

Analysis of Double Mediation Model Based on Family Economy, Parents' Educational Literacy, and Children's Academic Achievement

MENG ZHANG, YUHAN XIAO and SHUAISHUAI FENG

ABSTRACT

The rise and fall of a family are intertwined with personal achievements. No matter what success a person will achieve in the future, he will be influenced by the family from birth. Parents are the link between families and their children. Through reading, summarizing, and reflecting on previous scholars' research, this paper takes educational methods and educational concepts as the measurement indicators of parents' educational literacy, constituting a paralleled mediation model. By investigating the basic situation and educational behavior of 200 parents from different families in China, this paper aims at exploring the role of parents' educational literacy in the family economy children's academic achievement. The results show that the family economy can not only directly affect children's academic achievements, but also indirectly affect them through parents' educational methods and concepts. Specifically speaking, the direct effect accounts for 44%, the indirect effect of the education method accounts for 32%, and the indirect effect of the education concept accounts for 24%. The effect of parents' guidance on children cannot be ignored. Combined with previous studies, we can improve parents' educational literacy and help children grow up by means of Internet information and communication between parents.

INTRODUCTION

Family is usually the basic unit of social structure. Individual achievements usually benefit the whole family and the impact of family on individuals is also obvious. As for children, parents are often the ones giving them the most direct influence. From ancient times to the present, stories about family education have been widely circulated. However, in the past decades, new educational thoughts have emerged. Modern schools and social education institutions have developed rapidly in various countries, winning the trust of parents. Schools and society have been the main implementer of education.

On the one hand, the school employs teachers majoring in education to teach children knowledge and skills more efficiently. On the other hand, schools can never

Meng Zhang, Yuhan Xiao, Shuaishuai Feng*
School of Public Administration, Hainan University, Haikou, China
*Corresponding author

replace parents' role in shaping children, because parents are necessary supervisors for children after class. Unfortunately, when schools shoulder the responsibility of education, parents may feel lax in their own responsibilities and overlook the importance of guiding their children. A study of Chinese families shows that 72% of parents think that their family education methods for their children are incorrect, which reflects the decline in parents' competence. Up against the continuous economic development, it is of far-reaching significance to face up to the educational role of parents and explore the function of their educational literacy in children's growth, so as to train future talents and promote the healthy development of society.

LITERATURE REVIEW AND RESEARCH HYPOTHESIS

Family Education and Parents' Educational Literacy

Family education can be divided into broad and narrow senses. According to the traditional narrow sense, family education means that parents (including their elders) consciously exert influence and activities on their children through words and deeds, so as to cultivate people who are beneficial to the needs of family and society (Xinxin, 2021). Concerning its modern broad understanding, family education is the mutual influence and education among all family members in family life (Zhao, 1994). It can be seen that family education is a mutually interactive activity between parents and children. This paper focuses on the role of parents' education for their children and adopts the concept of parents' educational literacy to carry out research.

At present, there is no universal definition of parents' educational literacy in academia. Some studies believe that educational literacy is a special quality that parents should possess when educating their children to play the implementer of family education, including educational knowledge, educational concept, and educational ability (Wu, 2015). Obviously, as for many families, due to parents' busy work, special changes, and other reasons, it is not necessarily the father or mother responsible for educating their children but may include other family members (Zhou, 2013). In addition, parents' general literacy will also change their educational effect on their children (Wu, Wang et al., 2022), which shows that education is not a special behavior but has certain skills. The rapid development of society puts forward many modernization requirements for parents' educational literacy (Li, 2010). It is very vital to define parents' educational literacy from multiple dimensions.

In this paper, parents' accomplishment is defined as the qualities and abilities mastered or displayed by parents (including the father, the mother, elders, and other legal guardians) in the process of educational practice for their children and other youths in the family, more or less influencing the healthy growth or educational achievements of their children. In composition, parents' educational accomplishment includes their general and professional accomplishment, which is subdivided into the eight following aspects: physiological accomplishment, psychological accomplishment, moral accomplishment,

cultural accomplishment, educational concept, educational knowledge, educational ability, and educational method.

Existing Research

At present, most scholars regard family economy and parent education as a group of juxtaposed independent variables to discuss their influence on other variables. It has been proved that family income and parent education have a positive impact on the parent-child relationship and family environment (Zhang, 2012), while they have different impact mechanisms on children's studies (Xia, 2022). When it comes to their relationship, people with higher education are more likely to create a high-income family (Lemos, Almeida, et al., 2011). It can be seen that for the family economy, whether it will affect parents' educational behavior and how it will affect children's academic achievements are still unclear. In recent years, thanks to the support of national policies and the stable economic situation, China's household economy has grown significantly. According to the data of the National Bureau of Statistics of China, the per capita disposable income of Chinese residents has increased from 16,510 yuan to 35,128 yuan in the past ten years, with a cumulative nominal growth rate of 112.8% and an increase of over 80% after deducting the price factor, which provides feasibility for this paper to explore the impact of the family economy on children's academic achievements.

Relationship Between Family Economy and Children's Academic Achievement

The economic situation may directly impact children's academic performance. First of all, teachers in schools tend to pay more attention to students with stronger basic knowledge and better study habits (Wen and Li, 2018). As for those children in families with poor economic conditions, their preschool knowledge itself is weak (Merz, Landry, et al., 2014) and their mastery efficiency of new knowledge is lower than that of students with superior economic conditions. Secondly, when the teacher recommends everyone to think independently and verify a certain knowledge after returning home to class, these children from socioeconomically disadvantaged backgrounds may lose confidence in this knowledge immediately. Finally, their academic performance may be poor for a long time. Thus, we get hypothesis H1: the family economy is positively correlated with children's academic achievement.

Mediation Role of Educational Methods and Educational Concepts

The economic situation may indirectly impact children's academic performance. As the first teachers of children, parents play a crucial role in their children's growth (Á. Y. Makarenko, 2005). On this premise, educational methods mainly include the principles and skills used by parents in educating their children, which is integral to parents' educational literacy. However, many parents now realize their educational methods are not scientific (Xinxin, 2021). Previous studies have shown that when the family economy is relatively disadvantaged, even if parents have high expectations for their

children's education, the capital deficit will limit their role in specific educational actions (Xu and Montgomery, 2021). This kind of "concrete educational action" is often closely related to the corresponding technical methods, so the family's economic situation may indirectly affect children's academic performance in part through parents' educational methods. Hypothesis H2 is obtained: parental education method plays a mediation role in the process of the family economy affecting children's academic achievement.

As mentioned earlier, the influence of economic situation on children's academic performance may also be indirect, because parents have a far-reaching influence on children. This kind of influence is not only manifested concretely in the form of educational actions, but also potentially comes into being. An educational concept is a form of parents' potential influence on children, which mainly consists of parents' attitudes and views on children. For example, "self-efficacy" related to attitude refers to the individual's belief in whether he can achieve his goals efficiently (Bandura, 1997), so parenting self-efficacy is the parent's belief in whether he can effectively cultivate his children to be excellent. It is particularly important for their growth (Jones and Prinz 2005), with its intensity intertwined with the efficiency of parents' response to their children's needs (Gondoli, Dawn, et al., 1997). Existing studies have proved that family income has a significant impact on parental self-efficacy (Ra, Yoon, et al., 2009). Comprehensive analysis shows that the family's economic situation may indirectly affect children's studies partly through parents' educational concepts. Hypothesis H3 is put forward: parents' educational concept plays a mediation role in the process of the family economy affecting children's academic achievement.

RESEARCH METHODS

Literature Analysis Method

With the help of the Internet, this paper refers to many scholars' papers and reports as well as the concepts and principles of related books. Based on the research summary of domestic and foreign scholars in family education in recent years, we can further learn from experience and reflect on the shortcomings, which lays a solid theoretical foundation for the topic selection and hypothesis.

Investigation Method

A field survey of parents in different parts of China was conducted. A total of 200 questionnaires (all from different families) were collected, examined, and summarized. Parents' answers to common questions were processed into the values of their educational methods and concepts. Meanwhile, the basic information of parents (including income) and their children's academic achievements were also reflected in the questionnaire.

Variable Manipulation

Basic information about Parents

The basic information about parents comes from the information of gender, age, education, and so on, which reflects the social background of parents and is set as a control variable in the analysis to improve the scientific nature of the research.

Family Economy

The family economy is measured by the annual family income filled out by parents in the questionnaire. Because the values fluctuate greatly, the answer results of household income are taken as logarithms.

Educational Methods

This part is measured by the Parent Education Literacy Questionnaire (Zhou, 2013). The educational methods are mainly explored from three aspects: teaching students in accordance with their aptitude, leading by example, and learning to listen. For example, leading by example is researched from “Do you deliberately regulate your emotions or behaviors in front of your children?”. All items were assessed on the Likert scale ranging from 1 (“never”) to 5 (“always”). The higher the score, the stronger the educational method.

Educational Concept (Li 2010)

It’s measured by the composition of parents’ educational concepts (Li, 2010). The educational concept is mainly discussed from three aspects: children’s view, parent-child view, and talent view. For example, the view of children is manifested by “Will you consciously cultivate children’s ability to live independently?”. All items were also evaluated according to the Likert scale. The higher the score, the stronger the educational concept.

Children’s Academic Achievement

Children’s academic achievement is measured by their ranking in the class filled out by parents in the questionnaire. Given the differences in the overall education in different regions, the ranking percentages of children in their classes are adopted as follows: top 20%, 20% ~ 40%, 40% ~ 60%, 60% ~ 80%, and 80% ~ 100%.

Analysis Method

This paper analyzes the survey results with the help of IBM SPSS Statistics, a measurement software, and tests the hypotheses of this paper. Model 4 with PROCESS 3.4 plug-in is introduced for parallel mediation analysis.

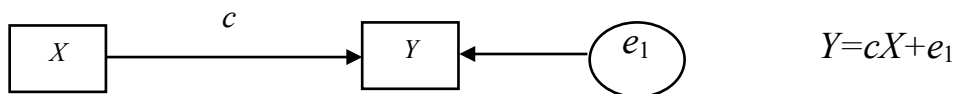


Figure 1. Direct Influence Relationship.

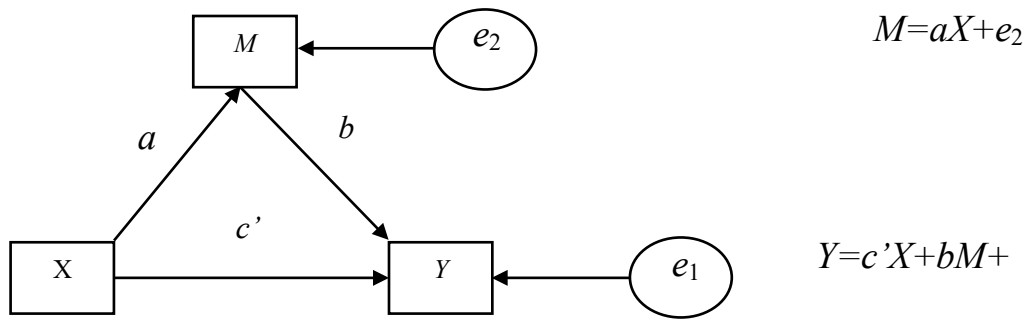


Figure 2. PROCESS Mediation Model (Model 4).2

Generally speaking, the relationship between two things in the same environment is complicated. Compared with the analysis of the direct relationship between two variables (as shown in Figure 1), Model 4 provided by PROCESS 3.4 (as shown in Figure 2) introduces mediating variable M , which can show the influence of explanatory variable X on explained variable Y more comprehensively. In this study, the significance of parents' educational literacy can be explored.

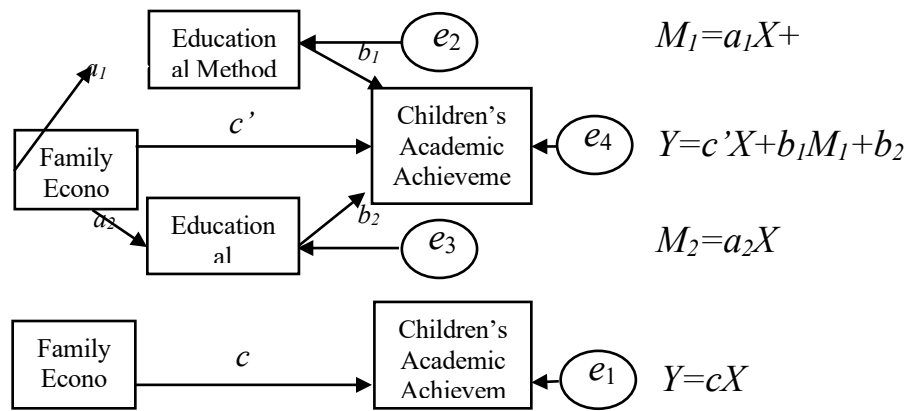
In the test of results, the Bootstrap method is adopted in this paper. Compared with previous methods relying on the coefficient test, Bootstrap properly selects the original data and simulates sampling, which improves the credibility of regression results.

After eliminating unreasonable data, this paper centralizes all continuous variables and takes the logarithm of the fluctuating income variables. In addition, parents' gender, age, and education were set as control variables. Finally, the number of Bootstrap samples is set to 5000. Appropriate data processing and model parameter selection are beneficial to improve the scientific nature of the paper.

RESULTS

Theoretical Model

After incorporating relevant variables into Model 4 of PROCESS 3.4, the following theoretical model results can be obtained:



3Figure 3. Family Education Mediation Model.

Family economy X may have a direct impact c on children's academic performance Y. When the educational method M1 and educational concept M2 are introduced, the influence of family economy X on children's academic Y may be directly and indirectly distinguished.

Regression Results

Before further discussing two paralleled mediations, in order to determine whether the elements of the model can be connected, the following regression coefficient table is very important:

TABLE 1. REGRESSION COEFFICIENT TABLE.1

Variable	Direct Effect		Total Effect		Indirect Effect			
	Children's Academic Achievement		Children's Academic Achievement		Educational Methods		Educational Concept	
	β	Se	β	Se	β	Se	β	Se
Independent Variable								
Family Economy (Lg10)	0.506	0.206*	1.150	0.175***	3.588	0.362***	2.980	0.355***
Control Variable								
Educational Methods	0.097	0.036**						
Educational Concept	0.099	0.036*						
Control Variable	YES	YES	YES	YES	YES	YES	YES	YES
Constant Term	-1.450	0.800	-2.025	0.838*	-3.842	1.735*	-2.035	1.705
Value of F	17.753		17.597		38.877		38.500	
R²	0.342		0.254		0.429		0.427	

Note: *, **, and *** are significance levels at 10%, 5%, and 1% respectively. The control variables in the regression include parents' gender, age, and education.

From this table, we can see that family economy, educational methods, and educational concepts can directly affect children's academic achievements. The economy also has a significant positive impact on educational methods and concepts. Incorporating educational methods and educational concepts into Model 4, independent variables, paralleled mediation, and dependent variables are correlated.

Effect Results

In order to further clarify the intensity relationship of various effects, the correlation values of direct effect, total effect, and mediating effect presented in Model 4 were recorded. The decomposition table of the model effect is as follows:

TABLE 2. DECOMPOSITION TABLE OF MODEL EFFECT.2

Various Effects	Effect Value	Boot Standard Error	Boot CI Lower Limit	Boot CI Upper Limit	Proportion of Effects (%)
Total effect (c)	1.1503	0.1746	0.8061	1.4945	100
Direct effect (c')	0.5063	0.2062	0.0997	0.9128	44.01
Total Mediating Effect (m)	0.6440	0.1216	0.3780	0.8313	55.99
Educational Methods	0.3271	0.1132	0.0960	0.5445	31.85
Educational Concept	0.2777	0.1136	0.0559	0.5187	24.14

The total effect of the family economy on children's academic achievement is 1.15. The mediating effect m (0.64) is slightly stronger than the direct effect c' (0.51). Meanwhile, the mediating effect value of the educational method (0.33) is higher than that of the educational concept (2.78).

DISCUSSION

According to the above results, the family economy has a significant positive impact on children's academic achievement, which means that children from families with a better economic situation are more likely to perform well academically, assuming that H1 is proven.

The family economy does not just directly affect children's academic achievements. Parents' guidance for children in families is particularly important. After joining the discussion of paralleled mediation (parents' educational methods and educational concepts), it is obvious that the influence of family economy X on children's academic achievement Y consists of three parts.

The first part is still the direct effect of the family economy on children's studies, accounting for 44.01% of the total effect.

It has been proven that parents with a high level of education can often create a high-income family (Lemos, Almeida, et al., 2011). On the premise of controlling parents' education, the regression results add a new causal chain to the relationship between them, namely, high-income families often give birth to a child with excellent academic performance.

Nowadays, most children will be imparted with the significance of studying. Children with better academic performance may go further in their student careers. By extension, the family economy and children's academic achievement are mutually beneficial. On the one hand, it reflects the importance of the study to personal development. On the other hand, it causes concern about the gap between rich and poor as well as the imbalance of educational resources in developing countries.

The second part is the mediating effect of the family economy on children's academic achievement through parent education, which accounts for 31.85% of the total effect. High income is a precious resource for a family, while children symbolize the future of the family. Previous studies have shown that parental education has a positive and powerful impact on children's learning (Brown, 2006). According to the results of the model, it can be seen that the skills and methods of proficient education for parents are efficient tools for digesting family resources. Hypothesis H2 is also confirmed.

The third part is the effect of the family economy on children's academic achievement through parents' educational concept, which accounts for 24.14% of the total effect. Previous studies have confirmed that the income gap makes different parents choose schools for their children from different starting points (Liang and Chan, 2012). In fact, parents' attitudes and views on children's development belong to the category of educational concepts. The influence of parents making these "choices" for their children has been verified in the model. According to the results, parents' educational concepts help the family economy influence children's academic achievements. Hypothesis H3 is proved.

In a word, parents' educational literacy cannot be ignored in the process that the family economy affects children's academic achievements. As for the influence of the family economy on children's academic achievement, the total mediating effect is significantly stronger than the direct effect, and the mediating effect of parents' educational methods is stronger than parents' educational concepts. After putting the effect result into the relational model, the theoretical model diagram is obtained:

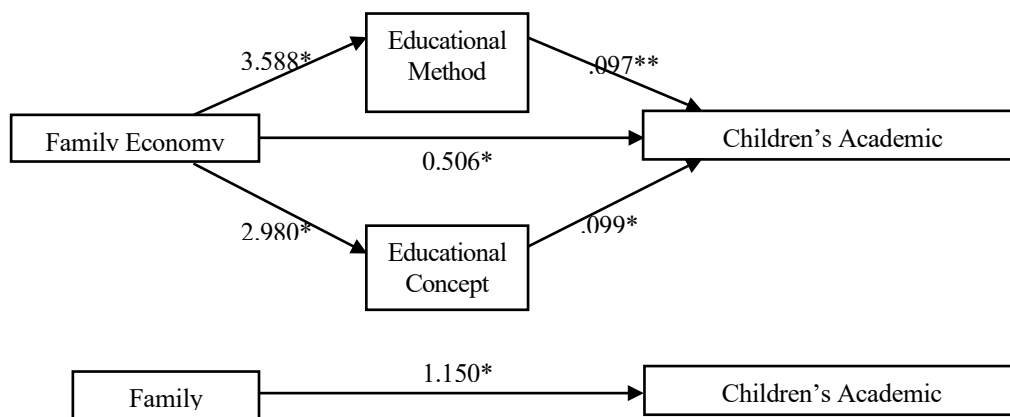


Figure 4. Transmission Model of Family Education Effect.

SUGGESTIONS

The Government Supports the Steady Growth of Household Income

The family economy is key to improving children's studies. Family's economic situation is usually determined by the parent's quality of life and work. As mentioned at the beginning, although the family is the basic unit of society, household income can also be improved by other means. The government can provide targeted welfare and employment policies to improve the living and working conditions of poor families. Once the first gear of family income is shifted, a family may operate healthily.

Parents Should Actively Learn Educational Methods

Although educational methods symbolize technicality, they are not difficult to obtain. With the rapid development of the Internet, the training effect of parents' education (even low-income) is becoming more and more remarkable (McGoron, Hvizdos, et al., 2018). With the help of the Internet, parents can efficiently learn a wide range of educational knowledge and methods at a low cost. Of course, this also requires the government and social media to maintain the Internet information environment.

Parents Should Take the Initiative to Reflect on Educational Concepts

Although the educational concept has potential, it can also be changed. In daily life, parents should regularly summarize and reflect on their own education and actively listen to their children's opinions and feedback. In addition, the form of talking to each other about educational experiences is favored by parents (Petersson, et al., 2004). Parents can discuss with other parents and learn from each other, so as to optimize their views and attitudes towards their children's development and enhance their educational concepts.

LIMITATIONS AND FUTURE DIRECTIONS

Expansion of Independent Variables

There are many factors that affect children's academic achievement, such as social stratification, parental harmony, and family environment. Due to the limited length of this paper, this study only takes the economy as an independent variable. At present, scholars have studied that the quality of the family environment will affect children's knowledge level (Merz, Landry, et al., 2014). With the enrichment of family life, there is also a broad space to study how the quality of the family entertainment environment influences children's knowledge level in the future.

Expansion of Mediating Variables

In the definition, this paper defines eight dimensions of parents' educational literacy. However, only representative educational methods and concepts are used in the research. Based on the fixed independent and dependent variables, it is also of great research significance to explore and compare the effects of other educational attainments.

Expansion of Dependent Variables

This paper discusses the influence of the family economy on children's academic achievements, but income may have different relationships with children's academic and social achievements (Xia, 2022). A child's growth cannot be measured by academic achievements alone. Conduct is also a critical part of their development.

CONCLUSION

Family is the starting point, school is an imperative part, and society is the destination of a person's education. Parents' educational literacy has a profound impact on their children's present and future. As for the influence of family and parents on children, this paper will study a broader aspect in the future. At the same time, this paper calls on more scholars to participate in the research of educational issues and put forward valuable opinions for the future development of children.

REFERENCES

1. Bandura, A. (1997). "Self-effectiveness: the exercise of control."
2. Brown, P.H. (2006). "Parental education and investment in children's human capital in rural China." *Economic Development and Cultural Change* 54 (4): 759-789.
3. Gondoli, et al. (1997). "Maternal emotional distress and diminished response: The mediating role of parenting." 33 (5): 861-861.

4. Jones, T.L. and R.J. Prinz (2005). "Potential roles of parental self-effectiveness in parent and child adjustment: a review." *Clin Psychological Rev* 25 (3): 341-363.
5. Lemos, G.C., et al. (2011). "Intelligence of adolescents is related to their parents' educational level but not to family income." 50 (7): 1062-1067.
6. McGoron, L., et al. (2018). "Feasibility of Internet-based parent training for low-income parents of young children." *Children and Youth Services Review* 84: 198-205.
7. Merz, E. C., et al. (2014). "Associations among parallel education, home environment quality, effective control, and pre-academic knowledge." *Journal of Applied Development Psychology* 35 (4): 304-315.
8. Petersson, K., et al. (2004). "What is good parental education? Interviews with parents who have attended parental education sessions." *Scandinavian journal of carding sciences* 18 (1): 82-89.
9. Ra, C. M., et al. (2009). "The comparison of children's behavior problems, social comparison, and parent self-effectiveness by their family income." *Korean Journal of Early Child Education* 29 (5): 359-378.
10. Wu, K., et al. (2022). "Parents' Education Anxiety and Children's Academic Burnout: The Role of Parental Burnout and Family Function." *Frontiers in Psychology* 12.
11. Xia, X. (2022). "Family Income, Parental Education and Chinese Preschoolers' Cognitive School Readiness: Authoritative Parenting and Parental Involvement as Chain Mediators." *Frontiers in Psychology* 13.
12. Xinxin, Y. (2021). "Fluence of Family Education on the Character Education among Adolescents." *Asia-pacific Journal of Convergent Research Interchange* 7 (7): 153-163.
13. Xu, Y. and C. Montgomery (2021). "Understanding the complexity of Chinese rural parents' roles in their children's access to elite universities." *British Journal of Society of Education* 42 (4): 555-570.
14. Zhang, X. (2012). "The Effects of Parental Education and Family Income on Mother-Child Relationships, Father-Child Relationships, and Family Environments in the People's Republic of China." *Family Process* 51 (4): 483-497.
15. Makarenko (2005). *Family and Child Education, Family and Child Education*.
16. Li Yajie (2010). *Contemporary Parent Education Research*, East China Normal University.
17. Liang Like and Chan Yingjuan (2012). Analysis on the Differences of Educational Concepts between Parents of Children in Urban and Rural Areas—Taking Luohe City as an Example% *J Intelligence*. (31): 232.
18. Wen Jun and Li Shanshan (2018). Class Differences and Their Influences in Intergenerational Transmission of Cultural Capital: A Comparative Study Based on Middle-class and Working-class Families in Shanghai% *J Journal of East China Normal University (Philosophy and Social Sciences Edition)*. 50 (04): 101-113 +175.
19. Wu Xiaoye (2015). Parents' Educational Literacy: Analysis of Current Situation, Problems and Causes% *J Adult Education*. 35 (07): 60-62.
20. Zhao Zhongxin (1994). *Family Education: Science and Art of Educating Children, Family Education: Science and Art of Educating Children*.
21. Monday Xi (2013). *Investigation on Parents' Educational Literacy of Urban Junior High School Students*, Nanjing Normal University.