the Questionnaire Star platform, and a total of 27

questionnaires with the existence of response patterns and the same or contradictory answers were excluded, resulting in 530 valid questionnaires, with an effective recovery rate of 95.2%. Among them, 182 (34.34%) were male and 348 (65.66%) were female; 151 (28.4%) were in the first year of college, 60 (11.3%) were in the second year of college, 64 (12.0%) were in the third year of college, 225 (42.4%) were in the fourth year of college, and 30 (5.6%) were in the fifth year of college. This study was reviewed and approved by the Ethics Committee of the Affiliated Hospital of Shaanxi University of Chinese Medicine. (Ethics Approval No. SZFYIEC-PJ-2024, No. [72]).

2.2 Measurement

2.2.1 General information questionnaire

Includes demographic information such as grade, gender, major, whether the child is an only child, whether the child is a single parent, monthly household income, and place of birth.

2.2.2 Beck Suicidal Ideation Scale

In this study, the Beck Suicidal Ideation Scale (BSS) revised by Li Xianyun et al [16] was used, which contains 19 questions divided into two subscales: suicidal ideation and suicide tendencies. Scoring was done on a Likert 3-point scale. The intensity of suicidal ideation in this study was based on the total score of items 1-5 of the scale, and the higher the total score, the stronger the suicidal ideation. The Cronbach's alpha for this scale in this study was 0.881, which has a high internal consistency.

2.2.3 Social Support Rating Scale

This study used the Social Support Rating Scale (SSRS) developed by Xiao Shuiyuan et al [6], which consists of 10 questions designed to assess the degree of social support and its utilisation by individuals through social relationships. The scale contains three dimensions, namely objective support (3 items), subjective support (4 items) and utilisation of social support (3 items). The sum of the scores of each dimension is the total social support score, which is used to reflect the social support of the subjects, and the higher the total score, the higher the level of social support. The Cronbach's alpha of the scale in this study was 0.726, indicating that the reliability of the questionnaire was acceptable.

2.2.4 self-control scale

In this study, the self-control scale developed by Tan Shuhua et al [17] was used, with a total of 19 questions containing five dimensions: healthy habits, impulse control, resisting temptation, focusing on work and moderating entertainment. The higher the score obtained by an individual, the stronger his/her self-control ability is reflected. The Cronbach's alpha coefficient value of the scale in this study was 0.882, indicating that the reliability of the questionnaire was good.

2.2.5 Reasons for Living Inventory for Adolescents

This scale is a self-report scale [18] designed to assess adolescents' suicidal protective factors, with a total of 32

questions containing five dimensions: suicidal fear, family cohesion, optimism for the future, self-acceptance, and peer acceptance. A six-point scale from 1 (not at all important) to 6 (very important) was used. Higher scores indicate stronger reasons for survival. The Cronbach's alpha for this scale in this study was 0.97, indicating that the reliability of the questionnaire was very good.

2.3 Statistical Methods

Data were analysed using SPSS 22.0 for common method bias tests, descriptive statistical analyses of the variables, and correlation analyses, etc., and the SPSS macro PROCESS plug-in was used to test the mediating effect of self-control in the relationship between social support and suicidal ideation and the moderating effect of reasons for survival.

2.4 Common Method Bias Test

In this study, the self-report method was used to collect data and the Harman one-way test was used to test for common method bias. The results of the test showed that the eigenroots of each factor were greater than 1 and the amount of variation explained by the first principal factor was 22.73%, which was lower than the critical value of 40%, indicating that the common method bias of the study was not significant.

3. Results

3.1 Descriptive Statistics and Correlation Analysis

The results of descriptive statistics and correlation analysis are shown in Table 1. The results showed that social support, self-control, and reasons for living were significantly negatively correlated with suicidal ideation, and social support, self-control, and reasons for living were significantly positively correlated.

Table 1: Descriptive statistics and correlations among the study variables(N=530)

	M (SD)	1	2	3	4
1 Social support	35.06(6.53)	-			
2 Self-control	59.95(11.32)	0.26**	-		
3 Reasons for living	150.83(28.24)	0.40**	0.29**	-	
4 Suicide ideation	1.71(2.08)	-0.24**	-0.39**	-0.52**	-

Note. ** $P < 0.01$.

3.2 Mediation Effect Test

The results of the mediation effect test of social support are shown in Tables 2 and 3. Social support was a significant predictor of suicidal ideation ($\beta = -2.11$, $t = -5.60$, $p < 0.001$). When the mediating effect of self-control was considered, social support remained significant in predicting suicidal ideation ($\beta = -1.31$, $t = -3.58$, $P < 0.001$). Self-control was also a significant negative predictor of suicidal ideation ($\beta = -1.23$, $t = -8.56$, $P < 0.001$). The upper and lower bounds of the Bootstrap 95% confidence intervals for both the direct effect of social support on suicidal ideation and the mediating effect of self-control did not contain zero, indicating that social support not only directly predicted suicidal ideation, but also predicted suicidal ideation through the mediating effect of self-control. The direct effect (-1.31) and the mediating effect

(-0.80) accounted for 67.09% and 37.91% of the total effect, respectively.

Indirect effect	-0.80	0.18	-1.19	-0.48	37.91%
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Table 2: Mediating effects of self-control

IV	Model 1 (DV: Suicide ideation)		Model 2 (DV: Self-control)		Model 3 (DV: Suicide ideation)	
	β	t	β	t	β	t
constant	4.35	9.06***	2.34	17.04**	7.21	12.86***
Social support	-2.11	-5.60***	0.66	6.09**	-1.31	-3.58***
Self-control					-1.23	-8.56***
R ²	0.06		0.07		0.17	
F	31.35***		37.06***		54.46***	

Note. IV: independent variable, DV: implicit variable; *** $P < 0.001$, ** $P < 0.01$, * $P < 0.05$.

Table 3: Breakdown of total, direct and indirect effects

	B	Boot SE	Boot LLCI	Boot ULCI	Relative effect value (%)
Total effect	2.11	0.38	-2.85	-1.37	
Direct effect	-1.31	0.37	-2.03	-0.59	62.09%

Table 4: Moderated mediation model

	Self-control(M)				Suicide ideation(Y)			
	B	se	t	P	B	se	t	P
Constant	-0.820	0.137	-5.985	<0.001	1.551	0.441	3.521	<0.001
Social support(X)	0.655	0.108	6.087	<0.001	0.073	0.347	0.209	0.835
Self-control(M)					-0.934	0.130	-7.182	<0.001
Reasons for living(W)					-1.009	0.093	-10.832	<0.001
Interaction term(M*W)					0.436	0.120	3.647	<0.003
R ²	0.066				0.349			
F	37.055***				70.440***			

Note. *** $P < 0.001$, ** $P < 0.01$, * $P < 0.05$.

Table 5: Mediating effects of reasons for living at different levels

Reasons for living	Effect	Boot SE	Boot LLCI	Boot ULCI
(M-1SD)-0.883	-0.864	0.198	-1.289	-0.510
(M)0	-0.612	0.140	-0.904	-0.363
(M+1SD)0.883	-0.360	0.114	-0.597	-0.155
Moderated intermediation	0.286	0.091	0.129	0.488

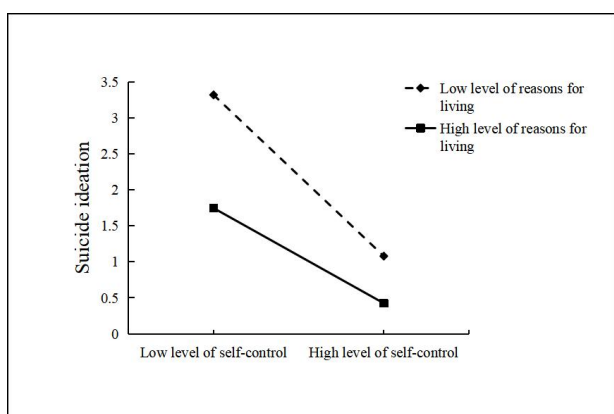


Figure 2: Moderation of the relationship between self-control and suicidal ideation by reasons for living

4. Discussion

4.1 The Effect of Social Support on Suicidal Ideation Among College Students

This study found that social support has a significant negative

3.3 Moderating Effects Test

A moderated mediation model analysis was conducted to analyse whether the mediating role of self-control between social support and suicidal ideation (second half) was moderated by reasons for living using the SPSS macro program Process Model 14. The results are shown in Figure 2, in the high survival reason group (M+1SD), self-control was significantly negatively correlated with suicidal ideation (simple slope = -0.549, $t = -3.344$, $P < 0.001$), with a Bootstrap 95% Confidence Interval of [-0.872, -0.227]; in the low survival reason group (M-1SD), self-control still negatively predicted suicidal ideation (simple slope = -1.319, $t = -7.726$, $P < 0.001$), with a Bootstrap 95% confidence interval of [-1.654, -0.984], but the trend increased. In-depth analyses revealed that the protective effect of reasons for living increased as self-control increased, and that reasons for living were particularly protective against suicidal ideation at high levels of self-control.

predictive effect on suicidal ideation, i.e., the higher the level of social support for college students, the lower their level of suicidal ideation, which coincides with the results of the study of adolescent suicidal ideation conducted by Tang Huilin et al [19]. According to the main effect model of social support [20], social support has a general gain effect, regardless of the stressful situation, as long as an individual has access to social support, he or she will be able to effectively resist stress and improve health. In addition, the interpersonal theory of suicide [21] states that individuals may develop suicidal ideation when they perceive a frustrated sense of burden and sense of belonging, especially when suicidal ideation and suicidal ability coexist, the risk of suicidal behaviour will increase significantly. Most of the college students in China are in the age group of 18-24 years old, their self-awareness is strong but not yet mature; abstract thinking develops but is more subjective and one-sided; they are emotionally rich but their mood fluctuates greatly; and their level of will improves but is not stable. Although their sense of independence has increased, they still hope to receive support, understanding and protection from parents, school and society when in distress. Research suggests that perceptions of social support and the connections established between individuals and social systems may help in adapting to stressful situations. Students with abundant social support are more likely to develop effective strategies to cope with difficult situations, while lack of social support is often seen as a high risk factor for suicidal behaviour [22]. The study by Huimin Li [23] further emphasised the critical role of social support in mental health education and personality development in higher education, and therefore actively promote students to construct and make use of good social networks. The

experience of studying in a foreign country removes college students from previously established social networks, which may cause them to perceive less social and psychological support from those close to them, thus negatively affecting mental health.

4.2 The Mediating Role of Self-control

The study demonstrated that self-control serves as a significant mediator between social support and suicidal ideation. The impact of social support, as an external factor, must be reflected by an internal factor, namely self-control. It can be posited that the receipt of greater social support by an individual will result in an increase in self-control, which in turn will lead to a reduction in the level of suicidal ideation. In particular, individuals with high levels of self-control exhibited lower rates of suicidal ideation in high-stress situations [10]. The strength model of self-control [24] likens it to a "muscle"; that is to say, self-control is a limited strength resource. When this resource is depleted, it leads to a reduction in the effectiveness of information processing, emotion regulation and behavioural control. This phenomenon is known as ego depletion [25]. Nevertheless, social support is more effective in managing and replacing the resources required for self-control in stressful circumstances. Conversely, individuals with inadequate social support may experience difficulties in responding effectively and self-regulating in the presence of stress [26]. It has been demonstrated that self-control is closely associated with the psychological well-being of college students. Those with robust self-control are better able to regulate their emotions and maintain a healthy psychological state [27]. Consequently, in order to reduce the emergence of suicidal ideation, improving self-control ability by enhancing social support is not an effective strategy.

4.3 The Moderating Role of Reasons for Living

The present study found that reasons for living played a negative moderating role between self-control and suicidal ideation, especially at higher levels of self-control. The weakening effect of reasons for living on suicidal ideation was more significant at higher levels of self-control. As a protective factor against suicide, reasons for living can directly reduce suicidal ideation and protect individuals. Although the precise manner in which it protects against suicidal ideation and suicidal behaviours is not known, reasons for living can act as a buffer to weaken the association between risk factors and suicidal ideation [28]. The rationale for survival is also effective in moderating the relationship between stressors, coping skills and suicidal behaviour. Empirical evidence indicates that reasons for living can mitigate the adverse effects of depressive symptoms on suicidal ideation [29]. In the college population, self-control is relatively higher due to increased self-awareness and independence, which enables individuals with high self-control to regulate emotions, control impulses, and hold positive cognitive beliefs with greater efficacy. Additionally, it was discovered that individuals who engage in suicidal behaviour and those who do not differ in the significance they ascribe to the tenets espoused by reasons for living. Consequently, augmenting the perceived importance of these beliefs may prove an effective strategy for curbing the

prevalence of suicidal behaviour [12]. In individuals experiencing suicidal ideation, enhancing beliefs about positive expectations of life may reduce the likelihood and intensity of suicidal ideation. This indicates that, in addition to the elimination of risk factors, the enhancement of protective factors, such as reasons for living, should be a priority in psychological crisis intervention. This approach would serve to mitigate the effects of risk factors and reduce the occurrence of crisis events.

In conclusion, this study provides a comprehensive examination of the relationship between social support and suicidal ideation among college students, offering a novel perspective and direction for suicide prevention. In the process of promoting psychological crisis intervention for college students, three key areas of focus have been identified: firstly, the strengthening of social support networks, the creation of a friendly and harmonious campus environment, and the enhancement of the concern and support of teachers, students and parents for students' mental health; secondly, the cultivation of self-control abilities and the provision of mental health education and counselling to help students improve their ability to cope with stress and challenges; and thirdly, the guidance of college students in the establishment of correct values, the deepening of their understanding of the meaning of life, and the fostering of a sense of life-cherishing and love. By adopting a comprehensive approach, it is our intention to more effectively reduce the occurrence of suicidal thoughts among college students and to safeguard their mental health and life safety.

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