

Relationship between emotional intelligence and self-efficacy among college students: the mediating role of coping styles

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Abstract

Numerous studies have shown that college students have a lot of bad emotions due to their special status. Bad emotions cause many conflicts in college students' lives and studies, resulting in a decrease in the quality of life and studies. However, few studies have examined the influence of the ability of self-regulation of emotions on the ability of college students to deal with daily life events. To explore the specific effects of emotional intelligence of college students' self-control and social interactions on self-efficacy in terms of their ability to cope with stress, we explored the link between emotional intelligence and self-efficacy and the mediating role of coping styles on both. In this study, we recruited 800 Chinese university students for a questionnaire survey using a random sampling method. We only obtained a valid sample of 717 ($M = 18.88$, $SD = 1.61$). Each participant completed a series of questionnaires, including the Sentiment Scale, Self-Efficacy Scale, and Coping Style Scale. Afterwards, data analysis was conducted using SPSS 20.0 and AMOS 22.0 to develop structural equation models. The results showed that emotional intelligence not only directly affects self-efficacy, but also indirectly affects self-efficacy through coping styles. The results of the study indicate that college students who assess their self-efficacy based on their emotional state and who are able to manage their emotions will experience more positive feelings psychologically and behaviorally, and thus achieve higher self-efficacy in activities such as classes, internships, and employment interactions.

Keywords Coping style · Emotional intelligence · Self-efficacy

1 Introduction

Is an individual's behavior in coping with different situations related to the amount of skills the individual possesses, or is it related to what the individual believes he or she can do in different situations? Self-efficacy is closely related to this question. Self-efficacy refers to an individual's ability to deal with various life events, including the ability to cope with learning problems. The concept of "self-efficacy" was first introduced by the American psychologist Bandura [1], and since then, the theory and practice of "self-efficacy" has been gradually explored and explained by scholars. Self-efficacy influences people's behavioral choices: coping style refers to the process of cognitive and behavioral adaptation and efforts to mitigate the adverse effects of an event when an individual is under stress [2]. The relationship between self-efficacy and coping styles is complex: research has shown zero [3], positive [4], and negative [5] correlations: but self-efficacy influences the way individuals deal with problems by affecting their behavioral choices,

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cognitive thought patterns, motivation levels, and affective experiences; and the way individuals prefer to deal with problems in turn influences their beliefs about how to deal with them. Students are encouraged to recognize their emotional characteristics, to make efforts to improve their abilities, to increase the level of self-efficacy, to explore their unlimited potential, to know themselves, to actively explore, and to correctly decide their future direction in constant adjustment. In this paper, we study how two factors, emotional intelligence and self-efficacy, affect college students in the face of various social environments today and what variables are at play in the middle of emotional intelligence and self-efficacy. Self-efficacy sense affects the way individuals make specific attributions, with high self-efficacy individuals with high self-efficacy are more likely to look for causes in themselves, while individuals with low self-efficacy individuals attribute problems to their own inability to solve. Individuals with low self-efficacy attribute problems to their own inability to solve them [6]; increasing the level of career decision-making self-efficacy improves learning ability by enhancing students' motivation to collect information and set goals, and improving decision-making self-efficacy [7]; individuals with higher self-efficacy have better academic performance, lower negative emotions, and better mental health [8–10]; self-efficacy is not only related to individual behavior and work skills, but also to the ability to use the skills acquired to perform the appropriate behavior and work.

Students are in an important period of rapid development, and the level of their self-efficacy will affect their schooling and development. However, from the current situation of education, many colleges and universities do not pay much attention to this aspect of education and focus too much on training students' knowledge and ability, which makes many students' self-efficacy awareness low, unwilling to communicate with others, unable to actively participate in teaching and collective school activities, lacking youthful vitality and hindering their physical and mental health development. Therefore, it is very necessary and practical to strengthen the cultivation ways of self-efficacy consciousness of college students in college education [11]. Self-efficacy influences a person's emotional response patterns, and emotional response patterns are an expression of emotional intelligence, so self-efficacy is in turn closely related to emotional intelligence (emotional intelligence). Emotional intelligence is a human ability to identify and regulate one's own emotions and those of others, and to use the emotional information obtained to adjust one's own thinking and behavior or that of others [12]. It is a psychological variable that affects the individual's ability to cope with environmental needs and stress [13, 14]. Emotional intelligence, as the ability to perceive and interpret interpersonal information in a social context, enables the ability to process and process emotions effectively: higher emotion management skills can significantly improve marital quality [15], and job satisfaction [16], and individuals with higher emotional intelligence are able to process and process positive or negative emotions appropriately [17] and experience more positive emotions [18]. People who with high emotional intelligence tend to be more sensitive to the feelings and emotions of others and to the thoughts of others, so individuals can maximize their own goals by constantly adjusting their emotion regulation strategies in different situations [19, 20]: emotional intelligence is considered to be an important ability that enables self-regulation of emotions and generates positive emotions at work; an individual's level of emotional intelligence can alleviate his or her own work stress [21]. The self-emotion-related dimensions of employee emotional intelligence have a positive effect on job performance and job effectiveness [22]. Therefore, it is necessary to pay attention to the development of emotional intelligence of college students.

College students are at a critical period of their lives and gradually entering society, but there are still many psychological problems with a large number of bad emotions, such as anxiety, irritability, depression, impulsiveness, etc., and students lack the ability to self-regulate. Emotion regulation and self-efficacy have important effects on survival, employment, learning, interpersonal communication, physical and mental health, and are important psychological skills that individuals need to adapt to society. From the foregoing, it is clear that relevant studies on college students' emotional intelligence and self-efficacy and their corresponding styles have achieved certain results, but there are still shortcomings in the depth, breadth and mediating mechanisms of the studies, for example, studies that separately examine the relationship between college students' emotional intelligence, coping styles and self-efficacy have not been seen and need to be further explored. The purpose of this study is to understand the correlation between emotional intelligence and self-efficacy among college students through a questionnaire survey, the effect of coping style on self-efficacy, and whether coping style is a mediating variable between the two. It is hoped that this study will expand the original theories and enrich the related research, and provide some guidance for the social adaptation and mental health of college students, and make corresponding suggestions on how to improve the emotional intelligence of college students to improve their self-efficacy.

2 Research methodology

2.1 Participants

Considering the privacy of the content of this study, an anonymous questionnaire was adopted to conduct the study so that the students could participate more actively in it. In this study, we recruited 800 Chinese university students for a questionnaire survey using a stratified random sampling method. A total of 717 valid questionnaires were collected after the invalid samples were removed, and the effective rate of the questionnaire reached 89.6%. Among them, 252 were male students and 465 were female students with an average age of 18.88 ± 1.61 years.

2.2 Measures

This study used the Emotional Intelligence Scale (EIS) [23, 25], the Self-Efficacy Scale (GSES) [24] and the Simplified Coping Style Questionnaire (SCSQ).

Emotional Intelligence Scale: the scale consists of 33 items, and the answers were obtained according to a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree) to measure an individual's perceptions of the extent to which s/he can identify, understand, harness, and regulate emotions in self and others. The scale is divided into four dimensions: emotion perception, self-emotion management, emotion management of others, and emotion expression. Its validity coefficient is 0.83. **Self-Efficacy Scale:** the scale consists of 10 items rated on a 4-point scale from not at all correct to completely correct on a scale of 1–4, with higher scores indicating higher general self-efficacy. The reliability test of the Chinese version of the GSES showed that its internal consistency coefficient was 0.87. **Simplified Coping Style Questionnaire:** the questionnaire consists of 20 entries divided into two dimensions: positive coping style and negative coping style. A 4-point scale was used, and the results of the questionnaire were the average scores of the positive coping and negative coping dimensions. The internal consistency coefficient of the questionnaire was 0.83, and the reliability coefficients of positive coping and negative coping were 0.85 and 0.80.

2.3 Procedure

The study was approved by the Ethics Committee of Graduate University of Mongolia. Participants from undergraduates and junior college students, majoring Philosophy, Economics, Law, Education, Literature, etc. (ten professional fields). 40 undergraduates and 40 junior college students per major, 800 students in all. Eight hundred college students were randomly selected as subjects at a university in China, and after the purpose of the study was carefully explained to them, the study participants agreed to participate in the study and pledged their confidentiality and anonymity during and after the study. The survey was answered using a paper questionnaire, which was given to the subjects and collected after 20 min with a small gift as a thank you for completing the questionnaire.

2.4 Data analysis

The software SPSS 20.0 was used to process and analyze the 717 valid data. Firstly, we performed a descriptive statistical analysis, secondly, correlation analysis was used to explore the relationship between emotional intelligence, self-efficacy and coping styles; Thirdly, the mediating role of coping styles between emotional intelligence and self-efficacy was examined using bootstrap approach; finally, structural equation modeling was used to further analyze the mediating role of coping styles.

3 Results and analysis

3.1 Correlation analysis of emotional intelligence, coping style and self-efficacy

Table 1 shows that in this study, the positive significant correlation between emotional intelligence and self-efficacy with a correlation coefficient of 0.550, $p < 0.01$; the positive significant correlation between emotional intelligence and

Table 1 Correlation matrix of emotional intelligence, self-efficacy, and coping styles

	Emotional intelligence	Self-efficacy	Coping styles
Emotional intelligence	1		
Self-efficacy	0.550**	1	
Coping styles	0.381**	0.321**	1

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 2 Table of intermediate effect test

	Effect	Boot SE	BootLLCI	BootULCI
Coping styles	0.0569	0.0173	0.0274	0.0945

Table 3 Table of coefficients of the effect of emotional intelligence on self-efficacy

	coeff	se	t	p	LLCI	ULCI
Emotional intelligence	0.5670	0.0381	14.8868	0.0000	0.4922	0.6417

Table 4 Model fit indices

χ^2	df	χ^2/df	RMSEA	CFI	TFI	NFI	IFI
147.571	12	0.000	0.125	0.923	0.821	0.918	0.924

coping style with a correlation coefficient of 0.381, $p < 0.01$; and the positive significant correlation between coping style and self-efficacy with a correlation coefficient of 0.321, $p < 0.01$. The present study further explored the mediating role of coping style between emotional intelligence and self-efficacy.

3.2 Mediating effect test

In this study, the bootstrap method was used to test the mediating role of corresponding modalities between emotional intelligence and self-efficacy. In the first step, first, whether $a * b$ is significant, significant indicates the existence of a mediating role; in the second step, whether c' is significant, significant indicates the possible omission of other mediators, insignificant indicates c' is the only mediator; in the third step, if c' is significant, then determine whether the direction of $a * b * c'$ is positive or negative, positive indicates a complementary mediator and negative indicates a competing mediator. The results are shown as follows.

From Table 2, it can be seen that the mediating effect of coping style between emotional intelligence and self-efficacy is significant, the interval ($LLCI = 0.0274$, $ULCI = 0.0945$) does not contain 0, and the mediating effect size $a * b$ is 0.0569. and then examine whether c' is significant, the results are as follows.

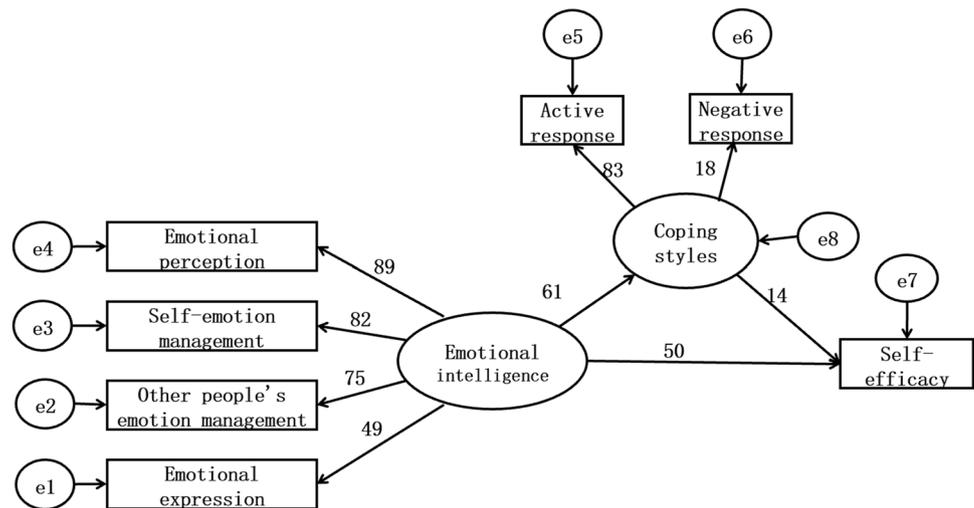
From Table 3, it can be seen that the coefficient of influence of emotional intelligence on self-efficacy is 0.567, $t = 14.8868$, $p = 0.000 < 0.05$ and the interval ($LLCI = 0.4922$, $ULCI = 0.6417$) does not contain 0, which indicates that c' is significant. Further, judging the direction of $a * b * c'$ revealed that $a * b * c' > 0$, which indicates that other mediating variables may have been missed and that emotional intelligence is a complementary mediator with other mediating variables.

3.3 Structural equation model validation

To further explore the mechanism of the role of coping styles in the relationship between emotional intelligence and self-efficacy, this paper used structural equation modeling to further analyze the mediating role of coping styles. The model was constructed accordingly.

From the fit indices of the hypothetical model listed in Table 4, it can be seen that the fit indices CFI , NFI , and IFI in the model all met the standard requirements or above. It indicates that the model fits the data well (see Fig. 1).

From this structural equation model, it can be found that emotional intelligence significantly affects self-efficacy and can indirectly affect self-efficacy through the mediating variable of coping style.

Fig. 1 Research framework

4 Discussion and conclusions

This study explored the role of emotional intelligence on college students' self-efficacy through an empirical approach. Four conclusions were drawn from this study: emotional intelligence was significantly related to self-efficacy; emotional intelligence was significantly related to coping styles; coping styles was significantly related to self-efficacy; and coping styles partially mediated the relationship between emotional intelligence and self-efficacy.

4.1 Emotional intelligence was significantly related to self-efficacy

Emotional intelligence was positively correlated with self-efficacy in this study. This is consistent with existing studies [19, 20]. It indicates that effective identification of one's own emotions can increase college students' beliefs about their ability to achieve desired outcomes when confronted. As seen in the structural equation model, emotional intelligence significantly affects self-efficacy. Emotional intelligence directly affects self-efficacy in college students, and the mediating effect of this pathway accounts for a large proportion of the total effect, which can indicate that the item emotional intelligence is an important mediating variable in influencing the results, and in the case of student learning, we can say that students' positive attitude toward learning is significantly and positively related to emotional intelligence. Emotional intelligence significantly and positively predicted self-efficacy, and students' generation of positive emotions could be mediated by emotional intelligence and self-efficacy. This is consistent with previous research findings that emotional intelligence is beneficial to students' self-efficacy, suggesting that it can positively influence self-efficacy not only through the positive emotions of emotional intelligence and but also through emotional intelligence that affects the development of self-efficacy and then acts on college students' slackness in learning. Emotional intelligence can positively predict individual self-efficacy, probably because individuals with higher emotional intelligence can effectively analyze the decision environment, build personal confidence, and use reasonable emotional expressions to influence others in order to effectively solve problems and make the right decisions, thus increasing self-efficacy.

4.2 Emotional intelligence was significantly related to coping styles

Emotional intelligence was positively correlated with coping styles in this study. This indicates that effective identification of one's own emotions is the basis for college students to adopt more positive. This result is similar to the findings of pre-study [13, 14, 26, 27]. The level of emotional intelligence of the population surveyed in this study is at an intermediate level, and the identification, effective regulation and application of one's emotions through positive interventions will promote the courage and ability of college students to face hardships and setbacks positively. In summary, the level of emotional intelligence has an important influence on the choice of coping styles. In the teaching work, through

psychological counseling, positive stress reduction and other interventions to improve college students in the face of frustration and difficulties in the process of life and governance learning often better control, adjust and use their own various emotions.

4.3 Coping styles was significantly related to self-efficacy

The relationship between coping styles and self-efficacy has been a hot topic of research. However, a large number of studies have shown some variability in the findings of the relationship between self-efficacy and coping styles in Chinese samples. For example, in studies with college students as subjects, some studies found no significant correlation between self-efficacy and negative coping [3], while some studies showed a negative correlation between self-efficacy and negative coping [5]. In a study with primary caregivers of cancer patients as subjects, self-efficacy was found to be significantly related to negative coping styles significantly positively correlated [4, 28]. It can be seen that research on coping styles is complex, and the ways of coping with problems vary from person to person; not only the research dimensions have not been unified so far, but also the relationship between the sense of self-efficacy and different coping styles is inconsistent, and the different findings obtained may be related to the professional and occupational factors of the research subjects.

4.4 Coping styles partially mediated the relationship between emotional intelligence and self-efficacy

This study examined the mechanism of action of emotional intelligence in college students to influence self-efficacy and verified the mediating effect of coping style between the two. The results showed that emotional intelligence not only has a direct effect on self-efficacy, but also has an indirect effect on it through coping styles. According to self-efficacy theory, individuals will assess their self-efficacy based on their emotional state. If they can manage their emotions, they will experience more positive feelings psychologically and behaviorally, and in turn will choose to cope in a positive way, ultimately achieving higher self-efficacy in activities such as classes, internships, and employment interactions. The above analysis demonstrates the synergistic effect of both emotional intelligence and coping styles.

4.5 Conclusion

Although the hypotheses proposed in this study were tested, there are still shortcomings: the methodological approach of this study, mainly using questionnaire method, is rather single. Different methods could be used in the future, such as empirical method, multivariate analysis to obtain survey data, longitudinal tracking type of research paradigm, etc.; there are numerous factors affecting self-efficacy, and this study to selected two factors, emotional intelligence and coping style, which were not controlled for other complex influencing factors due to the limitations of the research conditions, therefore, it may have some influence on the research result; this study examined the mediating effect of coping style as a whole, however, it is a multidimensional construct that contains both active coping and school-level coping. Therefore, future research could provide insight into its mediating effects in different dimensions. In addition, the study found that coping style partially mediated the effect of emotional intelligence on self-efficacy, which suggests that there may be other mediating variables between emotional intelligence and self-efficacy; therefore, for the sake of the study, other potential mediating variables can be explored in depth so that the underlying mechanism of action connecting the relationship between the two can be revealed in its entirety.

The three factors of emotional intelligence, coping style and self-efficacy have important effects on college students in the face of various social environments nowadays. In teaching, we need to adjust students' emotional state and create a good learning environment to improve students' self-efficacy. We can also use self-efficacy theory can help students get rid of helplessness and anxiety, so that they can maintain a positive and optimistic attitude when facing learning and improve their interest in learning.

Author contributions Both authors equally contribute to the work, review the drafted manuscript for critical content. Both authors read and approved the final manuscript.

Data availability The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Declarations

Ethics approval and consent to participate All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Ethics Committee of Graduate University of Mongolia (No. 2022-01-26). Informed consent was obtained from all individual participants included in the study.

Competing interests No potential conflict of interest was reported by the author.

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