

The Effect of Family Structure on College Students' Academic Frustration: The Mediating Role of Coping Styles

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Abstract: With the acceleration of social change, the proportion of single-parent families is also increasing, and through research and analysis, it is found that family structure has a significant impact on college students' academic stress. This study focuses on the relationship between family structure, college students' academic frustration and coping styles. 400 college students were surveyed using the College Students' Academic Frustration Questionnaire, the Family Structure Questionnaire and the College Students' Coping Styles Questionnaire, and the data was analysed using SPSS software. The results show that family structure significantly affects academic frustration, in which coping styles play a partial mediating role. This study enriches the relevant theories and provides a basis for improving the psychological health and academic performance of college students.

Keywords: Family Structure; Academic Frustration; Coping Styles; Mediating Role.

1. Introduction

At present in China, academic frustration has become the main frustration of college student groups, and there is a high level of academic frustration in college student groups [1]. In recent years, there are a few student groups who suffer from academic frustration, which leads to slow learning progress or even dropout [2]. Moreover, academic frustration can directly affect students' academic performance. However, according to a large number of studies, children's academic performance is largely influenced by factors in the family environment. The family is seen as the key to achieving the SDGs [3]. In Korea, the proportion of single-parent families is increasing due to divorce, separation, bereavement, and running away from home. Statistics Korea reported that the proportion of single-parent families was 9.02 per cent in 2010, 10.5 per cent in 2014 and 10.9 per cent in 2018. Incomplete families face complex and diverse problems, including poverty [4], employment, and education [5]. Among the early studies, the most influential were the Coleman Report in the United States and the Plowden Report in the United Kingdom, which concluded that home environment factors are strongly correlated with students' academic performance, explaining much of the variation in student achievement [6]. Some scholars have found in educational practice that a significant proportion of university students in a class with poor intellectual performance, even to the extent of repeating and dropping out, have family situations where their parents are divorced or single parents [7]. Therefore, the lack of family structure has a significant impact on students' academic performance, which is especially obvious in academic frustration, so it is particularly important to explore the relationship between family structure and academic frustration.

Family structure refers to the composition of the members of a family and their state of interaction and mutual influence, as well as the relatively stable patterns of ties that result from this state. Some studies have shown that family structure can have a significant impact on parenting styles, family

functioning, and the emotional and psychological well-being of children. Family divorce can negatively affect the mental health of adolescents and cause stress at the onset of adolescence [8]. Defective family structure can have an indelible negative impact on a child's psychological development, with single-parent families and intergenerational families having a significant positive predictive effect on unhealthy behaviours [9]. Changes in family structure such as parental divorce, family reorganisation, absence of father or mother and other non-conventional patterns are influential factors in the problem of children and adolescents refusing to go to school [10]. The absence of parenting tends to undermine children's ability to construct themselves and makes it difficult for them to deal with external events [11]. In addition, according to Coleman's social capital theory, that is, "financial capital needs to pass through social capital in order to have a greater impact on children's academic achievement" [12], it can be seen that financial problems have an important impact on college students' academics, and the group of college students from divorced families tends to be neglected by the society because of their special characteristics [7]. This further affects the academic frustration of college students. The family conflict theory suggests that the problems of divorced children are not a derivative of changes in the family structure or a decline in the standard of living, but should be attributed to the conflict between parents that accompanies the divorce process [13]. Hostility and confrontation between parents degrade the family into a repulsive environment where children experience tension, distress and insecurity, and conflict also exhausts parents physically and mentally and makes them less effective in dealing with their children [14]. This insecurity is manifested in the learning process as these groups are prone to frustration and poor resilience in the face of difficulties or problems.

Academic frustration (AF) is defined as a report of negative psychological emotions experienced by students when they are unable to cope with setbacks in the learning process [15]. Academic frustration refers to a negative emotional

experience with diffuse characteristics that some groups of students experience when they face academic dilemmas in their daily learning activities because they are unable to overcome them successfully [2]. However, different ways of coping with academic frustration have different impacts. According to foreign inquiry coping styles can have both positive and negative effects on a person's mind and body. Positive coping styles CS are problem-focused, in which individuals attempt to solve practical problems, while negative CS are emotion-focused, in which individuals report reducing their negative emotions by using coping strategies such as avoidance and denial. In recent years, there has been an increasing number of studies using coping styles as a mediating variable, for example, Harrington found that students with different levels of frustration tolerance may use different strategies to cope with stress in order to alleviate frustration during the learning process, and Yang Diem et al. found that negative coping styles were negatively associated with the risk of mobile phone addiction in adolescents and mediated adolescents' psychological resilience and mobile phone addiction; Guo Mengyu et al. showed that college students' psychological stress was significantly positively correlated with study burnout and negative coping styles, and study burnout was significantly negatively correlated with positive coping styles and significantly positively correlated with negative coping styles [16-18]. Therefore, it is inferred that positive coping styles can help to regulate the academic frustration caused by the lack of family structure, and conversely, negative coping styles can exacerbate the impact of the lack of family structure on college students' academic frustration.

By reviewing and analysing the existing literature, it can be found that research on the impact of family structure on college students' academic performance has made some progress and achieved some results, and most of the studies show that the lack of family structure will have a significant negative impact on college students' academic performance. However, no study has specifically explored the influence of family structure on college students' academic frustration, and there are still many issues that need to be further explored and researched. For example, the mediating role of coping styles and suggestions for improving college students' academic frustration. These issues require not only in-depth analysis and research, but also more precise modelling and analysis in the context of the actual situation.

2. Research Methodology

2.1. Subject of the Study

Convenience sampling was used to select students from freshmen to seniors at a university in Suzhou City, and 400 questionnaires were expected to be distributed.

2.2. Research Tools

The Family Structure Questionnaire (FSQ) is a self-developed questionnaire on the family structure of university students, which consists of questions on the age, gender, whether or not the sample is an only child, and whether or not it is a divorced family, and exists in the form of a non-scale.

Academic frustration questionnaire for college students. The Academic Frustration Questionnaire for College Students developed by Yuanshu Fu et al. 2022 was used, which consists of 41 questions with 6 factors (Academic Motivation Frustration, Academic Environment Frustration, Examination

Frustration, Academic Stress Frustration, Academic Adaptation Frustration, and Academic Self-Esteem Frustration), and was scored using self-assessment with a 5-point scale, (1 = not at all conforming; 2 = not at all conforming; 3 = uncertain; 4 = conforming; 5 = conforming). Conform; 5 = Fully Conform), with higher scores representing a greater experience of academic frustration. The Cronbach alpha coefficient for the overall questionnaire was 0.970.

Simplified Coping Styles Questionnaire (SCSQ). Developed by (Xie, 1998), it consists of 20 items. 12 items measure positive coping and 8 items measure negative coping. Respondents rated each item using a four-point scale ranging from 1 (completely disagree) to 4 (completely agree). The negative coping dimension was selected for this study and the Cronbach's alpha for the negative dimension of their questionnaire was 0.78.

2.3. Search Procedures

The study was conducted by the teacher trainees themselves as well as their professional supervisors as the main test. Prior to administering the test, consent was obtained from the school and teachers to introduce the project to the students to ensure that they understood how the test would be administered and the purpose of the test, and to ensure that the test was reliable and actionable.

2.4. Data Processing

Data were processed using SPSS software. Missing values were treated by multiple interpolation or deletion of samples, and continuous variables were standardised. Data distribution characteristics were analysed by descriptive statistics, Pearson or Spearman correlation analysis was applied to test variable correlation, and the Process plug-in and Bootstrap method of SPSS were used to test mediating effects.

3. Findings

A total of 414 questionnaires were collected for this result.

3.1. Descriptive Analysis

Table 1 shows that, in terms of the distribution of your current study, most of the samples are "freshmen", with a proportion of 26.57 per cent. In terms of your gender, there are relatively more "males" in the sample, with a proportion of 51.21 per cent. There are also 48.79 per cent of females in the sample. In terms of your family structure, 84.78 per cent of the sample are "non-single parents". 29.23 per cent of the samples were "average" in terms of being unable to concentrate on their studies. In terms of being distracted when studying, a relatively large proportion of the sample, 30.68 per cent, "strongly agreed". Another 30.43 per cent of the samples were average. In terms of the distribution of those who feel distressed when their test scores are lower than their expectations, the majority of the samples are "average", with a total of 160.0 samples, accounting for 38.65 per cent of the total. 32.85 per cent of the samples chose "average" for worrying about their academic performance. 31.40 per cent of the samples who felt anxious about the fact that studying was difficult chose "Strongly Agree". Another 30.92 per cent of the sample chose "average". The highest percentage of respondents choosing "average" was 35.02 per cent for feeling nervous and anxious due to the pressure of studying. Another 30.92 per cent of the sample agreed. The highest percentage of "average" is 33.82 per cent for anxiety because studying is a burden to me. 34.54% of the samples would choose "average"

for "Studying makes me suffer".

Table 1. Descriptive analysis of family structure, academic frustration, and negative coping styles

name (of a thing)	options (as in computer software settings)	Frequency	Percentage (%)
You are currently enrolled in	first-year university student	110	26.57
	second-year university student	103	24.88
	third-year university student	103	24.88
	fourth-year university student	98	23.67
Your gender is	male	212	51.21
	women	202	48.79
Your family structure is	single parents	63	15.22
	not a single parent	351	84.78
Struggle with not always being able to focus on your studies	couldn't agree more	115	27.78
	agree with	115	27.78
	usual	121	29.23
	disagree	28	6.76
	Strongly disagree.	35	8.45
I get distracted and upset when I study.	couldn't agree more	128	30.92
	agree with	112	27.05
	usual	126	30.43
	disagree	27	6.52
	Strongly disagree.	21	5.07
Struggling with test scores that are below your expectations	couldn't agree more	127	30.68
	agree with	90	21.74
	usual	160	38.65
	disagree	22	5.31
	Strongly disagree.	15	3.62
Worry about your academic performance	couldn't agree more	120	28.99
	agree with	121	29.23
	usual	136	32.85
	disagree	20	4.83
	Strongly disagree.	17	4.11
Anxiety that learning is always a difficult task	couldn't agree more	130	31.40
	agree with	114	27.54
	usual	128	30.92
	disagree	26	6.28
	Strongly disagree.	16	3.86
Stress and anxiety due to academic pressure	couldn't agree more	103	24.88
	agree with	128	30.92
	usual	145	35.02
	disagree	24	5.80
	Strongly disagree.	14	3.38
Learning is a burden to me and anxiety	couldn't agree more	120	28.99
	agree with	111	26.81
	usual	140	33.82
	disagree	23	5.56
	Strongly disagree.	20	4.83
Studying makes me miserable.	couldn't agree more	120	28.99
	agree with	107	25.85
	usual	143	34.54
	disagree	21	5.07
	Strongly disagree.	23	5.56
Sometimes I suffer because I don't do well in school.	couldn't agree more	127	30.68
	agree with	119	28.74
	usual	105	25.36
	disagree	37	8.94
	Strongly disagree.	26	6.28
Trying to take a break or a holiday to put the problem (worry) away for a while	not adopt or carry out	136	32.85
	now and then	151	36.47
	resort	55	13.29
	resort	72	17.39
	resort	144	34.78
Unwinding by smoking, drinking, taking pills or food	not adopt or carry out	144	34.78
	now and then	167	40.34
	resort	67	16.18
	resort	26	6.28
	5.0	10	2.42
Thinking that time will change things and the only thing to do is to wait.	not adopt or carry out	134	32.37
	now and then	177	42.75
	resort	65	15.70
	resort	31	7.49
	5.0	7	1.69
Relying on others to solve problems	not adopt or carry out	141	34.06
	now and then	186	44.93
	resort	47	11.35
	resort	36	8.70
	5.0	4	0.97
Accept reality, because there is no other way	not adopt or carry out	136	32.85
	now and then	177	42.75
	resort	58	14.01
	resort	36	8.70
	5.0	7	1.69
Fantasising that some kind of miracle might happen to change the status quo	not adopt or carry out	159	38.41
	now and then	163	39.37
	resort	56	13.53
	resort	31	7.49
	5.0	5	1.21
Comfort yourself.	not adopt or carry out	135	32.61
	now and then	137	33.09
	resort	141	34.06
	resort	1	0.24
add up the total		414	100.0

More than 30.68% of the samples chose "strongly agree" that sometimes I suffer because I do not do well in my studies. The highest proportion, 36.47 per cent, said that they tried to take a break or a holiday to leave their problems (worries) behind for a while. The percentage of those who do not take them is 32.85 per cent. The highest percentage of "occasional users" is 40.34 per cent for the use of cigarettes, alcohol, medication or food to relieve problems. The proportion of non-takers was 34.78 per cent. 42.75 per cent of the respondents believed that time will change the situation and the only thing to do is to wait. The percentage of non-takers is 32.37 per cent. In terms of relying on others to solve problems, the proportion of "occasional" is relatively high, at 44.93 per cent. The proportion of the non-taking sample is 34.06 per cent. In terms of accepting the reality because there is no other way, the majority of the samples are "occasional", with a proportion of 42.75 per cent. There are also 32.85 per cent of non-takers. The proportion of those who fantasise that some miracle may happen to change the status quo is 39.37% for "occasional adoption" and 38.85% for non-adoption. As well as 38.41 per cent of the non-taking sample. More than 34.06% of the self-consoling samples chose "sometimes take". In addition, 33.09 per cent of the samples took it occasionally.

3.2. Relevance Analysis

The results in Table 2 reveal significant associations between college students' academic frustration and family structure and negative coping styles, i.e., there is a negative correlation between family structure and academic frustration, and academic frustration shows a positive correlation with negative coping styles, whereas there is a negative correlation between family structure and negative coping styles.

The Pearson's correlation coefficient between family structure and academic frustration is -0.939 with a significance level of 0.000, indicating a strong negative correlation. This implies that the more complex the family structure is, it may lead to higher levels of academic frustration felt by the students.

The Pearson's correlation coefficient between academic frustration and negative coping styles was 0.793 with the same significance level of 0.000, showing a significant positive correlation. This indicates that students with higher levels of academic frustration are more likely to adopt positive coping styles, reflecting the potential positive role of coping styles in dealing with academic frustration.

The Pearson correlation coefficient between family structure and negative coping styles is -0.827 with a significance level of 0.000, indicating a significant negative correlation. This may mean that students with more complex family structures may be more inclined to adopt negative coping styles, emphasising the importance of family background in shaping students' coping strategies. The results of the analyses suggest that family structure not only directly affects academic frustration, but also indirectly through influencing students' coping styles. These findings are important for understanding how college students cope with academic challenges and provide a basis for developing effective interventions. By improving the family environment and educational styles, it may be possible to help reduce students' academic frustration and improve their psychological well-being and academic achievement.

Table 2. Correlation analysis of family structure, academic frustration, and negative coping styles

		Your family structure is	Academic frustration	Negative coping styles
Your family structure is	Pearson Correlation	1	-.939	-.827
	Significance (two-tailed)		.000	.000
	Number of cases	414	414	414
Academic frustration	Pearson Correlation	-.939	1	.793
	Significance (two-tailed)	.000		.000
	Number of cases	414	414	414
Negative coping styles	Pearson Correlation	-.827	.793	1
	Significance (two-tailed)	.000	.000	
	Number of cases	414	414	414

Significant correlation at 0.01 level (two-tailed)

3.3. Mediation Effect Test

This study explored the interrelationship between family structure, negative coping styles and academic frustration through mediation effect test. As shown in Table 3, it can be seen that there is a significant negative correlation between family structure and academic frustration, with an effect value of -1.9745, a standard error of 0.0665, a t-value of -29.694, a p-value of less than 0.001, and a 95% confidence interval of [-2.1053, -1.8438], which suggests that there is a direct correlation between the complexity of family structure and the enhancement of academic frustration.

Negative coping styles demonstrated a partially mediated effect between family structure and academic frustration, with an effect value of -0.0992, a standard error of 0.0547, a t-value of -1.8113, a p-value of 0.0718, and a 95% confidence interval of [-0.2093, -0.0074], and although the p-value was slightly higher than the traditional level of significance, the effect value and its confidence interval suggest that negative coping style may play a mediating role in the effect of family structure on academic frustration. In addition, the effect value of the direct effect of negative coping styles on academic frustration was 5.813, with a standard error of 0.191, a t-value of 30.311, a p-value of less than 0.001, and a 95% confidence interval of [5.4365, 6.1905], which suggests that there is a direct association between negative coping styles and reduced academic frustration. The findings reveal that family structure not only directly affects academic frustration, but may also indirectly affect academic frustration by influencing students' coping strategies.

These findings are important for understanding the causes of academic frustration among college students and provide a scientific basis for designing effective educational interventions.

3.4. Regression Analyses

This study used regression analysis to explore the effects of family structure and negative coping styles on academic frustration among college students. Table 4 reveals that the model has an R-value of 0.939 and an R-squared of 0.882, indicating that the model is able to explain 88.2% of the

variance in academic frustration, which has high explanatory power. The adjusted R-squared of 0.882 further validated the robustness of the model. The error of standard estimation was 0.273, indicating a high accuracy of model prediction. The results of ANOVA analysis revealed the significance of the model. The regression sum of squares is 229.945, the degree of freedom is 2, the mean square is 114.972, and the F-value is 1537.347 with a significance level of 0.000, indicating that the model is statistically significant. The results of coefficient

analysis showed that the coefficient of family structure was -1.975, standardised coefficient was -0.894, t-value was -29.694 and significance level was 0.000, indicating that there is a significant negative effect of family structure on academic frustration. The coefficient of negative coping styles is 0.069 with a standardised coefficient of 0.054, a t-value of 1.805, and a significance level of 0.072, which is slightly higher than 0.05, but still indicates that negative coping styles have a positive effect on academic frustration.

Table 3. Mediated effects test

Dependent variable (Y)	Independent variable (X)	Mediating variable (M)	R	R-sq	MSE	F	df1	df2	p
Academic frustration (Q20)	Family structure (Q3)	Negative coping styles (Q21)	0.9392	0.8821	0.0748	1537.3468	2	411	0

Estimation of model coefficients

Dependent variable (Y)	Mediating variable (M)	Independent variable (X)	constant term (math.)	ratio	standard error	t-value	p-value	Lower limit of the 95 per cent confidence interval	Upper limit of the 95 per cent confidence interval
Academic frustration (Q20)	Negative coping styles (Q21)	Family structure (Q3)		-1.9745	0.0665	-29.694	<0.001	-2.1053	-1.8438
Academic frustration (Q20)	Negative coping styles (Q21)	Family structure (Q3)	5.8135		0.1918	30.3119	<0.001	5.4365	6.1905

Direct and indirect effects

Type of effect	efficiency value	standard error	t-value	p-value	Lower limit of the 95 per cent confidence interval	Upper limit of the 95 per cent confidence interval
Direct effect (X on Y)	-1.9745	0.0665	-29.694	<0.001	-2.1053	-1.8438
Indirect effects (via M)	-0.0992	0.0547	-1.8113	0.0718	-0.2093	-0.0074

The results of the regression analyses in this study indicated that both family structure and negative coping styles had an impact on college students' academic frustration. Complexity of family structure was significantly associated with increased academic frustration, while negative coping styles were

associated with diminished academic frustration. These findings have important implications for understanding the formation mechanisms of college students' academic frustration.

Table 4. Regression analysis

modelling summary				
modelling	R	Square R	Adjusted R-square	Errors in standard estimates
1	.939a	.882	.882	.273
a. Predictor variables: (Constant), Negative coping style, Your family structure is				

ANOVAa						
modelling		square sum (e.g. equation of squares)	(number of) degrees of freedom (physics)	mean square	F	significance
1	regression (statistics)	229.945	2	114.972	1537.347	.000b
	residual	30.737	411	.075		
	(grand) total	260.682	413			
a. Dependent variable: academic frustration						
b. Predictor variables: (Constant), Negative coping style, Your family structure is						
Coefficient a						
modelling		Unstandardised coefficient		Standardised coefficient	t	significance
		B	standard error	Beta		
1	(Constant)	5.814	.192		30.312	.000
	Your family structure is	-1.975	.066	-.894	-29.694	.000
	Negative coping styles	.069	.038	.054	1.805	.072
a. Dependent variable: academic frustration						

4. Discussion

4.1. Relationship between Family Structure and Academic Frustration

The existence of college students' academic frustration is high, and helping college students to alleviate their academic frustration can help them maintain a positive and healthy emotional experience and physical and mental state, thus ensuring a good learning state. This study found that family structure affects college students' academic frustration, and the mean value of academic frustration of students from single-parent families is higher than that of students from two-parent intact families, which may be due to the fact that emotional support is relatively single and economic pressure may be higher in single-parent families, resulting in a lack of sufficient resources and psychological support for students when facing academic difficulties. Therefore, parents should pay attention to the family atmosphere, provide emotional support, help children establish a positive academic self-concept, and actively guide college students to cope with and regulate negative emotions. However, family structure is not the only determinant; family atmosphere and parenting style may play a moderating role. Future research could explore these potential variables in depth to more fully understand the mechanisms by which family environment influences academic frustration.

4.2. Relationship between Academic Frustration and Negative Coping Styles

College students with high academic frustration are more inclined to adopt negative coping styles, such as avoidance, self-blame and fantasy. This may be due to a lack of effective coping strategies or a lack of confidence in their own abilities to face academic stress positively. Therefore, schools should provide psychological counselling and academic support to help students develop positive coping strategies and reduce their academic frustration. This is consistent with the social cognitive theory that individuals' perceptions of events interact with their coping behaviours. However, it is worth noting that the choice of coping styles is not entirely determined by academic frustration, and factors such as students' personality traits and past experiences should not be ignored. Subsequent studies can construct a more comprehensive theoretical model to deeply analyse the complex relationship among the three.

Overall, this study confirms the direct effect of family structure on academic frustration, in which coping styles play a mediating role, and the findings have implications for alleviating academic frustration among college students.

5. Recommendations

5.1. Family Level

For single-parent families, single parents should spend as much time as possible with their children, pay attention to their academic and psychological conditions, and provide them with adequate emotional support. They can also learn effective parenting experience and emotional adjustment methods by joining parent support groups. In addition, families should focus on adopting a democratic parenting style, encouraging children to express their ideas, discussing solutions to problems together, and cultivating children's problem-solving skills and positive attitudes.

5.2. School Level

Strengthening the construction of mental health education programmes and designing targeted psychological counselling content for students from different family structures, so as to help students correctly understand setbacks and master positive coping strategies. Teachers should pay attention to students' family backgrounds, give more attention and guidance to students from special family structures, and provide individual counselling to students once they are found to have negative coping tendencies. In addition, universities can organise parent schools on a regular basis to teach parents scientific education concepts and methods, strengthen communication between home and school, and pay joint attention to students' mental health and growth.

5.3. Social Dimension

Communities can organise various kinds of parent-child activities and family support programmes to provide communication platforms and resource support for children of different family structures and their parents. The media should increase publicity on positive family relationships and cases of coping with setbacks, so as to create a favourable atmosphere of public opinion and disseminate positive energy. Professional psychological counselling agencies can provide public lectures and counselling services for the community, offering professional help to students and families with negative coping problems.

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