

Stress Perception and Psychological Adaptation in College Students: The Chain Mediating Role of Positive Core Schema and Self-control

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Abstract: This paper is to investigate the relationship between stress perception and psychological adaptation among college students, and the chain-mediated role of positive core schema and self-control. The present study used the Perceived Stress Scale (PSS), the Chinese College Student Adjustment Scale (CCSAS), the Brief Positive Core Schema Scale, and the Self-Control Scale (SCS) to administer the PSS, the CCSAS, the Positive Core Schema Scale, and the SCS to 917 college students. There was a significant negative correlation between college students' stress perception and psychological adaptation, positive core schema, and self-control; psychological adaptation showed a significant positive correlation with positive core schema and self-control; positive core schema was significantly positively correlated with self-control; the effect of college students' stress perception on psychological adaptation was not only reflected in the direct effect but also mediated by positive core schema and self-control through the chain. The effects of stress perception on psychological adaptation are not only in the direct effect but also through the chain mediation of positive core schema and self-control. Finally, this paper concludes that stress perception can affect psychological adaptation through the mediation of positive core schema, can have an effect through the mediation of self-control, and can also have a profound effect on psychological adaptation through the chain mediation of positive core schema and self-control.

1. Introduction

Psychological adaptation refers to the individual's psychological and behavioral response state when the environment or body and mind change, which reflects the individual's ability to adjust himself or herself and keep balance with the environment [1]. How well an individual adapts psychologically affects not only his/her study and life in college but also his/her work and life in adulthood [2]. In recent years, with the intensification of social competition and the frequent occurrence of various stressful events, college students are faced with many stressful events such as interpersonal, academic, employment, etc. The resulting psychological problems, if not alleviated for a long period of time, are prone to psychological adaptation disorders, or even mental illnesses, which is detrimental to the future development and physical and mental health of college students. Therefore,

it is necessary for us to have an in-depth discussion on the influencing factors of college students' psychological adaptation.

In the process of college students adapting to the environment, self-regulation, and self-management in the face of stress, the subjective perception of stress plays an indispensable role, which can effectively regulate the level of psychological cognition and show strong psychological adaptability [3]. Stress perception is the state of loss of control and tension that individuals perceive after cognitive evaluation when they face certain stressful events in their lives, resulting in an imbalance in their psychological state [4]. It has been shown that there is a close relationship between individuals' perception of stress and their psychological adaptation and that individuals' perceived stress affects their psychological adaptation. There is a significant negative correlation between stress perception and psychological adaptation, which indicates that the lower the level of stress perceived by individuals, the better their psychological adaptation will be, and the fewer problems of psychological adaptation will occur [5].

Schemas are cognitive structures that exist in people's minds as a kind of abstracted and generalized background knowledge, which is important for understanding and communication[6]. Many cognitive theories suggest that immediate assessments of self and others may be related to current external events, current emotional and cognitive states, and memory processes that synthesize past responses in the form of schemas, i.e., core schemas[7-9]. Core schemas are important mediating variables for individuals in social adaptation and include both self-schemas and other schemas. They include positive and negative perceptions of self and positive and negative perceptions of others [10]. Therefore, core schemas are also categorized into positive and negative core schemas. It has been shown that a positive core schema has a positive influence on their psychological adaptation [11].

In recent years, there have been fewer domestic studies related to positive core schema, but based on the moderating effect of stress perception on psychological cognition, this study hypothesized that there may be a negative correlation between stress perception and positive core schema. Individuals with higher stress levels tend to form or evolve negative mental schemas, which have a negative impact on their psychological adaptation. Stress perception may affect college students' psychological adjustment by influencing the positive core schema. In view of this, the present study proposes Hypothesis H1: There is a mediating role of the positive core schema in the relationship between stress perception and college students' psychological adjustment.

Self-control refers to an individual's ability to inhibit and regulate his or her impulses in order to conform to social norms and achieve long-term goals [12]. Self-control, as part of an individual's self-awareness, has a significant impact on an individual's psychological adaptation and is positively correlated with psychologically adaptive behaviors, and good self-control also inevitably produces a good level of psychological adaptation and harmonious interpersonal relationships [13]. Moreover, numerous studies have shown that self-control has a significant negative correlation with the perception of stress. Individuals with higher levels of stress have weaker self-control, which in turn leads to poorer adaptation to life. Therefore, the present study proposes the hypothesis H2: Self-control mediates the relationship between stress perception and psychological adaptation.

Under the mechanism of the influence of stress perception on psychological adaptation, it has been shown that a positive core schema of the self is associated with attitudes related to achievement and self-control [14]. Individuals with a positive core schema may be more likely to have good self-control, which in turn enhances adaptation to the environment. In light of this, the present study proposes Hypothesis H3: Positive core schema in college students predicts self-control, and the two act as chain mediators between stress perceptions and college students' psychological adaptation.

In summary, the present study attempts to explore the chain mediating role played by positive core schema and self-control between stress perception and psychological adaptation in college students. The hypothesized model is shown in Figure 1.

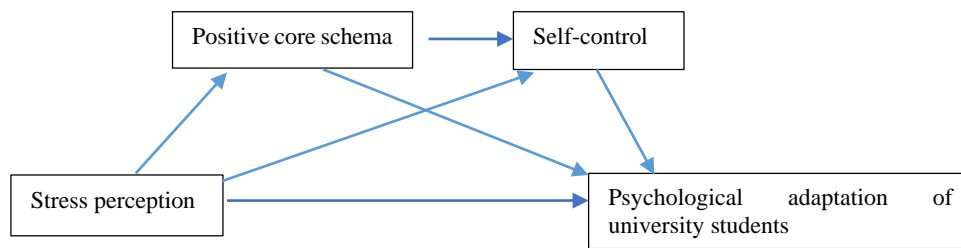


Figure 1: Hypothesized model of the effect of stress perception on college students' psychological adjustment

2. Research Methodology

2.1. Objects of study

This study selected college students as the research object. A total of 917 questionnaires were received, and after deleting invalid questionnaires such as those with missing values, haphazard answers, and short answer times, 838 valid questionnaires were obtained, with an effective recovery rate of 91.51%. Among them, 367 (44%) were freshmen, 229 (27%) were sophomores, and 232 (29%) were juniors and seniors. There were 179 (21.36%) male students and 659 (78.64%) female students with a mean age of 19.34 (SD=1.23).

2.2. Research tools

2.2.1. Perceived stress scale (PSS)

The Stress Perception Scale (14-item PSS) was proposed by Cohen, Kamarck et al. (1983) [15] to assess the degree of stress perceived by an individual and his or her ability to handle it. The scale consists of 14 questions, including six positive and eight negative questions. The scale measures two dimensions: feelings of tension and feelings of loss of control. Each question is scored on a 5-point scale ranging from 1-5 on a scale from "very non-compliant" to "very compliant", and the total score is tallied at the end. If the score on the scale is high, it indicates that the subject's psychological pressure is high. In this study, the Cronbach's alpha coefficient for this scale was 0.853.

2.2.2. Brief positive core schema scale

The Brief Positive Core Schema Scale was developed by Fowler, Hoenig, Snyder, and Omoto (2006)[10]. The scale was used to measure the positive core schema of college students on the dimensions of positive self and positive others. The scale consists of 12 questions, and subjects are asked to decide whether they hold the beliefs in each question. If they choose "No", they will be scored as 0; if they choose "Yes", they will be scored according to the intensity of their beliefs, ranging from "Somewhat Believe" to "Completely Believe". If "Yes" is chosen, the scale is scored 1-4 depending on the intensity of choice from "somewhat believe" to "completely believe". In this study, the Cronbach's alpha coefficient for this scale was 0.926.

2.2.3. Self-control scale (SCS)

In 2008, Tan Shuhua revised the Self-Control Scale (SCS)[16] developed by Tangney et al. to form the Chinese version of the SCS. The SCS is designed to assess an individual's ability to control his or her emotions, impulses, and behaviors, and categorizes self-control into five dimensions. Each question has five options, ranging from "not at all" to "completely", and is rated on a scale of 1-5. It

should be noted that some of the questions are reverse-scored. The Cronbach's alpha coefficient for the scale in this study was 0.881.

2.2.4. China college student adaptation scale (CCSAS)

The Chinese College Student Adjustment Scale (CCSAS) developed by Fang et al. (2005)[2] has good reliability and validity. The scale consists of 7 dimensions, including interpersonal adaptation, study adaptation, campus life adaptation, career choice adaptation, emotional adaptation, self-adaptation, and satisfaction, with a total of 60 questions. Each question is scored on a 5-point scale from "disagree" to "agree" on a scale of 1-5. If the score on the scale is high, it indicates that the subject has a high level of social adaptation. The Cronbach's alpha coefficient for the scale in this study was 0.936.

2.3. Data processing

Data were analyzed using SPSS 20.0 for descriptive statistics, scale reliability analysis, and correlation analysis; regression analyses, mediation effects, and chained mediation effects tests were performed using the SPSS plug-in PROCESS 3.5.

3. Results

3.1. Common method bias test

The Harman one-way test was used to test the common method bias used in this study. The results showed that there were 19 factors with eigenvalues greater than 1. The amount of variance explained by the first factor is 19.702%, which is less than the critical value of 40%, and there is no situation of "only one factor or one factor has a very high rate of explanation", which indicates that there is no obvious common method bias in this study.

3.2. Descriptive statistics and correlation analysis

From Table 1 showing some basic information on descriptive statistics and correlation analysis of the four variables, the correlation between the two of the four variables is significant.

Table 1: Descriptive statistics and correlation analysis between variables (N=838)

	<i>M</i>	<i>SD</i>	Stress perception	Positive core schema	Self-control	Psychological adaptation
Stress perception	42.16	7.963	1			
Positive core schema	25.77	9.123	-0.225***	1		
Self-control	57.93	11.661	-0.148***	0.286***	1	
Psychological adaptation	194.30	28.613	-0.318***	0.609***	0.584***	1

Note: *** stands for $P < 0.001$

3.3. Regression analysis, intermediation, and chained intermediation

Table 2: Regression analysis

	Regression equation	Overall fit index			Significance of regression coefficients	
	Predictor variable	<i>R</i>	<i>R</i> ²	<i>F</i>	β	<i>t</i>
Positive core schema	Distinguishing between the sexes	0.323	0.104	24.167	-0.113	-3.407

	Grade				0.201	6.090
	Household				0.077	2.353
	Stress perception				-0.243	-7.374
Self-control	Distinguishing between the sexes	0.335	0.112	21.072	-0.142	-4.266
	Grade				0.079	2.361
	Household				-0.018	-0.537
	Stress perception				-0.111	-3.275
	Positive core schema				0.238	6.904
Psychological adaptation	Distinguishing between the sexes	0.762	0.581	192.085	-0.049	-2.122
	Grade				-0.010	-0.431
	Household				-0.053	2.362
	Stress perception				-0.159	-6.784
	Positive core schema				0.445	18.240
	Self-control				0.428	17.939
Note: The variables in the model are standardized and brought into the regression equation						

Table 3: Direct and mediating effects between stress perception and psychological adaptation among college students

Effect	Trails	Efficiency value	Magnitude of effect	95% confidence interval
Direct effect	Stress perception - psychological adaptation	-0.159	47.06%	[-0.205, -0.113]
Intermediary effect	Stress perception - positive core schema - psychological adaptation	-0.108	31.59%	[-0.143, -0.074]
	Stress perception - self control - psychological adaptation	-0.048	14.04%	[-0.085, -0.012]
	Stress perception - positive core schema-self-control- psychological adaptation	-0.025	7.31%	[-0.035, -0.015]
	Aggregate intermediary effect	-0.181	52.94%	[-0.241, -0.116]

After standardizing the data, regression analysis was conducted using Model 4 of PROCESS 3.5, an SPSS plugin provided by Hayes, with perceived stress as the independent variable, psychological adaptation as the dependent variable, positive core schema as the mediating variable, and grade, gender, and family as control variables. The entire regression equation was significant, $R^2=0.419$, $F(5, 832)=119.907$, $p<0.001$; the total effect value in this path -0.340 ($P<0.001$), the direct effect value -0.207 ($P<0.001$), and the indirect effect value is -0.133 ($P<0.001$). The whole regression equation was also significant with stress perception as the independent variable, psychological adaptation as the dependent variable, self-control as the mediator variable, and grade, gender, and family as the control variables, $R^2=0.413$, $F(5, 832)=117.224$, $P<0.001$; the total effect value in this pathway was -0.340 ($P<0.001$), and the direct effect value -0.250 ($p<0.001$), indirect effect value -0.089 ($p<0.001$).

Using model 6, with stress perception as the independent variable, college students' psychological adjustment as the dependent variable, positive core schema and self-control as the mediator variables, and grade, gender, and family as the control variables, the results of the path coefficients are shown in Figure 2. The specific values of the entire regression analysis can be found in Table 2, and the specific direct and mediating effects can be found in Table 3. The whole regression equation was significant, $R^2=0.575$, $F(6,831)=192.085$, $p<0.001$. The chain mediation effect was tested by Bootstrap sampling, and the results showed that the path indirect effect with positive core schema as the mediating variable was -0.108(95%CI=[-0.144,-0.073]), and the path indirect effect with self-control as the mediating variable was -0.048 (95% CI=[-0.084,-0.017]), the path indirect effect with

Positive Core Schema and Self-Control as the mediating variable was -0.025 (95% CI=[$-0.035, -0.015$]), and the total of all indirect effects was -0.181 (95% CI=[$-0.241, -0.116$]), the chain mediating role of positive core schema and self-control in college students' stress perception on psychological adaptation was established.

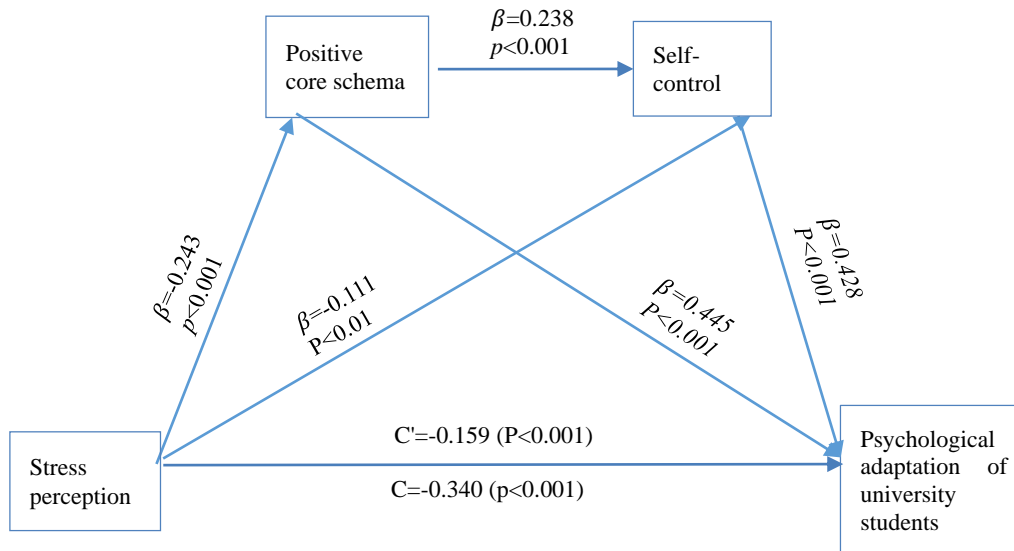


Figure 2: Chain mediation between positive core schema and self-control in the effect of stress perceptions on psychological adaptation among college students

4. Discussion

4.1. The effect of stress perception on psychological adaptation among college students

First of all, the results of this study show that college students' stress perception and psychological adaptation are significantly negatively correlated, and to a certain extent, college students with high-stress perception have poor psychological adaptation ability and need a long time to adapt. General stress theory suggests that the stress perceived by an individual will directly lead to the generation of negative emotions, which in turn will lead to the individual's psychological and behavioral problems [17]. Empirical studies have shown that these perceived psychological distress and stresses cause individuals to have lower levels of mental health, such as reduced sense of self-worth, avoidance, anxiety, depression, etc. [18,19], which is a factor that seriously affects the physical and mental development of individuals. College students are subjected to various pressures from academics, employment, emotions, interpersonal, and other aspects, which become an important reason for current students to have psychological problems such as tension and irritability [20]. These various pressures make college students feel exhausted in their daily lives, and feeling pressure and exhaustion for a long period of time tends to cause individuals to produce more negative emotions, which affects their coping styles when they face the problems they need to deal with, and the excessive pressure individuals perceive in their daily lives leads to difficulties in adopting a positive way to face their academic lives [21-23]. Naturally, it will reduce the psychological adaptation level of college students. From this study, it can be seen that college students with high stress perception will have more difficulty in psychological adaptation than those with low-stress perception, so in order to help college students have stronger psychological adaptation, we can start by helping them reduce their stress perception.

4.2. Mediating roles of positive core schema and self-control in stress perception and psychological adaptation, respectively

It can be concluded in this study that positive core schema plays a significant mediating role in college students' stress perception and psychological adaptation, and hypothesis H1 is valid that college students' stress perception can affect their psychological adaptation by influencing their positive core schema. Self-schema is a cognitive generalization of the self and is related to processing information about the self [24]. The judgments and evaluations made about others in social adaptation are also an important factor in influencing an individual's social adaptation. The other schema of cognitive generalizations about others is related to processing information about others [[10]]. Higher levels of stress perception result in individuals being more prone to frequent mind wandering due to anxiety and worry about upcoming stressful events. Mind wandering interrupts the individual's thinking, reduces task efficiency, and predisposes them to negative emotions such as frustration and anxiety [25], and may also lead to negative evaluations of oneself and a reduced sense of self-efficacy [26]. Thus, college students with high stress perceptions will have lower positive evaluations of the self-schema/other schema. This could also indicate that individual stress perceptions will negatively affect the positive core schema. Positive self/other schema also forms positive psychological response patterns, affecting individuals' perceptions of others, and prompting individuals to produce a series of internalized positive expectations for interpersonal relationships, which influence the quality of relationships between individuals and their peers [27]. Similarly, a decrease in the positive level of the core schema will also reduce the positivity of the psychological response mode, which will in turn reduce the individual's positive expectations for interpersonal relationships or even generate negative expectations, which in turn will weaken the individual's psychological adaptive capacity. In clinical samples, individuals with schizophrenia who have a positive core schema are more likely to recover [28]. Individuals who have a strong ability to change their responses to conform to standards such as ideals, values, or social expectations are themselves better adapted to the needs of school and society, have higher satisfaction with themselves, and thus have greater psychological resilience.

Self-control also plays a significant mediating role in college students' stress perception and psychological adaptation, and hypothesis H2 holds true that college students' stress perception can reduce their psychological adaptation by reducing their self-control. The previous paragraph cited research that higher levels of stress perception lead to individuals being more prone to frequent mind wandering due to anxiety and worry about upcoming stressful events [25], and Moon et al. found that individuals with frequent mind wandering had less self-control [29], which is mainly characterized by difficulties in protecting themselves from distractions [30], which is a strong support for the results of the present study. Tangney, Baumeister, and Boon (2018)[31] found in their study that Individuals with higher levels of self-control typically have better academic or work performance, greater resilience (including fewer psychiatric disorders, and high self-esteem), healthier eating habits, good sociability, and more positive emotional states. This is consistent with this study's finding that self-control affects psychological adjustment in college students.

4.3. Stress perception and psychological adaptation in college students: the chain mediating role of positive core schema and self-control

Positive core schema and self-control play a chain mediating role in college students' stress perception and psychological adaptation. Assuming that H3 is valid, college students' stress perception negatively affects their positive core schema, and negatively affected positive core schema reduces the level of self-control of college students, which in turn reduces their psychological adaptation. Stress affects individual adaptation by depleting certain psychosocial resources. In daily life, most students will encounter various setbacks and challenges, and these stressful events are not

long-term, but they will have a greater impact on students' daily lives and negatively affect students' motivation, self-confidence, and commitment to learning [32]. The stress buffer hypothesis suggests that the threatening effects of stress may be counteracted or balanced by an individual's positive resources and that individuals with higher levels of positive personal trait resources (e.g., proactive personalities) are well adapted to both high and low-stress situations. This reveals that having a positive core schema can help us relieve stress and adapt better to our environment. The present study concludes that there is also a significant positive correlation between self-control and positive core schema, and other studies have shown that college students with high self-control also have more positive evaluations and perceptions of self and others, which is related to the positive core schema's attitudes related to achievement and self-control [[14]]. The results of the present study also suggest that we can help college students build positive core schemas by changing their stress perceptions thereby enhancing their self-control and thus improving their psychological resilience.

5. Research Value and Research Outlook

College students are an important reserve for the development of the country, and the mental health of college students has a bearing on the future of the motherland, and the report of the Twentieth National Congress of the Communist Party of China (CPC) puts forward the need to "pay attention to mental health and mental hygiene." Mental health includes emotional stability, interpersonal harmony, cognitive reasonableness, and adaptation to change, etc. In this study, the psychological adaptation part includes these contents and college students are facing changes in several aspects of the scale we selected. In addition, the survey shows that 67.50% of Chinese college students' stress perception is in the middle to high level, and the higher the perceived stress level, the more serious the college students' anxiety. An important condition for psychological adaptation is that the environment faced by an individual has changed, at this time, in order to reach a state of harmony with the environment, the individual needs to make corresponding psychological and behavioral adjustments to cope with it, and college students are faced with multiple pressures such as interpersonal relationships, campus adaptation, employment, and confusion about the future, so how to help college students to improve the ability to adapt to the psychological environment is crucial for their physical and mental health, their subsequent development and social security. Helping college students improve their psychological resilience is crucial to their individual physical and mental health, subsequent development, and social security. In order to improve the physical and mental health of college students, this study draws clear conclusions about the correlation between the four variables of psychological adaptation, stress perception, positive core schema, and self-control, and the chain mediating role of the two variables, positive core schema, and self-control, in psychological adaptation and stress perception, and establishes a link between the four variables. It is hoped that these research data and results can help college students solve some related problems, improve their mental health, help better adapt to life, and better serve the society, and also hope to provide some support and new ideas for related researchers.

Psychological adaptation and perceived stress is a process of continuous development and change, and the cross-sectional study used in this study does not reflect its dynamics well, future studies may consider using the longitudinal research method to conduct further research. Then this study mainly used the questionnaire method, the subjects inevitably have the problem of slackness and lack of seriousness when doing the questionnaire, and it is hoped that the experimental method can be added in the future for a deeper study.

6. Conclusion

- (1) There is a significant negative correlation between the variable of college students' stress

perception and the variables of psychological adaptation, positive core schema, and self-control; there is a significant positive correlation between college students' psychological adaptation and the variables of positive core schema and self-control; and there is also a significant positive correlation between positive core schema and self-control.

(2) College students' stress perceptions had both significant direct and indirect effects on psychological adaptation, and the indirect effects included three pathways: mediation through positive core schema, mediation through self-control, and mediation through a chain of positive core schema, self-control.

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Ethics Approval: This study obtained the consent of the Ethics Committee of Southwest Minzu University, where the main research is located, and the participants.

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