The International Conference on Interdisciplinary Humanities and Communication Studies
DOI: 10.54254/2753-7048/6/20220403

The Influence of Age Gap Between First-Born and Second-Born Child on First-Born Academic Self-Efficacy
- The Mediating Role of Parent Involvement

Wenrui Cheng [1,a,*,†], Xinwen Liu[2,b,†], and Yangyang Yue[3,c,†]

[1] *Institute of International Businessl, Tianjin Foreign Studies University, NO.60, Xuefu Road, Binhai New Area, Tianjin, China*
[2] *Institute of Korean Culture and Education, Yonsei University, 50 Yonsei Road, West Damon District, Korean*
[3] *Institute of Foreign Language, Sichuan Technology and Business University, NO.9, Mingdong east section, Dongpo District, MeiShan, Sichuan, China*
a. 1610307424@pku.edu.cn, b. xinwen0202@163.com, c. yue2ang@163.com
**corresponding author*
†These authors contributed equally

Abstract: With the introduction of the national policy to encourage childbearing, the proportion of families with multiple children has been increasing. It is meaningful to explore whether in multiple children families the age gap between kids affects the children's academic behaviour. This study aims to explore whether the age gap between the eldest child and the second-born child has an impact on the academic self-efficacy of the eldest child, and if the parental involvement works as a mediating role in this process. A questionnaire survey was used to survey 627 students across the country. The results of the study are: ①Parental involvement was significantly correlated with academic self-efficacy, and there were significant gender differences in parental involvement, with boys' parents having more involvement. ②The age gap between the eldest child and the second child was negatively correlated with the academic self-efficacy of the eldest child, and the correlation was significant. ③Age gap influences the eldest child's academic self-efficacy through parental involvement, and the mediating effect accounts for 59.53% of the total effect.

Keywords: parental involvement, academic self-efficacy, Age gap, mediating effect

1. Introduction

In 1979, China began to implement the one-child policy. At that time almost all families have only one child. In December 2013, China implemented the two-child policy, and then on January 1, 2016, when the two-child policy was allowed, many families changed from "one-child" to "two-child". According to many studies, it has been found that the implementation of the two-child policy has a certain impact on many families. Because of the implementation of the two-child policy, many one-child families also have plan to have a second child. In view of these two different groups. This study mainly focuses on the impact of the first child in the one-child and second-child families on academic self-efficacy, and the impact of parent involvement on the first child in the one-child and second-

DOI: 10.54254/2753-7048/6/20220403

child families. According to Liang Yusong, “Academic self-efficacy means an individual's confidence in whether he or she has the ability to be competent to complete some academic tasks. [1].” Nowadays, children from single-child and two-child families both focus on their studies. They concern about “Can I finish this? Can I do better? How can I do my best?” These questions are not only about the children themselves, but also about their parents' attitudes towards them [2]. On one hand, for the first-born children in the two-child family, they have a younger brother or sister. To some extent, they will worry about whether younger brothers or sisters will affect their status at home. Therefore, the persistent psychological burden will affect the first-born child’s academic self-efficacy. Besides, whether there is a big difference between parents' parental involvement in children in only-child families and non-only-child families remains to be studied. According to WuXian’s study, parents' involvement is generally divided into two types: one is the involvement reflected in family education, that is, the influence of family education on children. In this environment, parents supervise children's growth and development as guides and managers. The other is the involvement in school education, that is, the connection between parents and school education. They participate in school-related activities as parents, such as holding parent-teacher meetings and communicating with teachers. Wu's research shows that parental involvement influences and mediates children's academic performance and growth mindset [3]. In addition, the age gap between the eldest child and the second-born child in a two-child family also has an impact on the parents' education style. Li Shanshan and others believe that when parents have a second child, their educational methods will change in two ways: first, parents should reflect on the problems that arise in the growth of their second child and optimize their educational methods; second, at the time of the second child’s birth, in response to the growth of the eldest child, parents start to pay more attention to "the cultivation of the older child's independent consciousness" [4].

Therefore, this study will study one-child families and two-child families’ academic self-efficacy and parent involvement. This will help the one-child family and the two-child family with a child's growth development. In addition, in the two-child family, there is a great significance in parents’ balance of the relationship between the two children.

2. Method

2.1. Research Objects

A total of 627 valid questionnaires were collected by random sampling and convenient sampling methods, including 306 males, and 321 females. Among 627 people, 340 are only children and 287 are eldest children in non-only child families, with an average age of 21.31±4.714.

2.2. Research Tools

2.2.1. Parent Involvement Questionnaire

Parents' involvement questionnaire is composed of 36 questions, including seven dimensions: 1. Parenting education; 2. Home-school communication; 3. Volunteer participation; 4. Home tutoring; 5. Participation in decision-making; 6. Participation in the community and 7. Lifecare, by Wu Nini and Yao Meilin, combining the definition of parents' engagement by foreign researchers and the characteristics of Chinese parents' engagement. A 5-point Likert scale was used. A higher score means more investment in this dimension. In this study, the overall questionnaire’s internal consistency coefficient was 0.96.

DOI: 10.54254/2753-7048/6/20220403

2.2.2. Academic Self-efficacy

The questionnaire of academic self-efficacy used in this study was revised by Liang Yusong. The questionnaire consisted of two parts; learning ability of self-efficacy and learning behavior of self-efficacy, with 22 items in total. A higher score means a higher individual's self-efficacy towards his or her learning ability and learning behavior in the study. In this study, the total Klonbach α coefficient of the questionnaire was 0.893, among which the internal consistency reliability of learning ability was 0.896, and learning behavior was 0.737.

2.3. Data Statistics

SPSS 25.0 and SPSS PROCESS4.0 were used to process the data.

3. The Results

3.1. Common Method Deviation Test

With the purpose of controlling the common method deviation problem, this study used the Harman single factor test to examine the common method deviation. The first factor without rotation explained only 34.57% of the total variation can be seen in the result, but not 40% of the total variation. The results show that, in this study, there is no serious common method bias.

3.2. Descriptive Statistics of Variables

The average value, a standard deviation of each variable and correlation coefficient between variables are shown in Table 1. After controlling for age and gender covariates, there was a significant positive correlation between each dimension of parent involvement (r from 0.51 to 0.93, $P < 0.01$), and the result shows a significant positive correlation between the two dimensions of academic self-efficacy (r from 0.57 to 0.66, $P < 0.01$).

Table 1: Descriptive statistics of each variable, correlation between variables and descriptive statistics.

Variable	1	2	3	4	5	6	7	8	9
1	-								
2	0.82**	-							
3	0.75**	0.78**	-						
4	0.77**	0.82**	0.75**	-					
5	0.75**	0.82**	0.79**	0.78**	-				
6	0.71**	0.73**	0.71**	0.66**	0.76**	-			
7	0.68**	0.71**	0.63**	0.75**	0.67**	0.52**	-		
8	0.60**	0.58**	0.57**	0.60**	0.55**	0.51**	0.59**	-	
9	0.56**	0.58**	0.60**	0.60**	0.60**	0.54**	0.57**	0.66**	-
M	14.96	25.59	14.41	29.28	18.07	6.79	22.53	41.97	39.16
SD	3.25	5.77	3.56	6.05	4.17	2.31	3.88	7.19	5.85

Note: 1. Parent involvement--parenting education; 2. Parent involvement-- home-school communication; 3. Parent involvement--volunteer participation; 4. Parent involvement--home tutoring; 5. Parent involvement--Participation in decision making; 6. Parent involvement--Participation in the community; 7. Parental involvement--life care; 8. Academic self-efficacy--learning ability self-efficacy; 9. Academic self-efficacy--Learning behavior self-efficacy.

DOI: 10.54254/2753-7048/6/20220403

The difference test of parent involvement and academic self-efficacy on gender and whether they are only children can be seen in Table 2. The gender difference test showed that no significant difference was found in parental involvement except in the dimension of life care, and the parent involvement in other dimensions was higher in boys than in girls ($P < 0.01$). In the dimension of learning behavior of self-efficacy, there are significant differences between genders. Males score was higher than females. ($P < 0.05$). The difference test of the eldest child between the single child and the non-single child families showed that the score of the single child was significantly higher than that of the non-single child in the dimension of parent involvement in life care ($P < 0.05$), but no significant difference between the single child and non-single child in other dimensions.

Table 2: Differences of main variables in gender and only child.

	Male（n=306）	Female（n=321）	t	singleton（n=340）	The eldest child of a non-singleton family (n=287)	t
1	15.44（2.72）	14.50（3.63）	3.68**	15.17 (3.00)	14.71 (3.51)	1.75
2	26.29（4.83）	24.92（6.49）	3.02**	25.72 (5.59)	25.44 (5.99)	0.62
3	14.92（3.05）	13.93（3.93）	3.55**	14.63 (3.35)	14.15 (3.78)	1.64
4	29.88（5.25）	28.71（6.69）	2.43**	29.59 (5.69)	28.91 (6.44)	1.38
5	18.82（3.47）	17.36（4.64）	4.48**	18.14 (4.01)	17.99 (4.36)	0.45
6	7.31（1.90）	6.31 （2.55）	5.60**	6.81(2.31)	6.78 (2.31)	0.14
7	22.71（3.52）	22.36（4.19）	1.12	22.88 (3.63)	22.12 (4.11)	2.42 *
8	42.11（6.87）	41.84（7.49）	0.48	42.26 (7.29)	41.64 (7.07)	1.08
9	39.66（5.58）	38.68（6.07）	2.10*	39.24 (5.94)	39.07 (5.76)	0.35
10	135.36（21.46）	128.08（28.93）	3.59**	132.93 (23.96)	130.10 (27.78)	1.35
11	81.78（11.40）	80.52（12.32）	1.32	81.49 (12.03)	80.71 (11.73)	0.82

The results in Table 3 show that the age gap is negatively and significantly correlated with the total score of parent investment and the two sub-dimensions of parenting education and life care. Academic self-efficacy was negatively and significantly correlated with the age gap. It shows that the greater the age gap between the eldest child and the second-born child, the lower the academic self-efficacy of the eldest child; the smaller the age gap between the eldest child and the second-born child, the higher the academic self-efficacy of the eldest child.

DOI: 10.54254/2753-7048/6/20220403

Table 3: The correlation between the age gap between the eldest child and the second-born child of non-only children and the variable.

Variables	1	2	3	4	5	6	7	8	9	10	11
Age gap	-0.130*	-0.112	-0.096	-0.089	-0.093	-0.088	-0.115*	-0.144*	-0.106	-0.117*	-0.139*

Note: 1. Parenting Education; 2. Home-school Exchange; 3. Volunteering Participation; 4. Home Tutoring; 5. Participation in Decision-making; 6. Participation in Community; 7. Lifecare; 8. Learning Ability Self-efficacy; 9. Self-efficacy in Learning Behavior; 10. Total Parental Engagement Score; 11. Academic Self-efficacy.

3.3. Mediating Effect Test of Parental Input

Process 4.0 was used to examine the mediating effect of parental input, with gender, age and marital status as control variables.

Table 4 shows that parental involvement positively predicts children's academic self-efficacy, and the age gap between the eldest child and the second child negatively affects the eldest child's academic self-efficacy. The mediating effect of parent investment is significant.

Table 4: The mediation model test of parental input.

	Academic self-efficacy			Parental engagement academic			Self-efficacy		
	coeff	t	p	coeff	t	p	coeff	t	p
Age gap	-0.172	-1.384	0.168	-0.812	-1.922	0.056	3	-2.357	0.019
Age	0.299	2.225	0.027	-0.097	-0.21	0.834	0.268	1.368	0.172
Marriage	2.093	1.215	0.225	-13.784	-2.358	0.019	-2.202	-0.883	0.378
Gender	0.675	0.695	0.488	-10.293	-3.144	0.002	-2.533	-1.814	0.071
Parental involvement	0.312	17.939	0						
R-square	0.557			0.07			0.051		
F	70.794			5.294			3.761		

The direct effect and mediating effect were tested by Bootstrap test with corrected deviation [5]. The sampling times were 5000, and the indirect effect was 0.253 [95% CI: -0.508, -0.01]. The mediating effect of parental involvement was significant, Table 5 shows that the mediating effect accounts for 59.53% of the total effect.

Table 5: Decomposition table of total effect, direct effect and mediating effect.

	Effect	BootSE	BootLLCI	BootULCI	Effect ratio
Mediating effect of parental involvement	-0.253	0.127	-0.508	-0.01	59.53%
Direct effect	-0.172	0.107	-0.392	0.032	40.47%
Total effect	-0.425	0.18	-0.779	-0.07	

4. Discussion

This study found that parent involvement and academic self-efficacy were not significantly different between first-born children from only and non-only child families. At present, the economic

DOI: 10.54254/2753-7048/6/20220403

conditions of families can provide superior living and learning conditions for their children. Parents also attach great importance to the cultivation of children and give their children more space, which enhances their children's sense of academic self-efficacy to a certain extent. This is also consistent with Huang's findings [6]. As the research objects are mostly high school students and college students, children at this age are more likely to study by themselves, mainly through the use of network resources to promote self-learning, and have a clear academic self-cognition ability. At this time, parents' interference in children's studies will also be reduced. Therefore, there is no significant difference in academic self-efficacy between the eldest child of the only child and the non-only child. However, there is a significant difference in parent involvement between the sexes. In terms of parental involvement, except for life care, male parents invest more in home-school communication, participation in decision-making, volunteer participation and other aspects. Xu Lixin's research can prove it. His study found that men scored higher than women on parental punishment, denial, and excessive protection, suggesting that parenting styles differ by gender [7]. It may be that during adolescence, male psychology is more rebellious, want to get away from the bondage of parents, often does not study seriously or skip classes and other bad behaviors, so parents spend more time on education. Among them, parents tend to punish men severely, refuse to deny them, and interfere too much. Secondly, Chinese parents are often influenced by traditional ideas, such as “son preference”, and have different expectations of the child's gender in the process of investment. In the study of Cui Sheng et al., parents' “high expectations” for men are mainly reflected in their educational background. They expect men to have a master's or doctoral degree, while their expectations for women are not high -- “a bachelor's degree” [8]. Therefore, parents adopt different parenting styles and devote different times to their children.

This study found that parent involvement was significantly correlated with each dimension of children's academic self-efficacy. Parents' efforts, time and resources spent in promoting children's academic performance, and specific behaviors all promoted children's stronger self-efficacy in academic performance, which was consistent with previous findings.

The age gap between the first and second child affects academic self-efficacy by influencing the degree of parent involvement, and the mediating effect is significant. No matter in the one-child family or a non-one-child family, the involvement of parents in academic self-efficacy affects children's study and life to some extent [9]. In non-one-child families, different ways of parent involvement with the first-born and second-born children have different effects on academic self-efficacy. The same is true in one-child families. Many domestic scholars have carried out relevant studies on this issue for different groups. For example, Chen Yuzhu found in her research on junior high school students that parents' emotional care would make junior high school students feel more warm and secure, and become more confident and form a higher sense of self-efficacy [10]. However, parents' negative treatment can make children less confident in themselves and reduce their self-efficacy. Tao Yanqiang et al. confirmed this result in a group study with college students as subjects [11].

In addition, parents spoiling their children too much and tolerance are not conducive to the development of independence. When children face difficulties and setbacks, parents can’t rely on their own ability to solve them. In the study, children do not have the full confidence to complete the study task. In this regard, Zhao Pengzhen mentioned that there was a significant negative correlation between parental intervention and academic self-efficacy in the parenting style [12]. Therefore, in life, parents should actively encourage their children to solve the setbacks and difficulties encountered and rely on themselves to complete the learning tasks and be good at learning from each other [13].

According to the survey, the age gap between the eldest child and the second child is negatively correlated with the eldest child's academic self-efficacy, and the correlation is significant. Fan Xuejin and others found that, in the same family, when parents have the first child, they began to put a lot of

DOI: 10.54254/2753-7048/6/20220403

time and energy into the first child, and get the experience and lessons on his upbringing [14]. When the parents have a second child, they will compensate for the second body, and spend more time and energy taking care of the second child. Academically, when the second child has problems in his studies, he can ask the eldest brother or elder sister for advice. However, the eldest child has no one to consult and solve learning problems, so the eldest child's academic self-efficacy will be lower. Another possibility is that the eldest child is the only child in a non-one-child family without a second child. When the first child is born, the parents may be busy with work, have less time and energy to take care of the family, and the family's economic situation is poor. Therefore, parents have less investment in their children and neglect the growth of their eldest child. The eldest child may have poor self-control, so he will be undisciplined in his studies and life. As the oldest child gets older, his life and behavior will become habitual, and the second child will not only imitate the behavior of the first child, but also will not serve as a role model for the second child.

When the second child is born, the social and economic status of the family would gradually improve, and the parents' work and income will be more stable. Therefore, the second child can enjoy better parenting resources than the first child, and at the same time, parents naturally give more care to younger children, so for the eldest child who gets less parental input, his or her academic self-efficacy will be reduced.

5. Conclusion

This study shows that the age gap between the eldest child and the second child, an easily overlooked factor, has a significant impact on the academic self-efficacy of the eldest child. Inspire parents to consider the age of the eldest child as an important factor when considering whether to raise another child. Meanwhile, when the second child was born, the eldest child should not be ignored, more attention should be given to the eldest child, and the relationship between the eldest child and the second child should be actively adjusted.

Since the comprehensive two-child policy has been implemented for only seven years, and the minimum age required to fill out the questionnaire is 9 years old, this study only takes the eldest child of a non-only family as the main research object, and further studies can consider the influence of age gap on the second child. Furthermore, with the implementation of the "three-child policy", the middle-ranked children can also be taken into research. In addition, this study takes gender as a covariate, and later studies can take gender as a moderating variable to study its influence about kids on academic self-efficacy.

References

[1] *Liang Yusong. (2000). Students' achievement goal, attributional style and academic self-efficacy research. (Doctoral dissertation, central China normal university).*

[2] *Zeng, Q. Y. , Ni-Ni, W. U. , & Yao, M. L. . (2010). Parent involvement and impacts on children's academic achievements. Journal of Bjing Normal University(Social ences).*

[3] *Wu X. (2021). The Parental Education Involvement and Academic Performance: The Intermediary Function of Growth Mindsets. Contemporary Education Forum.*

[4] *Li Shanshan, Guo Liping, Jiang Loui, & Xiao Yunli. (2019). A survey on parents' educational views of "two-child" families. Research in Education Science (1), 7.*

[5] *Fang, J. , & Zhang, M. Q. . (2012). Assessing point and interval estimation for the mediating effect:distribution of the product, nonparametric bootstrap and markov chain monte carlo methods. Acta Psychologica Sinica, 44(10), 1408-1420.*

[6] *Yun Huang. Study on the correlation between academic self-efficacy, self-esteem and peer relationship in high school students [D]. Central South University for Nationalities,2015.*

[7] *Li-Xin, X. U. . (2017). On the correlation of parenting style and college students' time management disposition. Heilongjiang Researches on Higher Education.*

DOI: 10.54254/2753-7048/6/20220403

[8] *Cui S & Song F F. (2019). Gender differences in parental educational expectations and investment: an empirical study based on China's Educational tracking survey. Journal of Education, Renmin University of China (02),154-168.*

[9] *Ruo-Xuan, L. I. , Zhang, L. F. , Yao, M. L. , Psychology, S. O. , & University, B. N. . (2018). Effect of parental involvement on student engagement:the mediating effect of mastery goal. Chinese Journal of Clinical Psychology.*

[10] *Chen Yuzhu. (2013). The investigation of implicit and explicit attitude of environment among university students . Social Psychological Science (5), 5.*

[11] *Tao Y Q, & Zhou X Y. (2016). The correlation between parenting style and self-efficacy of college students. Journal of Jishou University: Social Science Edition (S1), 5.*

[12] *Zhao Pengzhen. A Study on the Relationship of Parenting Style, Academic Self-efficacy, Autonomous Learning Competence and English Academic Achievement. (Doctoral dissertation, shanxi normal university).*

[13] *Nokali, N. E. E. , Bachman, H. J. , & Elizabeth Votruba‐Drzal. (2010). Parent involvement and children's academic and social development in elementary school. Child Development, 81.*

[14] *Fan Xuejin, Fan Xiaoxuan, CAI Lei, Ma Jingwen, Sun Tao, & Wu Yujia et al. (2019). Correlation between birth order and age difference and emotional behavior of school-age children in two-child families. Chinese School Health, 40(10), 4.*