



Analysis of the Effects of Parenting Styles on Learning Burnout and the Mediating Effect of Peer Relationships Among Primary School Students Based on SPSS

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Abstract. Given the increasingly competitive society and the prevalence of “tiger parenting”, primary school students are likely to burnout on learning and suffer from physical and psychological problems in the face of multiple pressures. In this study, Adolescent Learning Burnout Questionnaire, Short-form Egna Minnenav Barndoms Uppfostran for Chinese (S-EMBU-C), and Child’s Peer Relationship Scale are used to survey 378 primary school students in grades 3–6 by Wenjuanxing (a questionnaire platform). By using SPSS to analyze the effects of parenting styles on primary school students’ learning burnout, and using SPSS Bootstrap to verify the mediating effect of peer relationships, the study provides new ideas and clues to reduce primary school students’ learning burnout. Previous studies have used multiple regression analysis to verify the mediating effect with the help of functionally strong SPSS statistics. Bootstrap provides a comprehensive verification of the mediating effect by comparing the total, direct, and mediating effects, and provides a variety of simple and efficient models. The findings revealed that (1) in general, primary school students have lower levels of learning burnout, more positive parenting styles, and better peer relationships. (2) for primary school students, parenting style, peer relationships, and learning burnout are significantly and positively correlated; (3) Bootstrap effectively verifies that peer relationships mediate the effect of parenting style on learning burnout.

Keywords: learning burnout · parenting style · peer relationship · SPSS · mediating effect

1 Introduction

In primary school, children formally start to receive systematic education, and it is the best period for them to develop their mental quality, learning habit, learning interests, and physical quality. Children will form an initial worldview, life view, and values through

this period of socialized learning and exploration. But as social civilization continues to develop, competition becomes increasingly fierce, the college entrance examination is considered as the best way to “go from rags to riches”, “tiger mother”, “wolf father” and the prevailing trend of “tiger parenting” overshadow education with utilitarianism. Parents use their own experience to optimize choices for their children, forcing them to learn faster and more, and gradually ignoring the needs of children’s physical and mental development. Nowadays, the education industry is booming, but Fang Jiang and other researchers (2021) found that adolescents are suffering from the psychological storm of “four no’s”: no motivation to learn, no interest in the real world, no social skills, and no sense of life value [1]. According to the China National Mental Health Development Report (2019–2020), in 2020, the detection rate of depression among adolescents was 24.6%, of which the detection rate of mild depression was 17.2%, 0.4 percentage points higher than that in 2009, and the detection rate of severe depression was 7.4%; the detection rate of depression among primary school students was about 10%, of which the detection rate of severe depression was about 1.9–3.3%, and children’s psychological problems are on the rise [2].

On July 24, 2021, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the *Opinions on Further Reducing the Burden of Students’ Homework and Off-campus Training in Compulsory Education*, requiring all localities and departments to conscientiously implement them in light of the actual situation. The landscape and concept of education undergo major changes at the national level, yet parents’ educational anxiety fails to be immediately alleviated. The author believes that many of a child’s problems may be initially manifested as academic burnout. What about learning burnout among primary school students? How do parenting styles and peer relationships affect learning burnout? Do peer relationships play a mediating role in influencing learning burnout levels? All of these deserve to be studied to regain children’s mental health.

1.1 Literature Review

The current domestic research on learning burnout is mainly conducted on college students, followed by vocational students and secondary school students, and fewer studies have been conducted on learning burnout in primary school students. In the author’s search on CNKI, there are about 5916 pieces of literature themed on learning burnout (February 2022), and only 56 pieces of literature themed on primary school students’ learning burnout. Chengqing Wang and Lizhong Cui (2017) conducted an econometric analysis of the literature on learning burnout research in China and also concluded that studies on college students (including vocational students) were the largest, accounting for 72.86%, followed by primary and secondary school students, accounting for 13.91%, but no separate studies were conducted on secondary and primary school students [3]. The studies were mainly focused on learning burnout-related research, current situation investigation, and countermeasure research by using literature research, questionnaire survey, and interview.

There are few studies related to parenting styles and learning burnout retrieved in CNKI, but it has been shown that parenting styles closely correlate with the formation of learning burnout. According to Min Li and Yiqun Gan (2011), parents in the group with

low learning burnout tendency scored higher on emotional warmth and understanding, while parents in the group with high learning burnout tendency scored significantly higher on punishment and harshness, rejection and denial, and over-interference and protection than the group with low learning tendency [4]. In Qianruo Zhao's study (2015), it was shown that denial and punishment in parenting style significantly and positively correlated with children's learning burnout, and understanding and emotional warmth negatively determined the level of learning burnout [5].

Amid the studies on influencing factors of learning burnout, peer relationships are identified as an essential extrinsic factor influencing learning burnout. In the study of Jintang Li and Hongjuan Li et al. (2015), it was found that for junior high school students, the more serious their peer relationship distress was, the higher their level of learning burnout was [6]; Anyi Wang (2019) also concluded that poor peer relationships among primary school students would have an adverse effect on learning burnout [7]. Yanting Chen (2021) found that for junior high school students, making friends was the biggest distress in interpersonal relationships, and the indicators of interpersonal relationships of junior high school students correlated positively with the indicators of learning burnout, which was a significant predictor of the level of learning burnout [8].

It was concluded that parenting style and family support contributed significantly to learning burnout. According to Jiangtao Jin (2013), peer acceptance correlated significantly and negatively with parental emotional warmth and understanding, and significantly and positively with harsh punishment, rejection, and denial; social phobia and low self-esteem correlated significantly and positively with parents' harsh punishment, over-interference, over-protection as well as rejection and denial. Severe punishment by mothers could greatly influence peer relationships [9]. Ke Chen (2019) found that emotional warmth and over-protection in fathers' parenting style could positively predict peer relationships, while denial, emotional warmth, over-protection in mothers' parenting style showed significant positive correlations with peer relationships [10].

1.2 Study Significance

Although there are many studies on learning burnout, parenting styles, and peer relationships, there is a gap in the analysis of two correlations between the three factors. In this study, literature research, questionnaire survey, and data analysis are used to find out how parenting style affects learning burnout, and to identify the similarities among the "unfortunate" ones. The study also aims to discuss the mediating role of peer relationships with SPSS Bootstrap, thereby using it to unveil the "four no's" psychological storm and provide new ideas for subsequent research.

2 Study Content and Methodology

2.1 Purpose of the Study

The study aims to accomplish two main objectives: first, to understand the current status of learning burnout, parenting styles, and peer relationships among primary school students, as well as the influence of demographic factors on them; second, to research

the correlation between parenting styles, peer relationships, and learning burnout among primary school students through data analysis, and to discuss the mediating role of peer relationships.

2.2 Subjects of the Study

In this study, children are studied by questionnaire method. Students in grades 3–6 of primary school and their parents received questionnaires, and the parents have signed an informed consent form. 375 valid questionnaires are returned by excluding invalid ones, resulting in an effective rate of 99.21%. Among them, 32 questionnaires are received from grade 3, 128 from grade 4, 178 from grade 5, and 37 from grade 6. The demographic details of the sample are shown in Table 1.

2.3 Study Instruments

2.3.1 Self-designed Questionnaire for Measuring Demographic Variables

The questionnaire mainly collects demographic information, including location, child's school, grade, gender, children's only-child status, parents' only-child status, parent's education, occupation, age, and family income.

Table 1. Demographic information of the sample

Demographic characteristics		n	%
Gender	Male	190	50.5%
	Female	185	49.2%
Only child or not	Yes	204	54.3%
	No	171	45.5%
Single-parent family or not	Yes	12	3.2%
	No	363	96.5%
Fathers' only-child status	Yes	123	32.7%
	No	252	67%
Mothers' only-child status	Yes	131	34.8%
	No	244	64.9%
Father's education	High school and below	20	5.3%
	College	57	15.2%
	Undergraduate	150	39.9%
	Master's degree and above	148	39.4%
Mother's education	High school or below	24	6.4%
	College	50	13.3%
	Undergraduate	173	46%
	Master's degree and above	128	34%

2.3.2 Adolescent Student Burnout Inventory

This study adopts the Adolescent Student Burnout Inventory developed by Yan Wu and Xiaoyang Dai et al. (2010), which has 16 items grouped into three dimensions of physical and emotional exhaustion, learning alienation, and low achievement on a 5-point scale. In this study, the overall Cronbach's alpha coefficient of this inventory is 0.894, and the coefficient result of the KMO test is 0.909 according to the exploratory factor analysis based on SPSS 25.0. According to the spherical test, this test has good reliability with significance infinitely close to 0.

2.3.3 Short-Form Egna Minnen av Barndoms Uppfostran for Chinese

This study adopts Short-form Egna Minnen av Barndoms Uppfostran for Chinese revised by Jiang et al. (2010), which has 21 items and scores parents on three dimensions: rejection, emotional warmth, and over-protection. For the consistency in the total score, the emotional warmth dimension is also reversed scored in this study, which therefore is scored on the low emotional warmth dimension. In this study, the overall Cronbach's alpha coefficient of the scale is 0.908, and the coefficient result of the KMO test is 0.772. According to the spherical test, this test has good reliability with significance infinitely close to 0.

2.3.4 Children's Peer Relationship Scale

This study adopts the Children's Peer Relationship Scale developed by Boliang Guo (2003), which has 22 items, with higher total scores indicating poorer peer relationships. In this study, the overall Cronbach's alpha coefficient of the scale is 0.910, and the coefficient result of the KMO test is 0.912. According to the spherical test, this test has good reliability with significance infinitely close to 0.

2.4 Data Processing and Analysis

In this study, questionnaires are collected with Wenjuanxing, and SPSS 25.0 is used for data processing and analysis of questionnaire data. The descriptive statistical analysis, analysis of variance, reliability test, correlation analysis, regression analysis, and Bootstrap method are used to verify mediating effects.

3 Study Results

3.1 Common Bias Analysis

Harman's single-factor test in SPSS 25.0 is adopted for factor analysis of all entries in the questionnaire except demographic characteristics. 27 common factors with characteristic roots greater than 1 are selected. The total variance explained is 71.26%, and the variance explained by the first common factor is 21.26%, far below 40%, leaving no common method bias.

3.2 Descriptive Statistics

It is important to first understand the current learning burnout, parenting styles, and peer relationships of primary school students, and then to examine the variability of factors such as gender, grade level, and only-child status in the context of demographic characteristics.

It is found that currently, primary school students present overall positive results in terms of learning burnout, parenting style, and peer relationship. Taking a score of 60% as the cut-off point, 8.8% of primary school students are found with higher levels of learning burnout; 4.53% have higher negative scores for mother's parenting style and 5.8% have higher negative scores for father's parenting style, and 10.66% have poorer peer relationships.

3.2.1 Effect of Demographic Factors on Learning Burnout

Grade level, children's only-child status, fathers' only-child status, parents' age, and family economic conditions show no significant effects on primary school students' learning burnout.

Learning burnout levels significantly differ in terms of gender, region, and mothers' only-child status. According to the independent sample t-test on gender and learning burnout, the Sig value on learning alienation is 0.028, which is less than 0.05, indicating that boys and girls differ significantly on the dimension of learning alienation, and girls experience lower learning alienation than boys. Based on the independent sample t-test of the data from Hunan and Beijing, the Sig values are found less than 0.05 for total scores of learning burnout, physical and emotional exhaustion, and low achievement, indicating that students in the two regions have significant differences, and the students in Hunan score higher in learning burnout than those in Beijing.

In this study, an independent sample t-test is conducted as in Table 2 for the demographic factor of mothers' only-child status.

As shown in Table 2, the independent samples t-test shows that, regardless of mothers' only-child status, the Sig values for the total score of learning burnout, learning alienation, and low achievement dimensions are less than 0.05, indicating that mothers'

Table 2. Testing the differential effect of mothers' only-child status on learning burnout levels

Variables	Mothers' only-child status	n	<i>M</i>	t	Sig
Learning burnout	Yes	131	29.99	-3.14	0.002
	No	244	33.65		
Physical and mental exhaustion	Yes	131	8.58	-1.72	0.086
	No	244	9.25		
Learning alienation	Yes	131	7.63	-2.87	0.004
	No	244	8.83		
Low sense of accomplishment	Yes	131	13.78	-3.28	0.001

only-child status is a significant influencing factor. The scores indicate that children whose mothers are only-children score lower on the total score of learning burnout and each dimension than those whose mothers are not only-children. A possible reason for this is that mothers from only-child families face less competition in childhood than those from non-only-child families, and receive more care from their parents. Findings also reveal that mothers who are only children are more likely to have grandparents to help take care of their children, which gives these mothers more time to spend with their children and relatively less stress, so they demand relatively less from their children. The Sig value of the physical and emotional exhaustion is greater than 0.05, indicating that mothers' only-child status has little effect on this dimension, probably attributable to the importance of college entrance examinations nowadays.

3.2.2 Influence of Demographic Factors on Parenting Style

Parenting styles of primary school students do not get significantly affected by the child's only-child status, parent's only-child status, parent's age, and family economic conditions.

Some significant differences are found in terms of gender, region, and grade level through the test of variance.

According to the independent samples t-test, the Sig values for gender are less than 0.05 in such dimensions as mothers' over-protection, fathers' parenting style, fathers' rejection, and over-protection, and show significant differences. Girls' mean scores are lower than boys', indicating that parents have more active parenting styles toward girls, which might be attributable to girls' maturity and stability compared to boys during primary school. From the results of the one-way analysis of variance, the Sig values of grade levels are less than 0.05 in the parental over-protection dimension, and the parental attitudes are consistent. Also, there exists a significant difference between different grades, and the scores of Sig values decrease from grade 3, grade 5, grade 6, and grade 4 in descending order. Inadequate local educational resources and more competition in Hunan as well as different personality characteristics of respondents in different regions may contribute to this result.

3.2.3 Effect of Demographic Factors on Peer Relationships

No significant differences exist in the effects of such dimensions as child's gender, grade, region, child's only-child status, fathers' only-child status, parent's age, and family economic conditions on peer relationships of primary school students. While independent sample t-test for mothers' only-child status and peer relationship shows a significant difference with a Sig value of 0.005, which is less than 0.05.

From Table 3, it can be seen that children whose mothers have only one child have slightly better mean values of peer relationships than those whose mothers have more than one child. And this may be since mothers who have only one child have more time to participate in their children's life.

Table 3. Testing the differential effect of mothers’ only-child status on peer relationships

Mothers’ only-child status		n	M	SD	t	Sig
Peer relationship	Yes	131	35.42	9.03	-2.84	0.005
	No	244	38.45	11.23		

Table 4. Correlation analysis of learning burnout, parenting style, and peer relationship

Variables	M	SD	1	2	3	4
1	45.88	10.049	1			
2	45.82	10.303	.834**	1		
3	32.37	10.867	.541**	.484**	1	
4	37.39	10.595	.512**	.448**	.610**	1

** Significant correlation at the 0.01 level (two-tailed).

Note: 1-Mothers’ parenting style; 2-Fathers’ parenting style; 3-Learning burnout; 4-Peer relationships

3.3 C Related Studies

3.3.1 Study on the Correlation Between Learning Burnout, Parenting Style, and Peer Relationship

In this study, a significant positive correlation is found between parenting style, learning burnout, and peer relationships among primary school students, and after reversing the emotional warmth score and changing it to a low emotional warmth score, there is a significant positive correlation between all dimensions. In other words, higher scores of learning burnout lead to more negative parenting styles and poorer peer relationships (Table 4).

3.4 D Mediating Effect of Peer Relationship

In this study, the author uses the PROCESS plug-in of SPSS and chooses a simple intermediate model, with gender and grade level controlled, to test the mediating effect of peer relationships on mothers’ parenting style and learning burnout among primary school students through Bootstrap. The results suggest that mothers’ parenting style significantly and positively predicts learning burnout, ($B = 0.59, t = 12.47, p < 0.01$), and its positive predictive effect on learning burnout remains significant after the inclusion of mediating variables ($B = 0.33, t = 6.98, p < 0.01$), see Table 5 Table 6. Fathers’ parenting style also positively predicts learning burnout, ($B = 0.51, t = 10.67, p < 0.01$), and its positive predictive effect is equally significant after the inclusion of mediating variables ($B = 0.28, t = 6.06, p < 0.01$), see Table 7, Table 8.

Table 5. Explanation of total and mediated effects - mothers' parenting style

	Effect value	BootSE	BootLLCI	BootULCI	Effect
Mediating effect	0.2060	0.0335	0.1445	0.2766	40.36%
Mother - direct effect	0.3044	0.0453	0.2154	0.3934	59.64%
Total effect	0.5104	0.0439	0.4242	0.5967	

Table 6. Mediation model test for peer relationship-mother's parenting style

	Learning Burnout		Peer relationship		Learning Burnout	
	β	t	β	t	β	t
Mothers' parenting style	0.304	6.725**	0.508	10.753**	0.510	11.635**
Gender	-0.238	-0.305	-0.716	-0.767	-0.528	-0.611
Grade	-4.560	-8.056	-2.129	-3.184**	-5.422	-8.746**
Peer relationship	0.405	9.34**	\	\	\	\
R	0.725		0.532		0.643	
R2	0.526		0.283		0.414	
F	102.562**		48.767**		87.364**	

** . Significant at the 0.01 level

Table 7. Explanation of total, direct, and mediated effects - fathers' parenting style

	Effect value	BootSE	BootLLCI	BootULCI	Effect
Mediating effect	0.192	0.0341	0.1311	0.2632	44.31%
Father - direct effect	0.2413	0.0434	0.1559	0.3268	55.69%
Total effect	0.4333	0.045	0.3449	0.5218	

It is evident that the upper and lower limits of bootstrap 95% confidence intervals for the direct effect of parenting style on learning burnout and the mediating effect of peer relationships on learning burnout are non-zero and both of them are greater than zero, indicating that parenting style can directly predict learning burnout and can predict the level of learning burnout through the mediating effect of peer relationships.

Table 8. Mediation model test for peer relationship-fathers' parenting style

	Learning Burnout		Peer relationship		Learning Burnout	
	β	t	β	t	β	t
Fathers' parenting style	0.241	5.555**	0.428	8.856**	0.433	9.632**
Gender	-0.009	-0.011	-0.376	-0.386	-0.178	-0.196
Grade	-4.533	-7.850**	-2.269	-3.255**	-5.551	-8.554**
Peer relationship	0.449	10.580**	\	\	\	\
R	0.713		0.473		0.600	
R ²	0.509		0.224		0.360	
F	95.810**		35.587**		69.616**	

** . Significant at the 0.01 level

4 Conclusion

In terms of demographic characteristics, SPSS statistical analysis reveals significant differences in gender, region, grade level, and mother's only-child status across dimensions of academic burnout, parenting style, and peer relationships.

In terms of gender, parents take a more positive parenting approach to girls, with girls scoring lower than boys overall, and fathers are gentler with their daughters, scoring lower on the overall parenting style and rejection dimensions. Boys score higher on the over-protection dimension because boys are less self-controlled and more mischievous than girls during primary school. This data also reflects the potential problem of overly cautious and less exploratory parenting towards boys, which may cause the "mama's boy" and can be further studied. Boys and girls score significantly and differently on the learning alienation dimension. Girls have lower levels of learning alienation than boys, probably because girls are more studious, disciplined, conscientious, and better meet the expectations of teachers and parents in primary school.

Regionally, primary school students in Hunan and Beijing differ significantly in total scores of learning burnout, physical and emotional exhaustion, and low achievement. Primary school students in Hunan score higher in learning burnout than those in Beijing. This data may be shaped by the imbalance of educational resources on the one hand, where students in the county have more pressure to study as they need to change their fate by passing the college entrance examination; on the other hand, due to sampling bias, the sample size of primary school students in Hunan is smaller and mainly from the fifth grade of the same school. Different regional data also differ significantly in the parenting style, mother's parenting style, and rejection dimensions. Probably due to the smaller sample size or vigorous character and stricter upbringing of Hunan people, Hunan respondents all score higher than Beijing.

Students' scores on the over-protection dimension also vary significantly by grade level, with the scores declining from grade 3, grade 5, grade 4, and grade 6. The third graders suffer the most from overprotective parents probably because they are still young. For fifth-graders, children think they can already be independent and do many things,

but their parents do not approve of them, and children score higher on the parents' overprotective dimension when they cannot agree with their parents.

Mothers' only-child status shows significant differences in the dimensions of learning burnout, parenting style, and peer relationships. Mothers who have only one child negatively predict learning burnout, parenting style, and peer relationships, and this is a factor receiving less attention in previous studies. Mothers who have only one child negatively predict learning burnout, parenting style, and peer relationships, and this is a factor receiving less attention in previous studies. In this study, correlation analyses also indicate that mothers who have only one child are more likely to have grandparents assisting in child care, which also deserves further study.

In this study, the correlation analysis results reveal that parenting style and peer relationship significantly and positively correlated with the level of learning burnout among primary school students. After adding the mediating variable peer relationship as verified by SPSS Bootstrap, parenting style still significantly correlates with the level of learning burnout, but its effect decreases. After entering school, peer relationships play an increasingly important role and parents will gradually decrease their central position in children's minds. However, current primary school students have few opportunities to interact with their peers, except at school and in extracurricular classes, which leads to the underdevelopment of their social skills. Therefore, during the education of primary school children, parents should adopt a more positive parenting style and create a good atmosphere and environment for their children to interact with their peers. With more opportunities for independent activities, children can improve their social development and reduce the possibility of learning burnout situations.

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