



Understanding Social Support and Depression among College Students in Ethnic Areas: the Chain Mediation of Cognitive Reappraisal and Basic Psychological Needs

Meng Su^{1,*} and Liwei Wu¹

¹School of Education and Psychology, Southwest Minzu University, Chengdu 610041, China

Abstract

To explore the relationship and mediating mechanisms among perceived social support, depression, cognitive reappraisal, and basic psychological needs among college students in ethnic regions, this study conducted a questionnaire survey of 968 college students using the Perceived Social Support Scale, Emotion Regulation Questionnaire (Cognitive Reappraisal subscale), Basic Psychological Needs Scale, and Center for Epidemiological Studies Depression Scale (CES-D). The aim was to analyze the impact and underlying mechanisms of perceived social support on their depression. The results indicate that: (1) there is a significant pairwise relationship between perceived social support, depression, cognitive reappraisal, and basic psychological needs; (2) Cognitive reappraisal and basic psychological needs mediated the relationship through three distinct pathways: the independent mediating pathway of cognitive reappraisal, the independent mediating pathway of basic psychological needs, and the chain mediating

pathway in which the two act in sequence. In summary, perceived social support can effectively alleviate depression by increasing the frequency of cognitive reappraisal among college students in ethnic regions and promoting the satisfaction of their basic psychological needs.

Keywords: perceived social support, depression, cognitive reappraisal, basic psychological needs, ethnic areas.

1 Introduction

Depression is a negative psychological state characterized by anhedonia (loss of interest or pleasure) and persistent negative emotions [1]. With its global burden increasing substantially over recent decades [2], its existence not only reflects the significant damage to the individual's emotional regulation and cognitive function [3], but also has a wide impact on the individual's social function and carries a high risk of recurrence [4, 6], with depressive episodes often following a chronic, relapsing course [5]. Compared to the general group of college students, students in ethnic minority areas face unique challenges in psychological adaptation and emotional regulation due to their distinct geographical



Submitted: 16 December 2025

Revised: 01 January 2026

Accepted: 13 May 2026

Published: 12 August 2026

Vol. 1, No. 1, 2026.

10.62762/JDIE.2025.447149

*Corresponding author:

✉ Meng Su

3413904603@qq.com

Citation

Su, M., & Wu, L. (2026). Understanding Social Support and Depression among College Students in Ethnic Areas: the Chain Mediation of Cognitive Reappraisal and Basic Psychological Needs. *Journal of Digital Intelligence in Education*, 1(1), 31–41.



© 2026 by the Authors. Published by Institute of Central Computation and Knowledge. This is an open access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>).

and cultural backgrounds. There are certain group differences between the two: firstly, there are regional environmental differences. Ethnic minority areas are mostly multi-ethnic settlements, and there are differences in educational resource allocation and economic development levels between some areas and cities. The growth and learning environment of college students in ethnic minority areas is unique; Secondly, there are cultural adaptation differences. In the process of integrating into campus life and social development, college students in ethnic areas need to balance the learning adaptation of excellent traditional ethnic culture and mainstream social culture in the region. This adaptation process may be accompanied by specific cultural integration pressures, while the cultural adaptation scenarios of general college students are relatively single. Tang et al. [7] conducted a systematic review and meta-analysis and found that the prevalence of depressive symptoms among adolescents in mainland China reached a considerable level, highlighting the severity of depression as a public mental health concern in Chinese educational settings. Therefore, it is of great value for theoretical research and practical application to deeply study the generation and development mechanism of college students' depression in specific cultural background areas.

A large number of studies have found that understanding social support is closely related to depression, and understanding the level of social support can increase the risk of depression, which is a significant predictor of depression across diverse populations and cultural contexts [8–10]. The research of Wang et al. [11] has proved that among student populations, those with weak perception of social support are the high-incidence group of depression symptoms. Yuan et al. [12] further confirmed that there is a significant negative relationship between perceived social support and depression even among individuals facing severe psychosocial stressors, underscoring the cross-contextual robustness of this association. The above results indicate that perceived social support is a key protective factor in the development of depression. However, when exploring the internal mechanism, existing research has primarily focused on the simple mediating role of either cognitive factors such as stigma and self-efficacy [13], or psychological resources such as basic psychological need satisfaction [14], and has not yet revealed the synergistic mechanism of the two under the same framework. In recent

years, researchers have gradually realized that the process of individual perception of social support transforming into mental health benefits is not only the result of active regulation at the cognitive level, but also depends on the deep satisfaction of internal psychological needs, and the use of cognitive regulation strategies may affect the state of basic psychological needs. Based on the Self Determination Theory (SDT), the satisfaction of basic psychological needs (autonomy needs, relationship needs, ability needs) constitutes the core internal psychological resource for buffering against depression [15]. Sheldon and Elliot [16] demonstrated that when individuals pursue goals that are concordant with their intrinsic needs, the satisfaction of basic psychological needs is more effectively achieved, which provides a key explanation for the impact of cognitive reappraisal on basic psychological needs. Therefore, only by comprehensively examining the chain mediating role of cognitive reappraisal and basic psychological needs can we more systematically reveal the deep logic of understanding social support to alleviate depression.

In the framework of the emotion regulation process model, cognitive reappraisal is classified as an antecedent-focused emotion regulation strategy [17, 18]. Its core mechanism is to actively reconstruct the meaning of events, so as to regulate the emotional state. As an important component of cognitive emotion regulation, cognitive reappraisal strategy is significantly associated with perceived social support and depression. According to the buffer model theory [19], social support plays its buffer effect function through the individual's internal cognitive system. It is worth noting that cognitive reappraisal occurs at the cognitive change stage of emotion regulation. Empirical evidence suggests that the level of perceived social support significantly influences individuals' frequency of using cognitive reappraisal strategies. Metts and Craske [20] found that a higher level of perceived social support can promote individuals to use cognitive reappraisal strategies more frequently, thus effectively inhibiting the generation process of negative emotions. In terms of cognitive reappraisal and depression, several research results show consistent conclusions, and cognitive reappraisal and depression are significantly negatively correlated [22, 23]. Validated measurement instruments further confirm that cognitive reappraisal is a distinct and measurable adaptive regulation strategy [21]. The emotion regulation process model proposed by Gross [24] points out that the key

mechanism of reappraisal is to realize the change of emotional impact through situational cognitive reconstruction. The research data of Sheppes et al. [25] further shows that the use of cognitive reappraisal strategies can enhance positive emotional experience and reduce depression. It can be seen that, as an important predictor of depression, the frequency of cognitive reappraisal use and depression show a regular change, that is, the lower the frequency of use, the higher the degree of depression, and vice versa [26–28]. Based on this, we propose hypothesis 1: cognitive reappraisal plays a mediating effect between perceived social support and depression.

According to the self-determination theory proposed by Deci and Ryan [15], human beings are born with three core psychological needs, namely, relational needs, ability needs and autonomy needs. The satisfaction of these psychological needs forms the basis of mental health, and directly affects individual well-being and adaptive function [29, 30]. It is worth noting that the basic psychological needs are highly dependent on external environment support [15]. Empirical research has confirmed that understanding social support, as a cognitive representation of external environmental resources, significantly promotes basic psychological needs by providing emotional acceptance and ability affirmation [31, 32]. It can be inferred that social support from the surrounding environment may promote mental health and reduce negative emotions by enhancing the satisfaction of individual's internal needs. Research has shown that the satisfaction of individual basic psychological needs plays a key role in the development of mental health. A high level of satisfaction of basic psychological needs is not only significantly related to the improvement of subjective well-being [30], but also associated with individuals' active engagement in searching for and experiencing meaning in life [33], and to some extent reduce depression tendency [34]. Thus, the satisfaction of basic psychological needs may constitute an important internal mechanism for positive psychological adaptation. In view of this, understanding social support, as an important embodiment of external environmental resources, may play a buffer role in depression by enhancing individuals' satisfaction of basic psychological needs such as autonomy, competence and sense of belonging. Based on this, hypothesis 2 is proposed: basic psychological needs play a mediating role between perceived social support and depression.

Based on the theory of self-determination, Weinstein and Ryan [35] pointed out that stress actually stems from the continuous lack of basic psychological needs (autonomy needs, relationship needs, ability needs) of individuals. This means that the key to effectively deal with stress is to restore or guarantee the satisfaction of these basic needs, so as to reduce the negative impact of stress. As a widely recognized adaptive strategy, cognitive reappraisal may alleviate the negative impact of stress by enhancing the basic psychological needs of individuals. From the perspective of specific needs, research on emotion regulation strategy use in children and adolescents indicates that adaptive strategies such as cognitive reappraisal are associated with more secure attachment patterns and better interpersonal functioning [36], which indirectly suggests that cognitive reappraisal may help to enhance individuals' sense of belonging. The research of Brans et al. [37] further demonstrates that individuals who frequently employ cognitive reappraisal in daily life experience more positive affect and less negative affect, which provides an affective foundation conducive to the satisfaction of basic psychological needs. In addition, Van der Kaap-Deeder et al. [38] found that basic psychological needs play a mediating role between emotional regulation and psychological symptoms, supporting the core position of demand state in the process of psychological regulation. In conclusion, as a key environmental resource, perceived social support may improve the satisfaction of basic psychological needs by promoting individuals to use cognitive reappraisal strategies, and ultimately have a positive impact on depression. Therefore, this study proposes hypothesis 3: cognitive reappraisal and basic psychological needs play a chain mediating role between perceived social support and depression.

In summary, based on the emotion regulation process model and self-determination theory, this study constructed a chain mediation model to explore how the perceived social support of college students in ethnic areas affects their depression through cognitive reappraisal and basic psychological needs. The following three research hypotheses are proposed: H1: Cognitive reappraisal plays a mediating role between the perceived social support and depression of college students in ethnic areas; H2: Basic psychological needs play a mediating role between the understanding of social support and depression among college students in ethnic areas; H3: Cognitive reappraisal and basic psychological needs play a chain mediating role between perceived social support and

Table 1. Descriptive statistics and correlation analysis ($N = 968$).

	<i>M</i>	<i>SD</i>	1	2	3	4
1. Perceived social support	60.36	12.91	1			
2. Cognitive reappraisal	30.02	6.55	0.77**	1		
3. Basic psychological needs	94.89	15.06	0.70**	0.65**	1	
4. Depression	14.43	10.93	-0.58**	-0.54**	-0.68**	1

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, the same below.

depression among college students in ethnic areas. Incorporating these two variables into the mediating mechanism not only expands empirical research but also provides theoretical support for understanding the underlying pathways linking perceived social support to depression.

2 Research methods

2.1 Participants

By means of random sampling, 1104 questionnaires were collected from college students in a minority area in Sichuan Province, of which 968 were valid, with an effective recovery rate of 87.68%. Among them, there were 105 males (10.8%) and 863 females (89.2%); 745 freshmen (77%), 193 sophomores (19.9%), and 30 juniors (3.1%); 212 urban students (21.9%) and 756 rural students (78.1%); 547 Han people (56.5%), 362 Yi people (37.4%), 40 Tibetan people (4.1%), 2 Hui people (0.2%), and 17 other ethnic groups (1.8%).

2.2 Measures

1) Center for Epidemiological Studies Depression Scale (CES-D)

This study uses the Center for Epidemiological Studies Depression Scale (CES-D) compiled by Radloff [39], which has been widely validated and applied in Chinese populations [40] to assess individual depression. The scale consists of 20 measurement items and is divided into four dimensions: depression, somatic symptoms and activity retardation, interpersonal and positive emotions. The Likert 4-point scoring method is used. 0 points represent "less than 1 day", and 3 points represent "5-7 days". The higher the score, the more serious the depression. In this study, the Cronbach's alpha coefficient of the scale was 0.92.

2) Perceived Social Support Scale

In this study, the perceived social support scale

developed by Zimet et al. [41] and locally revised by Yang et al. [42] was used to measure perceived social support. The scale includes 12 measurement items, covering three dimensions of family support, friend support and other support. The Likert 7-point scoring method was used for all items. 1 point represents "extremely disagree", and 7 points represents "extremely agree". The higher the total score, the higher the individual's perceived level of social support. In this study, the Cronbach's alpha coefficient of the scale was 0.95.

3) Cognitive reappraisal questionnaire

This study selects the items of cognitive reappraisal dimension in the emotion regulation questionnaire, which was completed by Chen Wei and others in the revised version of the Chinese version. The questionnaire was originally prepared by Gross [43]. The questionnaire consists of 6 items, using the Likert 7-point scoring method, in which 1 point means "very inconsistent", and 7 points means "very consistent". The higher the score, the more inclined individuals are to use cognitive reappraisal strategies for emotional regulation. In this study, the Cronbach's alpha coefficient of the scale was 0.95.

4) Basic Psychological Needs Scale

This study uses the basic psychological needs scale originally developed by Ilardi et al. [44] within a self-determination theory framework to assess employees' perceptions of autonomy, competence, and relatedness, which contains three dimensions: relational needs (8 questions), autonomous needs (7 questions) and ability needs (6 questions), with a total of 21 items. This study uses the Chinese version of the scale revised by Yu et al. [45], which has been optimized in terms of language expression and cultural adaptation, and has good reliability and validity indicators. In this study, the Cronbach's alpha coefficient of the scale was 0.88.

2.3 Data Analysis

In this study, SPSS 26.0 was used for data processing and analysis, including common method bias test, descriptive statistics, Pearson correlation analysis, and chain mediation effect test with the help of model 6 in PROCESS macro developed by Hayes [46].

3 Results

3.1 Common Method Bias Test

In order to detect whether there is a common method bias, Harman single factor test [47] was used in this study. A total of 8 factors with eigenvalues greater than 1 were extracted, of which the first factor can explain 37.66% of the variation, which is lower than the critical standard of 40%, indicating that there is no serious common method deviation [48].

3.2 Descriptive statistics and correlation analysis among variables

As shown in Table 1, all three predictor variables were significantly negatively correlated with depression ($p < 0.01$): perceived social support ($r = -0.58$), cognitive reappraisal ($r = -0.54$), and basic psychological needs ($r = -0.68$). Perceived social support was significantly positively correlated with both cognitive reappraisal ($r = 0.77, p < 0.01$) and basic psychological needs ($r = 0.70, p < 0.01$), and cognitive reappraisal was significantly positively correlated with basic psychological needs ($r = 0.65, p < 0.01$).

3.3 The Mediating Effect of Cognitive Reappraisal and Basic Psychological Needs on Understanding the Influence of Social Support on Depression

Model 6 in the PROCESS macro developed by Hayes [46] is used for mediation effect analysis, and Bootstrap is used for repeated sampling for 5000 times. On the premise that gender and grade variables are controlled, the perceived social support is set as an independent variable, depression as a dependent variable, cognitive reappraisal and basic psychological needs as intermediary variables are introduced into the chain mediation model, and all data are standardized. The results show that all path coefficients in the model reach a significant level (see Table 2), and assumptions 1-3 are verified. The direct effect of perceived social support on depression is significant. Cognitive reappraisal and basic psychological needs play a partial mediating role in perceived social support on depression. The mediating effect value

of cognitive reappraisal on perceived social support on depression is -0.06, and the amount of effect is 12.24%; The mediating effect of basic psychological needs on the impact of perceived social support on depression was -0.21, with an effective amount of 42.86%; The chain mediating size of cognitive reappraisal and basic psychological needs in understanding the impact of social support on depression is -0.09, and the amount of effect is 18.36% (see Table 3).

4 Discussion

4.1 The Relationship between Perceived Social Support and Depression

The results of this study further verified that perceived social support is a key factor affecting psychosocial adaptation [49], and its mechanism in depression of college students in ethnic areas has been deeply revealed. The results showed that perceived social support not only directly and negatively predicted depression, but also indirectly affected it through the chain mediated path of cognitive reappraisal and basic psychological needs. This discovery has important theoretical deepening and practical guiding value. Based on the main effect model [19], the theory of self-determination [29] and the model of emotion regulation process [50], this study constructed and verified the path of perceived social support influencing depression through cognitive reappraisal and basic psychological needs. The research results confirm the "direct gain" effect of perceived social support as a psychological resource [19, 49], and more importantly, reveal the internal mechanism of its role, that is, perceived social support can promote the satisfaction of basic psychological needs by stimulating individuals' active cognitive reappraisal strategies, and ultimately alleviate depression. This mechanism provides a detailed explanation for understanding how social support translates into mental health benefits.

4.2 The mediating role of cognitive reappraisal in the relationship between perceived social support and depression

This study confirmed that cognitive reappraisal is a mediating variable between perceived social support and depression of college students in ethnic areas, which supports Hypothesis 1. This indicates that perceived social support can indirectly affect depression of college students in ethnic areas through cognitive reappraisal, and further confirms the value of cognitive reappraisal as an important intermediary factor in the process of triggering poor psychological

Table 2. Regression Analysis of variable relationship in chain mediation model.

Regression Equation		Overall fitting index			Regression coefficient and significance			
Outcome variable	Forecast variable	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>B</i>	<i>BootLLCI</i>	<i>BootULCI</i>	<i>t</i>
Cognitive reappraisal	Perceived social support	0.78	0.61	501.25	0.76	0.37	0.41	37.66***
	Gender				-0.08	-2.54	-0.87	-4.01***
	grade				-0.07	-1.36	-0.33	-3.21**
Basic psychological needs	Perceived social support	0.72	0.52	262.27	0.49	0.49	0.65	13.87***
	Cognitive reappraisal				0.28	0.48	0.80	7.84***
	Gender				0.03	-0.76	3.52	1.27
	grade				0.04	-0.27	2.37	1.57
Depression	Perceived social support	0.69	0.48	180.83	-0.14	-0.19	-0.05	-3.50***
	Cognitive reappraisal				-0.09	-0.28	-0.03	-2.42*
	Basic psychological needs				-0.52	-0.42	-0.33	-15.45***
	Gender				-1.08	-2.69	0.54	-1.31
	grade				0.89	-0.11	1.88	0.51

Table 3. The test results of the chain mediation effect of understanding social support to predict depression.

Effect	Route	Effect value	Effect amount	95% confidence interval	
				lower limit	upper limit
Direct effect	Understanding social support-depression	-0.12	24.49%	-0.19	-0.05
Intermediary effect	Understanding social support-cognitive reappraisal-depression	-0.06	12.24%	-0.12	-0.00
	Understanding social support-basic psychological needs-depression	-0.21	42.86%	-0.26	-0.17
	Understanding social support-cognitive reappraisal-basic psychological needs-depression	-0.09	18.36%	-0.12	-0.07
Total indirect effect		-0.37	75.51%	-0.43	-0.30
Total effect		-0.49	100.00%	-0.53	-0.44

adaptation. This finding is consistent with the research conclusion of Marroquín et al. [51], whose research also points out that cognitive reappraisal plays a mediating role between understanding social support and individual psychological adaptation. From a theoretical perspective, this result can be reasonably explained through the buffer model proposed by Cohen and Wills [19]. According to this model, perceived social support provides "available resources" that will affect individuals through the internal cognitive system. This positive psychological state provides them with sufficient "psychological energy" to adopt adaptive emotion regulation strategies. As the research of Metts and Craske [20] shows

individuals with high understanding of social support are more inclined to regard potential pressure events in the environment as "controllable challenges" rather than "insurmountable threats". This cognitive tendency makes college students in ethnic areas more willing to actively adjust their interpretation of events when facing difficulties, so as to more easily use cognitive reappraisal strategies. As a prepositive emotion regulation strategy [24], the core of cognitive reappraisal is to regulate emotional experience by changing the cognitive assessment of events. This result is consistent with the conclusion of Sheppes et al. [25], that is, cognitive reappraisal directly cuts off the path from stress events to

depressive symptoms by reducing the activation intensity of negative emotions and enhancing positive emotional experience, and ultimately plays a role in relieving depression. Research on acculturation among youth in multi-ethnic settings indicates that successful cultural adaptation—characterized by the ability to navigate between heritage and mainstream cultures—is associated with reduced depression risk [52], suggesting that cognitive flexibility, including reappraisal capacity, plays a key role in this process.

4.3 The mediating role of basic psychological needs in understanding the relationship between social support and depression

This study confirmed that basic psychological needs are the mediating variable between perceived social support and depression of college students in ethnic areas, and Hypothesis 2 is supported. This result reveals another important pathway: perceived social support can alleviate depression by promoting the satisfaction of basic psychological needs of individuals and building an internal psychological resource pool. This finding is consistent with previous studies. Specifically, students who perceive family care and peer acceptance have significantly improved interpersonal trust and reduced loneliness. This experience of "being accepted and valued" directly fills the relationship needs and provides emotional connection protection for resisting depression [53]. According to self-determination theory [54], when individuals experience environmental support that affirms their competence, their sense of efficacy and perceived control over their environment are simultaneously enhanced, meeting their competence needs and thereby reducing depression tendencies associated with feelings of helplessness. This "I can meet challenges" efficacy experience is the core performance of ability needs to be met, thus reducing the depression tendency caused by "powerlessness". The research of Chirkov et al. [55] shows that when individuals feel the positive support of their family and friends for their cultural habits and life choices, they will experience a stronger sense of "self determination". This sense of control over their own behavior will fully meet their independent needs and avoid negative emotions caused by "being suppressed and not understood". The research of Youguo et al. [56] also confirmed that understanding social support has an overall promoting effect on the three basic psychological needs, and this support perception promotes the transformation of needs,

which constitutes a key intermediary chain to alleviate depression. From the perspective of theoretical foundation, this result echoes Deci and Ryan's [15] assertion that "basic psychological needs are the core resources of emotional health".

4.4 The Chain Mediating Role of Cognitive Reappraisal and Basic Psychological Needs in the Relationship between Perceived Social Support and Depression

This study verified a chain-mediated pathway through which perceived social support affects depression via cognitive reappraisal and basic psychological needs, thus supporting Hypothesis 3. Cognitive reappraisal, as an adaptive emotion regulation strategy, theoretically promotes the satisfaction of basic psychological needs (autonomy, sense of ability, sense of belonging) through multiple dimensions, thereby playing a key mediating role in understanding the relationship between social support and depression. At the level of competence, cognitive reappraisal plays a role through cognitive restructuring and positive reappraisal mechanisms. When individuals face setbacks or challenges, cognitive reappraisal can re evaluate potential threatening events as growth opportunities or controllable challenges, and this cognitive transformation helps maintain positive beliefs about one's own abilities. Research has shown that cognitive reappraisal helps individuals maintain cognitive flexibility in stressful situations by reducing the activation levels of emotion related brain regions, thereby maintaining a positive perception of their own abilities [57]. At the level of autonomy, cognitive reappraisal promotes the satisfaction of autonomous needs through the mechanisms of meaning attribution and intrinsic motivation stimulation. When individuals actively engage in cognitive reappraisal of negative events, this proactive cognitive processing process itself is a manifestation of autonomy. By endowing events with new cognitive meanings, individuals can enhance their internal sense of control over the situation, rather than passively accepting external evaluations. Brans et al.'s [37] research found that individuals who frequently use cognitive reappraisal in daily life experience greater positive affect and reduced negative affect, which supports the formation of an internal motivational state conducive to the satisfaction of autonomous needs. From the perspective of self-determination theory, cognitive reappraisal enhances an individual's perceived choice of their own behavior, promotes the formation of intrinsic motivation, and thus

satisfies autonomous needs. At the level of belonging, cognitive reappraisal plays a role through mechanisms of correcting interpersonal cognitive biases and strengthening social connections. The individual's cognitive evaluation of interpersonal interaction directly affects the degree of satisfaction of their sense of belonging. Cognitive reappraisal can correct negative interpersonal cognitive biases, reinterpreting others' behavior as goodwill or situational factors rather than targeted rejection or exclusion. For example, peer neglect can be reinterpreted as "the other person may be busy with other things" rather than "not liking me," and this cognitive shift helps to reduce perceived interpersonal conflicts, strengthen social connections, and increase a sense of belonging.

This study reveals the chain mediated role of cognitive reappraisal and basic psychological needs in the relationship between social support and depression among college students in ethnic areas, providing empirical evidence for targeted design of mental health interventions. The main implications are as follows: firstly, to develop cognitive reappraisal skills, it is recommended that ethnic colleges carry out situational emotion regulation training, focusing on actual situations such as cross-cultural conflicts and academic pressure, and improving students' cognitive regulation ability towards negative events through cognitive reconstruction, positive reappraisal and other techniques, enhancing their cross-cultural emotional adaptability. The second is to build a demand supporting campus environment, which should systematically create a campus atmosphere that supports the development of students' autonomy, abilities, and sense of belonging. This can be achieved through implementing personalized career guidance, organizing cross-cultural integration activities, establishing diverse evaluation mechanisms, and improving psychological support systems to promote the satisfaction of students' basic psychological needs. The third is to promote a hierarchical and classified intervention strategy, adopting targeted interventions based on the differences in students' social support level, cognitive reappraisal ability, and psychological needs satisfaction. For example, strengthening peer systems and professional assistance for students with low social support, providing technical training for those with insufficient cognitive regulation ability, and providing group and individual psychological services for those with insufficient psychological needs.

4.5 Research limitations

There are three main limitations to this study: firstly, there is a gender imbalance in the sample, with a significantly higher proportion of females than males. The reason is that the research institution is a normal university, mainly focusing on humanities and social sciences majors (with more female students), and male participation willingness is relatively low, which may limit the applicability of the conclusion to the male population. In the future, it is necessary to expand the sample size, optimize the gender structure, and enhance universality; Secondly, there are limitations in cross-sectional design. This design can only reveal the correlation and mediating pathways between variables, and cannot establish causal relationships. In the future, longitudinal tracking or experimental design can be used to verify causal relationships; Thirdly, potential confounding variables such as family economic status, academic pressure, and degree of ethnic cultural adaptation were not included, which may interfere with the understanding of the relationship between social support, cognitive reappraisal, basic psychological needs, and depression. In the future, such variables should be included to construct a more comprehensive model.

5 Conclusion

This study concludes that: firstly, understanding social support can significantly reduce the level of depression among college students in ethnic areas through cognitive reappraisal and basic psychological needs; Secondly, cognitive reappraisal and basic psychological needs function in a chain mediation, indicating that cognitive emotion regulation can further affect depressive emotions by promoting the satisfaction of psychological needs. The above findings suggest that in order to improve the mental health level of college students in ethnic areas, attention should be paid to the construction of their social support system, and a multi-level and systematic intervention path should be formed through cognitive reappraisal strategy training and the creation of a supportive environment for their needs.

Data Availability Statement

Data will be made available on request.

Funding

This work was supported without any funding.

Conflicts of Interest

The authors declare no conflicts of interest.

AI Use Statement

The authors declare that no generative AI was used in the preparation of this manuscript.

Ethical Approval and Consent to Participate

This study was determined to be exempt from full ethical review by the Academic Ethics Committee of Southwest Minzu University, as it involved anonymous questionnaire data collection with minimal risk to participants. All procedures were conducted in accordance with the ethical principles of the Declaration of Helsinki. Written informed consent was obtained from all participants prior to data collection, and participants were informed of their right to withdraw at any time without consequence.

References

- [1] Hammen, C. (2018). Risk factors for depression: an autobiographical review. *Annual review of clinical psychology*, 14, 1-28. [CrossRef]
- [2] Liu, Q., He, H., Yang, J., Feng, X., Zhao, F., & Lyu, J. (2020). Changes in the global burden of depression from 1990 to 2017: Findings from the Global Burden of Disease study. *Journal of psychiatric research*, 126, 134-140. [CrossRef]
- [3] Gao, W., Yan, X., & Yuan, J. (2022). Neural correlations between cognitive deficits and emotion regulation strategies: understanding emotion dysregulation in depression from the perspective of cognitive control and cognitive biases. *Psychoradiology*, 2(3), 86-99. [CrossRef]
- [4] Thapar, A., Eyre, O., Patel, V., & Brent, D. (2022). Depression in young people. *The Lancet*, 400(10352), 617-631. [CrossRef]
- [5] Burcusa, S. L., & Iacono, W. G. (2007). Risk for recurrence in depression. *Clinical psychology review*, 27(8), 959-985. *Chinese Journal of Clinical Psychology*, 31(5), 1209-1213. [CrossRef]
- [6] Slavich, G. M., & Irwin, M. R. (2014). From stress to inflammation and major depressive disorder: a social signal transduction theory of depression. *Psychological bulletin*, 140(3), 774. [CrossRef]
- [7] Tang, X., Tang, S., Ren, Z., & Wong, D. F. K. (2019). Prevalence of depressive symptoms among adolescents in secondary school in mainland China: A systematic review and meta-analysis. *Journal of affective disorders*, 245, 498-507. [CrossRef]
- [8] Rogowska, A. M., & Cisek, A. (2024). Minority stress, perceived social support, and depression in people diverse in sexual and gender minority status. *Psychology & Sexuality*, 15(4), 679-693. [CrossRef]
- [9] Akosile, C. O., Mgbeojedo, U. G., Okoye, E. C., Odole, A. C., Uwakwe, R., & Ani, U. K. (2024). Social support as a correlate of depression and quality of life among Nigerian older adults: a cross-sectional study. *Journal of Cross-Cultural Gerontology*, 39(2), 173-188. [CrossRef]
- [10] Jiang, P., Zhang, Z., Li, S., & Yan, Y. (2024). Negative life events and depression among Chinese university freshmen: a longitudinal moderated mediation model. *Frontiers in Public Health*, 12, 1480394. [CrossRef]
- [11] Wang, H. Y., Zhang, S. S., Wu, J. Y., & Liu, Z. H. (2023). Relationship among perceived social support, bullying defender and depression symptoms in middle school students. *Chinese Mental Health Journal*, 44(2), 237-241. [CrossRef]
- [12] Yuan, G. F., Zhang, R., Qiao, S., Li, X., Shen, Z., & Zhou, Y. (2024). Exploring the longitudinal influence of perceived social support, HIV stigma, and future orientation on depressive symptoms among people living with HIV in China. *AIDS and Behavior*, 28(5), 1662-1672. [CrossRef]
- [13] Wang, P., Xiong, J., Zheng, J., Chai, C., & Wang, Y. (2023). Perceived social support and depression among people living with HIV in China: roles of stigma and adherence self-efficacy. *BMC psychiatry*, 23(1), 544. [CrossRef]
- [14] Shin, H., & Park, C. (2022). Social support and psychological well-being in younger and older adults: The mediating effects of basic psychological need satisfaction. *Frontiers in Psychology*, 13, 1051968. [CrossRef]
- [15] Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic dialectical perspective. *Handbook of self-determination research*, 2(3-33), 36. <https://www.researchgate.net/publication/309563565>
- [16] Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: the self-concordance model. *Journal of personality and social psychology*, 76(3), 482. [CrossRef]
- [17] McRae, K., Ciesielski, B., & Gross, J. J. (2012). Unpacking cognitive reappraisal: goals, tactics, and outcomes. *Emotion*, 12(2), 250. [CrossRef]
- [18] Ochsner, K. N., & Gross, J. J. (2005). The cognitive control of emotion. *Trends in cognitive sciences*, 9(5), 242-249. [CrossRef]
- [19] Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological bulletin*, 98(2), 310. [CrossRef]
- [20] Metts, A. V., & Craske, M. G. (2023). Influence of social support on cognitive reappraisal in young adults elevated on neuroticism. *Behaviour Research and Therapy*, 167, 104355. [CrossRef]

- [21] Garnefski, N., & Kraaij, V. (2006). Cognitive emotion regulation questionnaire—development of a short 18-item version (CERQ-short). *Personality and individual differences*, 41(6), 1045-1053. [CrossRef]
- [22] Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical psychology review*, 30(2), 217-237. [CrossRef]
- [23] Troy, A. S., Shallcross, A. J., & Mauss, I. B. (2013). A person-by-situation approach to emotion regulation: Cognitive reappraisal can either help or hurt, depending on the context. *Psychological science*, 24(12), 2505-2514. [CrossRef]
- [24] Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of general psychology*, 2(3), 271-299. [CrossRef]
- [25] Sheppes, G., Suri, G., & Gross, J. J. (2015). Emotion regulation and psychopathology. *Annual review of clinical psychology*, 11(1), 379-405. [CrossRef]
- [26] Shao-Hua, Z. H. A. N. G., Biao, S. A. N. G., Ying, L. I. U., & Ting-Ting, P. A. N. (2020). Emotion regulation strategies in Chinese adolescents with different depressive symptoms. *Journal of Psychological Science*, 43(6), 1296-1303. <https://jps.ecnu.edu.cn/EN/abstract/abstract10646.shtml>
- [27] Atherton, B. D., Nevels, R. M., & Moore, M. T. (2015). Predicting symptoms of depression from social anhedonia and emotion regulation. *The Journal of nervous and mental disease*, 203(3), 170-174. [CrossRef]
- [28] Schäfer, J. Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *Journal of youth and adolescence*, 46(2), 261-276. [CrossRef]
- [29] Ryan, R. M., & Deci, E. L. (2021). Self-determination theory: Basic psychological needs in motivation, development, and wellness. *Rajagiri Management Journal*, 15(1), 88-90. [CrossRef]
- [30] Wu, C. Z., Rong, S., Zhu, F. T., Chen, Y., & Guo, Y. Y. (2018). Basic psychological need and its satisfaction. *Advances in Psychological Science*, 26(6), 1063-1073. <https://journal.psych.ac.cn/xlkxjz/EN/10.3724/SP.J.1042.2018.01063>
- [31] Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., ... & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and emotion*, 39(2), 216-236. [CrossRef]
- [32] Milyavskaya, M., & Koestner, R. (2011). Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains. *Personality and individual differences*, 50(3), 387-391. [CrossRef]
- [33] Steger, M. F., Kashdan, T. B., Sullivan, B. A., & Lorentz, D. (2008). Understanding the search for meaning in life: Personality, cognitive style, and the dynamic between seeking and experiencing meaning. *Journal of personality*, 76(2), 199-228. [CrossRef]
- [34] Levine, S. L., Brabander, C. J., Moore, A. M., Holding, A. C., & Koestner, R. (2022). Unhappy or unsatisfied: distinguishing the role of negative affect and need frustration in depressive symptoms over the academic year and during the COVID-19 pandemic. *Motivation and Emotion*, 46(1), 126-136. [CrossRef]
- [35] Weinstein, N., & Ryan, R. M. (2011). A self-determination theory approach to understanding stress incursion and responses. *Stress and Health*, 27(1), 4-17. [CrossRef]
- [36] Gresham, D., & Gullone, E. (2012). Emotion regulation strategy use in children and adolescents: The explanatory roles of personality and attachment. *Personality and individual differences*, 52(5), 616-621. [CrossRef]
- [37] Brans, K., Koval, P., Verduyn, P., Lim, Y. L., & Kuppens, P. (2013). The regulation of negative and positive affect in daily life. *Emotion*, 13(5), 926. [CrossRef]
- [38] Van der Kaap-Deeder, J., Brenning, K., & Neyrinck, B. (2021). Emotion regulation and borderline personality features: The mediating role of basic psychological need frustration. *Personality and Individual Differences*, 168, 110365. [CrossRef]
- [39] Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied psychological measurement*, 1(3), 385-401. [CrossRef]
- [40] Zheng, Y., Wei, L., Lianggue, G., Guochen, Z., & Chenggue, W. (1988). Applicability of the Chinese beck depression inventory. *Comprehensive psychiatry*, 29(5), 484-489. [CrossRef]
- [41] Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of personality assessment*, 52(1), 30-41. [CrossRef]
- [42] Yang, X., Xue, M., Pauen, S., & He, H. (2024). Psychometric properties of the Chinese version of multidimensional scale of perceived social support. *Psychology research and behavior management*, 2233-2241. [CrossRef]
- [43] Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of personality and social psychology*, 85(2), 348. [CrossRef]
- [44] Ilardi, B. C., Leone, D., Kasser, T., & Ryan, R. M. (1993). Employee and supervisor ratings of motivation: Main effects and discrepancies associated with job satisfaction and adjustment in a factory setting 1. *Journal of applied social psychology*, 23(21), 1789-1805. [CrossRef]
- [45] Yu, C., Zhang, W., Zeng, Y., Ye, T., Hu, J. P., & Li, D. L. (2012). Gratitude, basic psychological needs, and problematic Internet use in adolescence. *Psychological Development and Education*, 28(1), 83-90. <https://devpsy.b>

- nu.edu.cn/CN/abstract/abstract113.shtml
- [46] Bolin, J. H. (2014). Introduction to mediation, moderation, and conditional process analysis: a regression-based approach. <https://www.jstor.org/stable/24018134>
- [47] Xiong, H. X., Zhang, J., Ye, B. J., Zheng, X., & Sun, P. Z. (2012). Common method variance effects and the models of statistical approaches for controlling it. *Advances in Psychological Science*, 20(5), 757-769. <https://journal.psych.ac.cn/adps/EN/abstract/abstract1478.shtml>
- [48] Zhou, H., & Long, L. (2004). Statistical remedies for common method biases. *Advances in Psychological Science*, 12(06), 942. <https://journal.psych.ac.cn/adps/EN/abstract/abstract894.shtml>
- [49] Lakey, B., & Orehek, E. (2011). Relational regulation theory: a new approach to explain the link between perceived social support and mental health. *Psychological review*, 118(3), 482. [CrossRef]
- [50] Gross, J. J. (2015). The extended process model of emotion regulation: Elaborations, applications, and future directions. *Psychological inquiry*, 26(1), 130-137. [CrossRef]
- [51] Marroquín, B. (2011). Interpersonal emotion regulation as a mechanism of social support in depression. *Clinical psychology review*, 31(8), 1276-1290. [CrossRef]
- [52] Berry, J.W., Phinney, J.S., Sam, D.L., & Vedder, P. (2006). Immigrant youth: Acculturation, identity, and adaptation. *Applied psychology*, 55(3), 303-332. [CrossRef]
- [53] Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological bulletin*, 142(10), 1017. [CrossRef]
- [54] Deci, E. L., & Ryan, R. M. (2000). The “ what” and “ why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, 11(4), 227-268. [CrossRef]
- [55] Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: a self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of personality and social psychology*, 84(1), 97. [CrossRef]
- [56] Youguo, L., Jianwen, C., Yan, L., & Yirong, C. (2025). The longitudinal relationship between social support and college adjustment: The mediation of basic psychological needs satisfaction and moderation of intentional self-regulation. *Journal of Psychological Science*, 48(1), 86-96. <https://jps.ecnu.edu.cn/EN/10.16719/j.cnki.1671-6981.20250109>
- [57] Ochsner, K. N., Ray, R. D., Cooper, J. C., Robertson, E. R., Chopra, S., Gabrieli, J. D., & Gross, J. J. (2004). For better or for worse: neural systems supporting the cognitive down-and up-regulation of negative emotion. *Neuroimage*, 23(2), 483-499. [CrossRef]



Meng Su is currently a postgraduate student majoring in Mental Health at the School of Education and Psychology, Southwest Minzu University, Chengdu, China. Her research interests focus on mental health assessment and psychological intervention. (Email: 3413904603@qq.com)



Liwei Wu is currently a postgraduate student majoring in Mental Health at the School of Education and Psychology, Southwest Minzu University, Chengdu, China. His research interests include mental health education and counseling psychology. (Email: 15355305331@163.com)