Research on the Relationship between Social Anxiety, Emotional Intelligence and Self-efficacy of College Students on the basis of SPSS26.0 and PROCESSv4.1

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Abstract: Social anxiety of college students may be related to individuals' emotional intelligence and self-efficacy. This study aims to examine the relationship between social anxiety,emotional intelligence and self-efficacy of college students, as well as analyze the mediating effect of self-efficacy. Three questionnaires(emotional intelligence scale, interaction anxiety scale and the general self-efficacy scale)were carried out among 512 college students. Based on the survey data, SPSS26.0 software was used for correlation analysis, and Model 4 in PROCESSV4.1 was used to test the mediation effect. The result shows that emotional intelligence and self-efficacy are negatively correlated with social anxiety. Additionally, emotional intelligence associates with social anxiety mediated by self-efficacy (35% mediating effect), that is, college students' emotional intelligence can not only affect social anxiety directly but also affect social anxiety indirectly through the intermediary effect of self-efficacy. The study provides a new way of thinking to solve college students' social anxiety, and some targeted suggestions were proposed.

Keywords: College students, Social anxiety, Mediating effect, SPSS26.0, PROCESSV4.1

1 Introduction

Social anxiety shows nervousness, alienation and a tendency to avoid interpersonal situations for fear of negative evaluation. College students are at the intersection of school and society, and they bear the dual pressures of academic achievement and employment, which makes them susceptible to social anxiety. If there is no avoiding to communicate with others, students with social anxiety are nervous accompanied by specific physiological reactions.[1] A study has suggested that from 1998 to 2015, the number of college students with social anxiety increased simultaneously with the year. [2] Social anxiety affects the daily social interactions and mental health of college students. Therefore, exploring its influencing factors is count for much to improve their social anxiety. Emotional intelligence refers to individuals' ability to monitor their own and others' emotions, and use such information to guide their thoughts and behaviors. The higher the emotional intelligence of college students, the better they can handle their individual emotions as well as other people's emotions in interpersonal situations. Previously, scholars suggest a hypothesis that someone's degree of self-efficacy infers to the degree of belief in oneself in facing new environment or new things to some extent. They are of the opinion that

general self-efficacy is a stable perception a person holds.[3] In social situations, high level of self-efficacy can avoid or weaken anxiety caused by aversive events. In contrast, people with low level of self-efficacy tend to be more likely to experience incompetence during aversive events, and then cause anxiety.[4]

Obviously, there is a correlation between emotional intelligence, social anxiety and self-efficacy. However, previous studies often only focus on the pairwise relationship of the three variables, and have not discussed on the interrelationship between the three variables. Therefore, this paper aims to analyze the relationship of the three based on previous studies, and establish a regression model to provide a reference for improving social anxiety of college students.

2 Research Participants and Methods

2.1 Participants

From February to March in 2023, anonymous questionnaires were conducted on 512 college students, including 251 males and 261 females. Those students were cluster stratified sampled from 17 classes in different universities. The subjects ranged from 17 to 27 years old with an average age of 22 years old.

2.2 Methods

2.2.1 Questionnaires

Emotional Intelligence Scale[5]is a self-statement questionnaire，which includes four dimensions: emotion perception, self-emotion management, others' emotion management and emotion utilization. The Cronbach of the scale in this study is 0.968, indicating good consistency within the scale ; Interaction Anxiety Scale [6]is mainly used to measure individuals' feelings in social interactions, with 15 items. The Cronbach of the scale in this study is 0.905 ; There are 10 items in General Self-Efficacy Scale, and Cronbach of this scale is 0.909.

2.2.2 Analysis

In this study, SPSS26.0 software was used for descriptive statistics and correlation analysis, and Model 4 in PROCESSV4.1 was used to test the mediation effect. The bias-corrected nonparametric percentile Bootstrap method was used to estimate 95% confidence intervals for the mediating effects by taking 5000 Bootstrap samples.

2.2.3 Common Method Biases Test

Harman's One-factor Test was used for common Method Biases Test. The result shows that there are 8 factors with Characteristic root greater than 1, and the explained variance of the first factor was 31.07%(< 40%), so the common method bias is not apparent.

3 Results and Analysis

3.1 Descriptive statistics and correlation analysis of the three variables based on SPSS26.0

The correlation analysis between emotional intelligence, social anxiety and self-efficacy (as shown in Table 1). It was found that there is a negative correlation of the emotional intelligence and social anxiety, and all four dimensions of emotional intelligence (emotion perception, self-emotion management, others' emotion management and emotion utilization) are negatively correlated with social anxiety either. Self-efficacy is negatively correlated with social anxiety(r=-0.258). College students' self-efficacy is positively correlated with emotional intelligence(r=0.376), as well as a significant positive correlation with the four dimensions of emotional intelligence (r=0.342 ~ 0.387).

Table.1 Correlation coefficient of the variables

	EI	EI-1	EI-2	EI-3	EI-4	SE	SA
Emotional intelligence(EI)	1						
Emotional perception(EI-1)	0.971**	1					
Self-emotional management(EI-2)	0.977**	0.925**	1				
Others' emotional management(EI-3)	0.961**	0.890**	0.954**	1			
Emotional utilization(EI-4)	0.967**	0.945**	0.912**	0.887**	1		
Self-efficacy(SE)	0.376**	0.364**	0.365**	0.387**	0.342**	1	
Social anxiety(SA)	-0.217**	-0.217**	-0.220**	-0.187**	-0.216**	-0.258**	1

ps：**P<0.01

(The source of the table is a statistical analysis of the data in this study by SPSS26.0 software)

3.2 The mediating effect test of self-efficacy based on PROCESSv4.1

In this study, it is hypothesized that self-efficacy plays a mediating role between emotional intelligence and social anxiety: emotional intelligence is the exogenous variable, social anxiety is the outcome variable, and self-efficacy is the mediating variable to establish a structural equation model.

According to the results of the stepwise regression test of mediating effect in Table 2, it shows that in the first step (model 1), the direct path coefficient for the effect of emotional intelligence on social anxiety is -0.172 (β=-0.172). In the second step (model 2), the direct path coefficient for the effect of emotional intelligence on self-efficacy is 0.360 (β=0.360). In the third step (model 3), after including self-efficacy as the mediating variable, the path coefficient for the effect of emotional intelligence on social anxiety is -0.111 (β=-0.111), and there is a significant effect of self-efficacy on social anxiety (β=-0.170).

Table2. Stepwise regression test of mediating effect

Step	Outcome variable	Exogenous variable	R-sq	F	β	t
Step 1	SA	EI	0.217	25.196**	-0.172	-5.020**
Step 2	SE	EI	0.376	84.029**	0.360	9.167**
Step 3	SA	EI	0.288	23.086**	-0.111	-3.054**
		SE			-0.170	-4.476**

ps：**P<0.01

(The source of the table is an analysis of the data in this study by PROCESSv4.1)

As shown in Table 3, the mediating effect value of self-efficacy is -0.061 , which accounted for 35% (-0.061/-0.172*100%=35%)of the total effect. In the study, each effect was tested by Bootstrap method((repeated sampling was set to 5000 times; the confidence interval was set to 95%), and all confidence intervals did not include 0, therefore, we can draw a conclusion that all effects are statistically significant. There is a partial mediating effect of self-efficacy between emotional intelligence and social anxiety. (As shown in Figure 1 and Table 3)
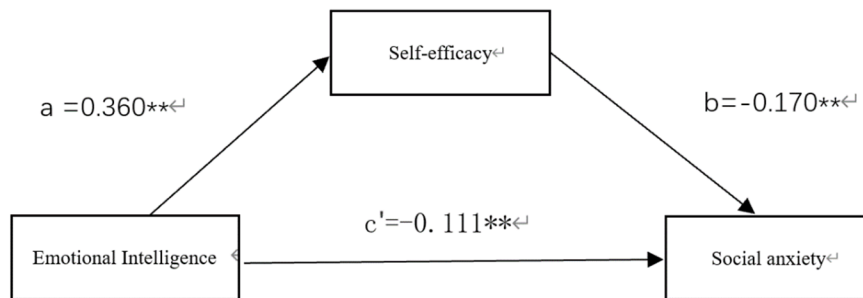

Figure 1. Mediating effect model of self-efficacy between emotional intelligence and social anxiety
ps: a and b are path coefficient；c' is the direct effect value；**p<0.01
(The figure is a self-made hypothesis model based on the result of this study)

Table 3. Results of the mediating effect test

Effect	Effect Value	LLCI	ULCI	Proportion of effect
Total effect	-0.172	-0.239	-0.105	
Direct effect	-0.111	-0.182	-0.040	65%
Mediating effect	-0.061	-0.103	-0.026	35%

(The source of the table is an analysis of the data in this study by PROCESSv4.1)

4 Discussions

4.1 Study result of social anxiety among college students

The survey result shows that the proportion of college students with social anxiety accounts for 10.1% of the overall population, among which the ratio of college students with general anxiety was 6.2%, and the number of students with comparative anxiety and severe anxiety accounted for 3.9%. The proportion of social anxiety among college students in this study was significantly higher than that of *China National Mental Health Development Report (2019 ~ 2020)*, which pointed out the social anxiety of Chinese college students accounted for 8%. This phenomenon indicates that the trend of social anxiety among college students increases, with social changes and the increase of academics and employment pressure.

Interpersonal communication is an important way for college students to improve their social adjustment ability.[7] However, social anxiety can seriously affect interpersonal communication, it has become one of the main psychological problems of college students. Severe social anxiety may cause adverse outcomes, such as problem behaviors and depression[8]. For this reason, looking for the relational mechanisms is valued to provide empirical evidence for promoting their healthy physical and mental development.

4.2 Relationship between emotional intelligence and social anxiety

In this study, emotional intelligence is negatively correlated with social anxiety. Emotional intelligence helps accurately evaluate and regulate individual's and others' emotions, as well as to utilize emotions to motivate, plan and achieve goals in life. Obviously, recent research indicated incontestably that emotional intelligence has a bearing on social condition (mainly referring to their relationships with roommates, classmates and teachers), and students' emotional intelligence improves, the degree of their social anxiety gradually decreases.[9] The level of emotional intelligence is closely related to the tendency of social anxiety. On the one hand, someone who has a higher degree of emotional intelligence indicate a lower trend of social anxiety. On the other hand, someone who has a lower degree of emotional intelligence reflect a higher trend of social anxiety, as well as they can't use their emotions to guide thinking and action well. Therefore, we can conclude that the emotional intelligence can predict social anxiety. Improving the level of students' emotional intelligence can effectively reduce social anxiety.

4.3 The mediating role of self-efficacy

In this study, there is a mediating effect of self-efficacy between emotional intelligence and social anxiety, a part of the influence of emotional intelligence on social anxiety is through the mediating variable of self-efficacy. Self-efficacy is a subjective belief that determines how people perceive, think, self-motivate, and behave. Self-efficacy and social anxiety are negatively correlated. Individual with low self-efficacy will more likely to adopt attitudes such as avoidance and withdrawal when facing problems, and are more likely to produce social anxiety. Emotional intelligence has a negative prediction effect on social anxiety, and a positive prediction effect on self-efficacy. That is, the higher the emotional intelligence, the stronger the self-efficacy, and the lower the trend of social anxiety.

The relationship provides a new way of thinking to solve college students' social anxiety. Cultivating self-efficacy helps make positive behavioral choices, enhance subjective well-being, and better integrate into college life, so that guide college students to adopt positive strategy and reduce the effects of anxiety when they encounter difficulties.[10]To weaken the increasing trend of social anxiety among college students, we can not only develop the emotional intelligence, but also improve their level of self-efficacy to intervene social anxiety.

5 Conclusions

To sum up, this study investigates the relationship between emotional intelligence, self-efficacy and social anxiety, and further reveals its potential mechanism, which provides some enlightenment for reducing colleges students' social anxiety. Finally, the following conclusions can be drawn from the research:

(1) There is a high degree of social anxiety in university students, and obviously has threaten physical and mental health of them.

(2) Emotional intelligence and self-efficacy are negatively correlated with social anxiety.

(3) Besides emotional intelligence affects social anxiety directly, self-efficacy also affects it mediately.

(4) The mediating effect of self-efficacy accounted for 35% of the total effect.

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