

The relationship between self-control and social adaptation in university students: chain-mediated effects of positive core schema and stress perception

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Abstract. In order to explore the influence of self-control on college students' social adaptation and its mechanism of action, the Self-Control Inventory, the Brief Positive Core Schema Scale, the Stress Perception Scale, and the Chinese College Students' Adaptation Scale were used to investigate 679 college students. The results revealed that: (1) self-control was significantly and positively correlated with the Positive Core Schema; the Positive Core Schema was negatively correlated with Stress Perception and positively correlated with Social Adaptation; Stress Perception was negatively correlated with Social Adaptation; (2) the Positive Core Schema and Stress Perception not only partially mediated the relationship between self-control and Social Adaptation respectively, but also played a chain-mediated role between the two. The study reveals the relationship between self-control and social adaptation of college students and its mechanism of action, expands the influencing factors of college students' social adaptation, and has certain practical significance for the mental health work of college students.

Keywords: Positive core schema, Self-control, Social adaptation, Stress perception.

1. Introduction

Social adaptation is a process in which an individual interacts with the self-system composed of his or her various psychological resources and the social context system composed of various stimuli [1]. The essence of social adaptation state lies in the harmony and balance between external and internal, including the psychological relationship between individuals and the social environment, and within individuals [2]. Good adaptability is one of the main signs of college students' psychological health. The university stage is an important period for the formation of individual self-consciousness, the establishment of self-identity and the formation of outlook on life and values, and the good or bad social adaptation of college students not only affects their learning and development, happiness and physical and mental health in the university stage, but also affects their work and life after adulthood [3,4]. Therefore, the influencing factors of students' social adaptation are also issues worth focusing on [5]. Exploring the influencing factors of college students' social adaptation and understanding their internal mechanisms of action are crucial to reducing maladaptive behaviors among college students [6].

Self-control refers to an individual's ability to resist internal desires and external temptations in order to adhere to long-term goals [7], and is an individual's ability to autonomously regulate behavior and match it to personal values and social expectations. It can trigger or stop specific behaviors such as inhibiting impulsive behaviors, resisting temptations, delaying gratification, developing and completing behavioral plans, and adopting socially situationally adapted behaviors [8]. Self-control has been found to be positively associated with physical and mental health and wealth [9], and students with greater self-control have better classroom performance [10]. It is also negatively correlated with undesirable behaviors such as aggressive, antisocial, and addictive behaviors. Self-control occupies a central position in individual personality development, which can help individuals adapt to social changes and has an important impact on their mental health and social adaptive behavior [11]. Individuals with high self-control have greater adaptive capacity, have healthier

physical and mental health, perform better in school and work, and have higher life satisfaction [12]. On this basis, this study proposes Hypothesis 1: Self-control of college students positively predicts social adaptation.

Schemas affect how individuals cognitively process situations or life events. In recent years, many cognitive theories of mental illness and psychological disorders have shown that individuals' immediate evaluations of themselves and others are closely related to internal core schemas [13]. Core schemas are important mediating variables for individuals in adapting to society, including self-schemas and others' schemas [14]. The self-schema, an individual's cognitive generalization of self, is associated with processing information about the self and mediates between the environment and an individual's mental health [15]. The others schema of cognitive generalizations about others is related to processing information about others [14], and the judgments and evaluations made about others in social adaptation are also an important factor influencing an individual's social adaptation. Schemas can be positive or negative, and thus there are positive and negative core schemas. For example, negative self-schemas are predictive of depression [16], while positive core schemas are associated with attitudes related to achievement and self-control [17]. In light of this, the present study proposes hypothesis 2: the positive core schema of college students mediates the relationship between self-control and social adaptation.

The relationship between stress and mental health has received increasing attention in contemporary psychological research. Stress perception refers to the subjective feelings that arise from the cognitive system's processing and evaluation when an individual faces a threatening stimulus in the environment, which is manifested as a sense of nervousness or a sense of being out of control [18]. Previous research has found that the higher the level of stress, the lower the level of psychological adaptation, and that stress can have a negative predictive effect on good socially adapted behavior and a positive predictive effect on poorly adapted behavior [19]. It has also been shown that high stress perception is positively associated with addictive behaviors [20], and according to the "tension" theory, problematic behaviors arise from negative experiences caused by stress or tension. In addition, stress perception is negatively related to self-control [21]. Resource conservation theory suggests that self-control is an important resource to help people achieve their goals [22], and the strength model also suggests that coping with stress requires sufficient self-control energy [23]. Experimental studies have found that individuals in a state of ego depletion in stress do worse on academic tasks and have more difficulty completing them [24]. Adolescents with higher self-control have fewer daily stress reactions compared to adolescents with lower self-control [25]. In light of this, this study proposes research hypothesis 3: college students' stress perceptions mediate the relationship between self-control and social adaptation.

Social adaptation is a fundamental task of the life course, the core of individual survival and development and an important goal of socialization, as well as an important indicator of the level of mental health [26]. The more mature and well-established intellectual (cognitive) model of the theoretical model of social adaptation emphasizes the role of cognition in social adaptation, arguing that an individual's intrinsic cognitive structure and cognitive processing are closely related to social adaptation. Core schema, as one of the important cognitive factors for individuals, affects their cognitive processing of self, others, situations and life events. In addition Lazarus (1991) argued that cognitive appraisal is at the core of the concept of stress perception, and research has shown that stress perception is effective in predicting the social adaptation of secondary school students [27]. In light of this, the present study proposes Hypothesis 4: College students' Positive Core Schema predicts stress perception, and the two act as chain mediators between self-control and social adaptation.

In summary, college students' self-control, positive core schema, stress perception, and social adaptation are closely related, and there are relatively few studies that synthesize self-control, positive core schema, and stress perception to examine the mechanism of their influence on social adaptation. Therefore, the present study aims to comprehensively examine the mechanism of self-control on

social adaptation and the chain mediating role of positive core schema and stress perception between them.

2. Method

2.1 Participants

In this study, a questionnaire survey was conducted on undergraduates from four universities in Sichuan Province using convenience sampling method, and a total of 702 questionnaires were received, excluding the data of incomplete answers, wrong answers to the wrong questions of the test, and too short answer time (less than 2 minutes), and 679 valid questionnaires were obtained, with a validity rate of 92.7%. Among them, there were 519 female students (76.43%) and 160 male students (23.56%); 328 freshmen (48.31%), 170 sophomores (25.04%), 165 juniors (24.30%), and 16 seniors (2.36%), and the average age of the subjects was 19.23 ± 1.18 years.

2.2 Instruments

2.2.1 Self-Control Scale

The Self-Control Scale (SCS) was used to assess the level of self-control. The scale consists of 19 items, including 5 dimensions: impulse control (6 items), healthy habits (3 items), resisting temptation (4 items), focusing on work (3 items), and moderating entertainment (3 items). A 5-point Likert scale was used, with positively scored items ranging from 1 to 5 points from "not at all compliant" to "fully compliant", and negatively scored items on the opposite scale. The total score ranges from 19 to 95, with higher scores indicating higher levels of self-control. In this study, the Cronbach's alpha coefficient of the scale was 0.891.

2.2.2 Concise Positive Core Schema Scale

The two dimensions of Positive Self and Positive Others of the Brief Core Schema Scale were used to measure the positive core schema of college students. The scale consists of 12 items [14], such as: I am a fun person; others are fair and just. Subjects were asked to judge whether they held the beliefs in the entries, and if they chose "no", they were scored 0. If they chose "yes", they were asked to rate their beliefs on a scale ranging from "somewhat believe" to "completely believe". If the subject chooses "yes", he/she has to choose the intensity of holding this belief from "somewhat believe" to "completely believe", and the score ranges from 1 to 4, respectively. The Cronbach's alpha coefficient for this scale in this study was 0.923.

2.2.3 Stress perception scale

The Stress Perception Scale developed by Cohen, Kamarck, and Mermelstein [28] and revised by Yang and Huang [29], which assesses three kinds of stressful situations: (1) daily chores; (2) major events; and (3) changes in coping resources, including both tension and loss of control, with a total of 14 items, was used to measure the college students' nearly one month's Stress perception level. A 6-point scale was used, with scores ranging from 1 to 6, from "never" to "always". The higher the total score, the higher the perceived stress level and the higher the sense of loss of control. In this study, the Cronbach's alpha coefficient for this scale was 0.863.

2.2.4 Chinese College Student Adaptation Scale

The Chinese College Student Adaptation Scale (CCSAS) developed by Fang et al. was used, which has good reliability and validity. The scale consists of 60 questions, and each question is scored on a 5-point scale ranging from 1 to 5, from "disagree" to "agree". The higher the score, the higher the level of social adaptation. The scale consists of seven dimensions: interpersonal adaptation, study adaptation, campus life adaptation, career choice adaptation, emotional adaptation, self-adaptation, and satisfaction. The Cronbach's α coefficient of this scale in this study was 0.942.

2.3 Data processing

SPSS27.0 statistical software was used for descriptive statistical analysis; Harman one-way method was used for the test of common method bias; according to the idea of mediation effect test proposed by Wen and Ye [30] chained mediation effect test was carried out by using the macro program Process model 6 in SPSS.

3. Results

3.1 Common method bias test

In this study, the Harman one-factor method was used to test for common method bias, and an exploratory factor analysis was conducted on each of the four scale entries separately, and 21 factors with eigenvalues greater than 1 were extracted, and the cumulative variance explained of the first factor was 21.37%, which is lower than the critical criterion of 40%, indicating that there is not a more obvious common method bias [31].

3.2 Descriptive statistics and correlation analysis

The results of the correlation analysis are shown in Table 1, self-control was significantly positively correlated with positive core schema and social adaptation ($r=0.37$ and $r=0.63$, $p<0.01$), and self-control was significantly negatively correlated with stress perception ($r=-0.21$, $p<0.01$); positive core schema was significantly negatively correlated with stress perception ($r=-0.24$, $p<0.01$), and was significant positive correlation ($r=0.64$, $p<0.01$); and stress perception was significantly negatively correlated with social adaptation ($r=-0.36$, $p<0.01$). Since gender, age, and grade level were significantly correlated with the variables discussed in this study, they were used as control variables in the subsequent data analysis.

Table 1. Mean, standard deviation and correlation of variables (N=679)

| Variables | M | SD | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------------|-------|------|---------|--------|--------|---------|---------|---------|
| 1.Dender | 1.76 | 0.43 | | | | | | |
| 2.Age | 19.23 | 1.18 | 0.04 | | | | | |
| 3.Grade | 1.81 | 0.89 | 0.06 | 0.73** | | | | |
| 4.Self-control | 3.07 | 0.62 | -0.14** | 0.13** | 0.13** | | | |
| 5.Positive core schema | 2.09 | 0.76 | -0.09* | 0.17** | 0.19** | 0.37** | | |
| 6.Stress perception | 3.15 | 0.58 | -0.07 | -0.02 | 0.03 | -0.21** | -0.24** | |
| 7.Social adjustment | 3.26 | 0.50 | -0.12** | 0.12** | 0.13** | 0.63** | 0.64** | -0.36** |

Note: * $p<0.05$, ** $p<0.01$. gender: 1=male, 2=female; grade level: 1=freshman, 2=sophomore, 3=junior, 4=senior.

3.3 The effect of college students' self-control on social adaptation: the mediating role of positive core schema and stress perception

In accordance with the theoretical hypothesized model: the independent variable is self-control (X), the mediator variable 1 is the positive core schema (M1), the mediator variable 2 is the stress perception (M2), and the dependent variable is social adaptation (Y), with age and grade as control variables, the chained mediation effect test was conducted using model 6 of the SPSS plug-in PROCESS provided by Hayes (2013).

The entire regression equation was significant, $R^2 = 0.39$, $F(1, 677) = 436.86$, $p < 0.001$. The mediation effect was tested using Bootstrap sampling, and was analyzed by summing the total scores of Positive Self and Positive Others into a Positive Core schema. The results of the chained mediation

regression analyses showed that (as shown in Table 2 and Figure 1), self-control significantly predicted the Positive Core schema ($\beta = 0.45, p < 0.001$); self-control ($\beta = -0.14, p < 0.001$) and positive core schema ($\beta = -0.14, p < 0.001$) significantly predicted stress perceptions; self-esteem ($\beta = 0.35, p < 0.001$), positive core schema ($\beta = 0.29, p < 0.001$), and stress perceptions ($\beta = -0.14, p < 0.001$) significantly predicted social adaptation.

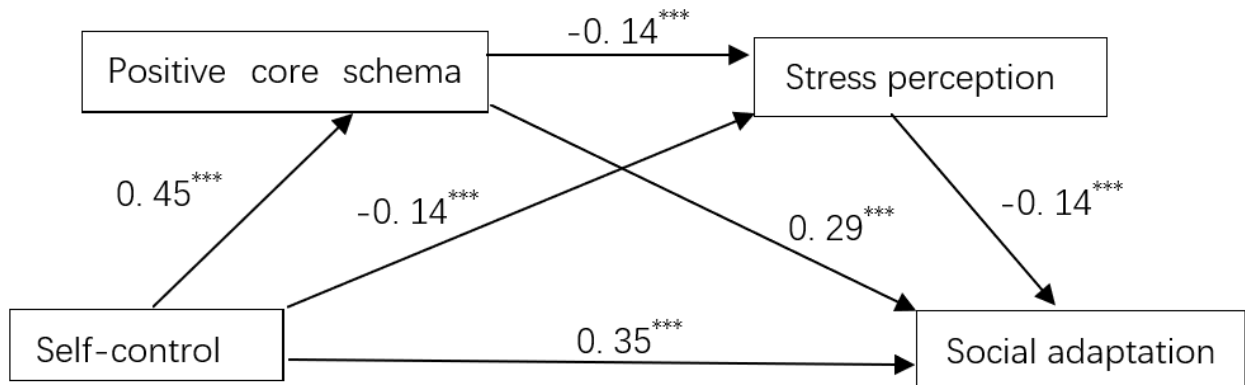


Fig. 1 Model diagram of the chain mediating role of positive core schema and stress perception in the effect of self-control on social adaptation

Table 2. Chained mediation regression analysis

| Regression equation | | Overall fit index | | | Significance of regression coefficients | |
|----------------------|----------------------|-------------------|------|-----------|---|----------|
| Outcome variable | Predictor variable | R | R2 | F | β | t |
| Positive core schema | Self-control | 0.37 | 0.13 | 107.79*** | 0.45 | 10.38*** |
| | Self-control | | | | -0.14 | -3.66*** |
| Stress perception | Positive core schema | 0.27 | 0.07 | 27.36*** | -0.14 | -4.62*** |
| | Self-control | | | | 0.35 | 16.34*** |
| Social adaptation | Positive core schema | 0.78 | 0.61 | 349.91*** | 0.29 | 16.76*** |
| | Stress perception | | | | -0.14 | -6.54*** |

The direct effect of self-control on social adaptation was 0.35 ($t = 16.34, p < 0.001, LLCI = 0.30; ULCI = 0.39$), which accounted for 68.63% of the total effect size (Table 3), and the total indirect effect size of positive core schema and peer attachment between self-esteem and social adaptation was 0.16, which accounted for 31.37% of the total effect.

Table 3. Chained mediated effects test

| | Indirect effect values | Boot standard error | Boot CI lower limit | Boot CI upper limit | Relative mediation effect |
|---|------------------------|---------------------|---------------------|---------------------|---------------------------|
| Total indirect effect | 0.16 | 0.02 | 0.12 | 0.19 | 31.37% |
| Self-control → Positive core schema → Social adaptation | 0.13 | 0.02 | 0.09 | 0.15 | 25.49% |
| Self-control → Stress perception → Social adaptation | 0.02 | 0.01 | 0.01 | 0.04 | 3.92% |
| Self-control → Positive core schema → Stress perception → Social adaptation | 0.01 | 0.00 | 0.01 | 0.02 | 1.96% |

The above analysis shows that the model is valid and there is a chain mediation effect, i.e., self-control can not only have a direct effect on college students' social adaptation, but also have an indirect effect on college students' social adaptation via the chain mediation formed by positive self schema and stress perception.

4. Discussion

4.1 The relationship between self-control and social adaptation in college students: the chain-mediated effect of positive core schema and stress perception

This study reveals the chain mediating role of self-control on the positive core schema and stress perception in the process of college students' social adaptation, which is an exploration of the mechanism of self-control influencing social adaptation. By integrating schema theory, "tension" theory, resource preservation theory and social adaptation theoretical model, this study constructs and analyzes the chain mediating role of self-control on the positive core schema and stress perception in the process of college students' social adaptation, and further clarifies the process of social adaptation, which is an exploration of the mechanism of self-control influencing social adaptation. Adaptation of college students is a multifactorial structure, and these factors are interrelated. The adaptability level of college students is in correspondence with their physical and mental condition and life satisfaction, i.e., the stronger the adaptability, the better the physical and mental condition and the higher the life satisfaction [32]. Good social adaptation contributes to an individual's physical and mental health and growth, and socially maladjusted individuals are highly susceptible to psychological problems and may even experience problematic and criminal behaviors [33]. At the practical level, the results of this study suggest that enhancing college students' social adaptation can be achieved by improving their level of self-control, enabling them to have positive core schemas and slowing down their level of stress perception through schema intervention.

Self-determination theory suggests that environmental factors can influence the integration and organization of the self through the satisfaction or non-satisfaction of the individual's own basic psychological needs, which ultimately affects the individual's adaptive capacity [34]. The healthiest and happiest people are those whose selves and environments are a perfect match, but it is difficult to achieve a perfect match in daily life, but it is possible to improve the degree of match by adjusting the self. People with high self-control are able to adapt well to stress and make self-adaptations. The results of the study show that self-control has a significant direct effect on social adaptation, indicating that the higher the level of self-control of college students, the better their social adaptation, which verifies the research hypothesis one, which is basically consistent with the results of previous

studies. Yang found through research that adolescents who have good control over their emotions and who can persevere in the face of a variety of external temptations are more capable of independent living. Galla and Wood also concluded that self-control has a significant effect on an individual's psychological well-being and socially adaptive behavior. This shows that self-control is an important psychological influence mechanism for social adaptation.

Second, this study found that college students' positive self/other schemas mediated the relationship between self-control and social adaptation, validating Hypothesis Two. This finding suggests that individuals with high levels of self-control positively influence their social adaptation through the formation of positive schemas of self and others. Cognitive neuroscience has found that self-control is an important ability for people to achieve long-term goals, but is a relatively limited cognitive resource [35]. The Positive Self Schema is a cognitive representation that guides individuals in social life to process information about their "self" and is the basis for high levels of self-esteem, positive self-evaluations, and high levels of self-efficacy. The positive self/other schema in this study is a cognitive structure, and as such, it is influenced by self-control. Cognitive theory suggests that negative core schemas lead to cognitive vulnerability and dysfunctional attitudes in individuals and is supported by empirical research [17]. The results of the present study, on the other hand, validate the positive influence of positive core schemas on their social adaptation, further enriching and developing cognitive theory. It also further reveals the mechanism of self-control's influence on social adaptation.

Again, self-control has a positive effect on social adaptation through stress perception, validating hypothesis three. Stressful events are encountered by everyone, but there are differences in individual perceptions of stressful events, which determines the extent of the impact of stressful events on individuals [36]. Matheny et al. found that individuals who perceive greater stress are unable to deal with the problems caused by the stressful situation, and that when facing stressful events, college students who perceive more stress are more likely to develop negative emotions. According to the theory of "general stress" [37], stress causes problematic behaviors, i.e., negative experiences caused by various kinds of tension or stress. Specifically, self-control negatively predicts stress perceptions, while stress perceptions also negatively predict social adaptation, which is consistent with the results of previous studies, revealing that stress perceptions have a transfer role between self-control and social adaptation. College students with high self-control have more resources to control perceived stress due to academic, interpersonal, and employment influences. It suggests that the higher the level of self-control of college students, the less stress they perceive, which will promote their social adaptation.

Finally, the present study found chain-mediated effects of positive core schema and stress perception in self-control and social adaptation, which verified hypothesis four. This result reveals a close relationship between positive core schemas and stress perception. On the one hand, positive core schema negatively predicts stress perception. Schemas affect how individuals cognitively process situations or life events. Theoretically, the positive core schema in this study reflects the self and other dimensions of the internal working model formed in the early years, and individuals with positive self and other schemas are more likely to develop secure peer attachments and more likely to develop positive expectations for interpersonal relationships. During young adulthood, individuals need to move from a state of dependence to independence and formally enter adult society. This period plays a critical role in an individual's lifelong development. Entering college is an important turning point in young adulthood, and although entering college is often viewed as a positive life event, it also implies that the individual is faced with a multifaceted change in his or her relationship with the environment, which brings with it certain stresses and challenges. From the day they enroll in college, college students need to adapt to new environments and groups, and may feel potential academic competition and employment pressures at any time. These factors will greatly increase the emotional distress and psychological problems of college students. Research on the mental health of college students confirms to some extent the general stress that entering college brings to individuals (Lu, 2003). College students with a high level of self-control form positive schemas about self/others

and directly influence individuals' perception of stress, which in turn promotes their level of social adaptation [38]. On the other hand, the process of social adaptation is also a process in which individuals interact with various social context systems with their own self-system composed of various psychological resources. Thus, positive core schema and stress perception play a chain mediating effect in self-control and social adaptation. The results of this study shed further light on the process of individual social adaptation.

4.2 Limitations and Implications of the Study

Although the hypotheses of this study were confirmed, from the perspective of data analysis, there are still dimensions that can be subdivided under the three scales of Self-Control, Stress Perception, and Social Adaptation, and there is still room for further exploration in theoretical modeling and data analysis. In addition, social adaptation is an ongoing process of development and change, and studying its dynamics requires the use of more refined methods. In this context, cross-sectional studies, although characterized by simplicity and speed, do not effectively reflect the dynamics of social adaptation. Considering the long-term and enduring nature of social adaptation, future studies may consider using longitudinal research methods to explore in depth a series of variables and their interrelationships in the process of social adaptation, so as to provide a scientific basis for a better understanding of and intervention in the issue of social adaptation. Meanwhile, since the self-report method used in this study may have the effect of social approvability, more objective methods such as behavioral observation and experimental method can be used at a later stage to further validate the relationship between the variables, so as to more accurately assess the effect of social adaptation.

5. Conclusion

By investigating and analyzing the data of 679 college students in the study, the following conclusions were drawn:

- (1) Self-control significantly predicts college students' social adaptation.
- (2) Positive core schema mediates the relationship between self-control and college students' social adaptation.
- (3) Stress perception mediates the relationship between self-control and college students' social adaptation.
- (4) Self-control influences college students' social adaptation through the chained mediation of positive core schema and stress perception.

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