

# Parental Recognition of Double Reduction Policy , Family Economic Status And Educational Anxiety: Exploring the Mediating Influence of Educational Technology Substitutive Resource

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**Abstract:** China's double reduction policy, aiming to curb excessive extracurricular tutoring, sparks debate and concerns among parents about its impact on the next generation's academics and competitiveness. Some forward-thinking parents seek alternatives like one-on-one tutoring or paid online learning, yet financial constraints intensify anxiety, especially for economically disadvantaged families. A study involving 200 parents examines their views on policy implementation, family economic status, and the role of alternative resources in educational anxiety. Findings highlight that the stronger the implementation of the double reduction policy in a region, the higher the parental education anxiety becomes. Parents with poorer economic conditions are more hesitant than those with better economic status when it comes to choosing to use paid alternative educational resources. The government and society should explore measures to ensure equitable access to education and alleviate anxiety. Additionally, establishing a dynamic tracking and feedback system for the double reduction policy is essential, actively seeking input from parents to better serve their needs and align educational policies with national education goals.

**Keywords:** alternative education resource; double reduction policy; educational anxiety; time perspective; educational equity

## 1. Introduction

China's double reduction policy is a highly anticipated wave of educational reforms aimed at alleviating students' heavy academic burdens, reducing family education expenses, and improving students' quality of life [1]. The extent of its implementation has sparked extensive discussions, as it not only alters family education expenditures but also affects parental education anxieties and influences the availability of alternative educational resources within the education ecosystem [2,3]. Over the past few years, the Chinese government has taken multiple measures, including reducing academic workloads, narrowing educational disparities, and encouraging schools to provide more innovative teaching methods [4]. Wang et al. argued that these measures aim to foster a more comprehensive development of students, rather than just pursuing grades. However, the actual impact of the policy and how it changes the dynamics between students, families, and schools remains a

complex and worthy topic of exploration [5]. Furthermore, Cai et al. highlighted that the double reduction policy has also triggered a series of societal changes, including reforms in education and training institutions, shifts in parental educational beliefs, and the redistribution of family education expenditures [6]. These factors further increase the complexity of our understanding of how various components of the education ecosystem interact with each other. Therefore, the mission of this article is to delve deeply into the impact of the double reduction policy on current parental education anxiety. We are not only focusing on the relationship between this policy and alternative educational resources, as well as the family's economic status, but also exploring its potential as a beneficial policy in alleviating the financial burden on parents. Additionally, we emphasize the necessity of adjusting it according to the current state of education in China. Through this comprehensive study, we can gain a better understanding of the holistic effects of educational reform on China's education system and potential directions for improvement in the future.

### *1.1. Parents' Perceptions of the Implementation Level of the Double Reduction Policy*

One important thing being studied is how well the double reduction policy is being put into place. Chen says that this means that different areas and schools are carrying out the policy in specific ways, such as by limiting the number of after-school training groups and reducing the number of subjects taught [7]. Various regions of the country have different ways of implementing the policy, which has a big effect on the options and plans for family education and on how parents feel about and approach their children's education.

A study by Li et al. found that students have an easier time with homework in locations where the policy is carried out more strictly [8]. At the same time, though, other teaching tools showed up like mushrooms after it rains. The double reduction policy has, in some ways, stopped the overgrowth of individual tutoring groups, which has made it easier on parents' funds [9]. But it has also cut off the normal ways for parents and kids to get help with schoolwork. This means that parents have to look for other ways to learn, like one-on-one training and online sites that charge education fees [10,11]

Therefore, a complex interplay exists between the degree of policy implementation, the availability of alternative educational resources, and parents' education-related anxieties. The policy has different effects in different areas, which means that family education methods are changing. This difficult situation makes it harder to make decisions about education. More in-depth study is required to fully comprehend how the different factors interact with others and how they all affect families' and students' educational experiences and growth.

### *1.2. Family Economic Situation: A Key Factor in Policy Implementation Effects*

In research, the family's economic situation plays a crucial role because it is closely tied to the degree of policy implementation. A large portion of a Chinese family's income usually goes for educational costs. Because of this, the cost of policy acceptance can have a big effect on the financial situation of the family [12, 13]. Studies show that families tend to spend less on personal training in places where policies are strictly enforced, which is good for their finances [14]. However, research from Lu et al. has also shown that policies may make it hard for certain educational institutions to make money, which can hurt the income of families who work in the education and training business [15]. Cao et al. also say that some students who do badly in school but need extra help are unable to access normal extracurricular tutoring, so they have to look for other ways to learn [16]. But a lot of the other options, like one-on-one tutoring or paid online information sites, cost more, which raises the overall cost of education for the family. According to Psaki et al., a small rise in spending on education might not have a big effect on the middle class. But for most families, this is a big financial load. So, the family's financial situation can be affected by how well policies are put into place, what other educational tools are available, and how worried parents are about their children's education [17].

### *1.3. Alternative Educational Resources: New Options Under Double Reduction Policy*

The scope of alternative educational resources is extremely broad, encompassing various educational methods, tools, and platforms, which exhibit diversity in concepts, content, and types [18, 19]. Zeng & Nian

argued that driven by the policy of double reduction, traditional extracurricular tutoring classes have faced limitations, posing an urgent challenge for some families, especially students with poorer academic performance [20]. They are compelled to actively seek alternative educational resources to address this issue. Using a practical case as an example, some underperforming students may seek help from online mathematics learning applications to improve their math skills or rely on community education programs to receive additional academic support. However, the availability and cost of alternative educational resources vary depending on geographical location and resource types, primarily determined by the economic status and place of residence of students' families. Not all underperforming students can access alternative resources that suit their needs.

#### *1.4. Parents' Education Anxiety: Emotional and Blood Ties*

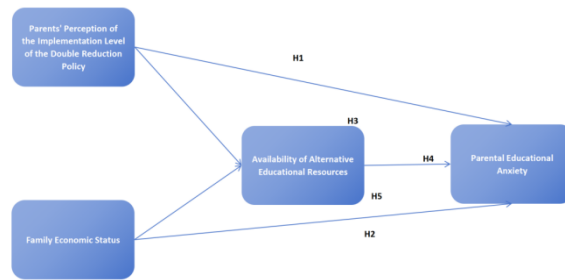
Parental educational anxiety is an important factor that reflects emotional considerations in family education decision-making. According to Thakur, educational anxiety refers to the emotional state in which parents feel nervous, worried, or anxious during their children's educational process [21]. This anxiety may involve concerns about their children's academic performance, social and emotional well-being, future careers and economic prospects, educational policies, and competition pressures. Typically, this anxiety stems from parents' concerns about their children's future and happiness, as well as the uncertainties in the social and educational environment [22–24]. Changes in national education policy can also trigger parents' feelings of unease and anxiety. For instance, some studies suggest that in regions where the implementation of double reduction policy is more pronounced, parental educational anxiety may decrease [25]. Liu explained that this is because parents perceive that these policies reduce the academic pressure on students and alleviate intense competition [26]. Such policies may reduce parents' worries about their children facing excessive competition and academic burdens. However, other research has found that parents may worry that these policies could lead to a decline in education quality and that their children may lose competitiveness in a highly competitive environment. Additionally, some parents may be concerned about policy instability, as frequent changes in education policies can make it difficult for them to plan for their children's future education [27,28]. In summary, parental educational anxiety is a complex emotional factor influenced by various factors, including changes in education policies and parents' concerns about their children's future and the educational environment. This anxiety has significant implications for family education decisions and the growth and development of children.

In this context, the double reduction policy may be seen as a somewhat one-size-fits-all approach, but it has also spurred a trend where alternative educational resources are emerging, providing students with more flexible, diverse, and personalized learning pathways. However, as mentioned earlier, the cost factor of alternative educational resources also needs to be considered because different families have varying financial capabilities, which may impact students' choices and usage.

In our current study, we aim to delve into the impact of China's double reduction policy on parental education anxiety and investigate whether this policy is influenced by the availability of alternative educational resources. Additionally, we are interested in how family economic status shapes parental attitudes towards the double reduction policy and explore whether parents are aware of and can access these alternative educational resources, and how this may affect their levels of education-related anxiety. Fueled by curiosity about these questions, we have put forth five research hypotheses to thoroughly investigate this topic (shown in Figure 1).

Hypothesis 1: We hypothesize a positive correlation between the extent of implementation of the double reduction policy and parental education anxiety. We predict that as the policy's implementation becomes more extensive, parental education anxiety will also increase.

Hypothesis 2: We anticipate a negative correlation between family economic status and parental education anxiety. We predict that families with better economic conditions will generally have lower levels of parental education anxiety, and educational anxiety will increase in families whose economic conditions are relatively poor.



**Figure 1.** Hypothetical plot of variables about the study.

Hypothesis 3: We hypothesize that the availability of alternative educational resources mediates the relationship between the extent of implementation of the double reduction policy and parental education anxiety. We predict that the degree to which the "double reduction" policy affects parental education anxiety is influenced by its impact on the accessibility of alternative educational resources.

Hypothesis 4: We predict a correlation between the availability of alternative educational resources and parents' educational anxiety.

Hypothesis 5: We hypothesize that the availability of alternative educational resources mediates the relationship between family economic status and parental education anxiety. We predict that family economic status affects parental education anxiety is influenced by its impact on the accessibility of alternative educational resources.

## 2. Method

A group of parents whose children attended schools in a certain area of China were included in this study. 200 parents' data were collected as a result of convenience sampling during participant recruitment. We took great care to preserve participant identity and data confidentiality throughout the whole study procedure. We used a Likert scale questionnaire to determine how parents perceived the double reduction policy's level of implementation. The scale used a five-point rating system, with higher scores indicating a stricter perception of the implementation of the double reduction policy. For measuring the family's economic status, household income is one of the important indicators to measure the economic level of households, and different countries and organizations may use different criteria to divide the economic level of households. We use ten thousand yuan as a unit, with each interval representing 200,000 Chinese yuan, where parents self-reported their annual income. A similar approach was employed to assess the accessibility of alternative educational resources, utilizing a Likert-scale questionnaire. Again, a five-point scale was used, with scores reflecting the level of abundance of alternative resources. To evaluate parental education anxiety, we employed a questionnaire developed by Chen [7]. Following the data collection phase, we conducted data analysis. Initially, we conducted descriptive statistical analysis, including measures of central tendency, standard deviation, and correlation analysis, to delve into the relationships between various variables. Subsequently, through regression analysis, we investigated the potential impact of family economic status on parental education anxiety while also considering the mediating role of parents' perceptions of the dual reduction policy's implementation and the accessibility of alternative educational resources, among other factors.

## 3. Results or Findings

### 3.1. Descriptive Statistics of Sample Basic Information

According to Table 1, we can glean the following insights: 55.50% of the sample is "male," while 44.50% is "female." In terms of age distribution, 34.50% of the sample falls within the age range of 36–40, and an equal proportion of 34.50% is above 41. Regarding educational levels, the majority of parents hold a bachelor's degree, accounting for 58.50%. Parents are engaged in various professions, including government service, the

service industry, finance, etc., with "media and entertainment" representing 19.50% of the sample. Notably, there are no ethnic minorities included in this sample.

**Table 1.** Descriptive statistics.

Item	Details	Frequency	Cumulative (%)
Gender	Female	89	44.50
	Male	111	100.00
Age	31–35	62	31.00
	36–40	69	65.50
	Above 41	69	100.00
	Bachelor's Degree	117	58.50
	Doctorate Degree	13	65.00
Educational Level	Elementary School	6	68.00
	High School	25	80.50
	Master's Degree	27	94.00
	Middle School	1	94.50
	None	11	100.00
	Agriculture	6	3.00
	Education	30	18.00
Work Styles	Finance	16	26.00
	Government and Nonprofit Organizations	30	41.00
	Healthcare	11	46.50
	Manufacturing	22	57.50
	Media and Entertainment	39	77.00
	Retail	10	82.00
	Services	12	88.00
	Technology and Information Technology	24	100.00
Ethnicity	Han	200	100.00
	Summary	200	100.0

### 3.2. The Relationship between Parents' Perception of the Implementation Level of the Double Reduction Policy and Parental Educational Anxiety

**Table 2.** The correlation between iv1 and the dv.

		PEA
Parents' Perception of the Implementation Level of Policy	correlation coefficient	0.685**
	p-value	0.000
	Sample size	200

\* p<0.05 \*\* p<0.01

Based on the data in Table 2, we conducted a correlation analysis using the Pearson correlation coefficient to examine the relationship between "Parents' Perception of the Implementation Level of the Double Reduction Policy" and "PEA (Parental Educational Anxiety)." The analysis revealed a correlation coefficient of 0.685, which is statistically significant at the 0.01 significance level. This confirms our initial hypothesis that a higher parental perception of policy implementation is positively correlated with increased educational anxiety.

### 3.3. The Relationship between Family Economic Status and Education Anxiety

**Table 3.** The correlation between iv2 and PEA.

		PEA
	correlation coefficient	-0.923**
Family Economic Status	p-value	0.000
	Sample size	200

\* p<0.05 \*\* p<0.01

Based on the data in Table 3, we conducted a correlation analysis using the Pearson correlation coefficient to examine the relationship between family economic status and parental educational anxiety (PEA). The specific analysis results indicate that the correlation coefficient between family economic status and PEA is -0.923, and it shows a highly significant negative correlation at the 0.01 significance level. There are two scenarios in this result: when the parents' family financial status is better, their educational anxiety is lower. However, parents whose families are relatively weaker have higher educational anxiety.

**Table 4.** Comparison of anxieties of parents with different family economic status.

Title	Family Economic Status			Summary
	1.0	2.0	3.0	
PEA	50.417	34.333	33.250	40.280

Note: 1.0 represents 0-200,000 annual income; 2.0 represents 200,000-400,000 annual income; 3.0 represents annual income of more than 400,000.

Furthermore, Table 4 clearly illustrates this point. Generally, parents from more affluent families tend to have lower average levels of educational anxiety, while those from less economically advantaged backgrounds often experience higher levels of educational anxiety. Nevertheless, overall, most parents experience some degree of educational anxiety.

### 3.4. The Relationship between Availability of Alternative Educational Resources and Parental Educational Anxiety

**Table 5.** The correlation between AER and PEA.

		PEA
	correlation coefficient	0.999**
Availability of Alternative Educational Resources	p-value	0.000
	Sample size	200

Cont.

PEA

\* p<0.05 \*\* p<0.01

Based on Table 5, we used the Pearson correlation coefficient to study the relationship between "Availability of Alternative Educational Resources" and "Parental Educational Anxiety (PEA)." The analysis showed a correlation coefficient of 0.999, which is highly significant at the 0.01 level, indicating a strong positive correlation between the availability of alternative educational resources and parental educational anxiety. In other words, an increase in available alternative educational resources is closely linked to higher levels of parental educational anxiety.

3.5. *The Mediating Role of Availability of Alternative Educational Resources*

**Table 6.** Mediation effect model test (n=200).

	Alternative educational resources					PEA					PEA					
	B	Standard error	t	p	β	B	Standard error	t	p	β	B	Standard error	t	p	β	
Constant	6.491**	0.201	32.367	0.000	-	88.864**	3.008	29.541	0.000	-	-8.500*	0.000	-4614473.51	0.000	-	
Family Economic Status	-0.755*	0.027	-27.535	0.000	-1.354**	-12.403**	0.411	-30.170	0.000	-1.327*	-1.083*	0.000	-4912294.85	0.000	-0.116	
Parents' Perceptions of the Implementation Level of the Double Reduction Policy	-0.434*	0.041	-10.587	0.000	-0.521**	-6.511*	0.615	-10.587	0.000	-0.466*	0.000	0.000	8.723	0.000	0.000	
AER											15.000**	0.000	57612806.10970313	0.000	0.894	
R2		0.882					0.906						1.000			
Adjust R2		0.881					0.905						1.000			
value		F (2,197)=735.784,p=0.000					F (2,197)=945.001,p=0.000					F (3,196)=1.172123905862252e+26,p=0.000				

\* p<0.05 \*\* p<0.01

Mediation analysis involves three types of regression models. The first type focuses on modeling the relationship between the independent variable X and the dependent variable Y. The second type centers on modeling the connection between the independent variable X and one or more mediator variables M (with multiple mediator variables resulting in multiple models). The third type encompasses both the independent

variable X and the mediator variable M in modeling the relationship with the dependent variable Y. In the context of Table 6, these mediation analysis models involve three specific regressions: one between alternative educational resources and family economic status, as well as the degree of implementation of the double reduction policy; another between parental educational anxiety (PEA) and family economic status, along with the degree of implementation of the double reduction policy; and the third between parental educational anxiety (PEA) and family economic status, the degree of implementation of the double reduction policy, and alternative educational resources.

**Table 7.** Summary of the effects analysis process.

Effect	Item	Effect t	SE	t	p	LLCI	ULCI
Direct effects	Family Economic Status⇒PEA	-1.083	0.000	-4912294 85768.338	0.000	-1.083	-1.083
	Can you perceive the degree of implementation of the double reduction policy⇒PEA	0.000	0.000	8.723	0.000	0.000	0.000
Indirect effects	Family Economic Status⇒Do you feel that there are many alternative educational resources	-0.755	0.027	-27.535	0.000	-0.808	-0.701
	Can you perceive the degree of implementation of the double reduction policy⇒Do you feel that there are many alternative educational resources	-0.434	0.041	-10.587	0.000	-0.514	-0.354
Total effect	Do you feel that there are many alternative educational resources⇒PEA	15.000	0.000	57612806 10970.313	0.000	15.000	15.000
	Family Economic Status⇒PEA	-12.403	0.411	-30.170	0.000	-13.209	-11.597
	Can you perceive the degree of implementation of the double reduction policy⇒PEA	-6.511	0.615	-10.587	0.000	-7.716	-5.306

Note: LLCI refers to the lower bound of the 95% interval of the estimated value, and ULCI refers to the upper limit of the 95% interval of the estimated value.

As shown in Table 7, Mediation effect models encompass three types of effects: direct effects, indirect effects, and total effects. Direct effects correspond to the regression effect values of the independent variable X in the third type of regression model. Indirect effects are computed by multiplying the results from the second and third types of regression models, involving a combination of values obtained from these models. Total effects relate to the regression effect values of the independent variable X in the first type of regression model. To calculate indirect effects, particularly when a mediator variable M is present, one multiplies the effects of X→M and M→Y, yielding the indirect effect value. The researchers subsequently conducted guided sampling to test this indirect effect, ultimately confirming the presence of the mediating effect.



**Table 8.** Indirect effects analysis.

Item	Effect	Boot SE	BootLLCI	BootULCI	z	p
Family Economic Status⇒Do you feel that there are many alternative educational resources⇒PEA	-11.320	0.058	-1.358	-1.125	-195.625	0.000
Can you perceive the degree of implementation of the double reduction policy⇒Do you feel that there are many alternative educational resources⇒PEA	-6.511	0.070	-0.632	-0.356	-92.804	0.000

Note: BootLLCI refers to the lower limit of the 95% interval of Bootstrap sampling, BootULCI refers to the upper limit of the 95% interval of Bootstrap sampling, and bootstrap type: deviation-corrected bootstrap method

As shown in Table 8, indirect effects serve as the ultimate results in mediation effect tests, encompassing several key aspects: There are two primary types of mediation effects to consider: parallel mediation and serial mediation. In cases where the focus is on examining serial mediation, the aspect of parallel mediation can be directly disregarded. The presence or absence of mediation effects is determined through the examination of the 95% confidence interval (BootCI) of the indirect effect. If this interval includes the number 0, it signifies the absence of a mediation effect. Conversely, if the 95% confidence interval (BootCI) of the indirect effect does not encompass the number 0, it indicates the presence of a mediation effect. To investigate mediation effects, the Bootstrap sampling method is utilized, involving 5000 samples. The outcomes reveal that for the mediation path 'Family Economic Status ⇒ Alternative Educational Resources ⇒ PEA,' the 95% confidence interval does not contain the number 0 (95% CI: -1.358 to -1.125), confirming the existence of this mediation effect path. Furthermore, in the analysis of the serial mediation effect path 'The degree of implementation of the double reduction policy ⇒ Alternative Educational Resources,' the 95% confidence interval also excludes the number 0 (95% CI: -0.632 to -0.356), substantiating the presence of this mediation effect path.

#### 4. Conclusion and Discussion

The intensification of the double reduction policy in China may lead to more pronounced parental education anxiety. This phenomenon is partly due to the fierce competition within the Chinese education system, where government restrictions may make parents worry that their children are losing a competitive edge, especially in terms of future enrollment opportunities. Additionally, Zhang et al. highlighted that there is unequal distribution of education resources in China, with regions along the eastern coastal areas and in Hong Kong and Macao having relatively abundant educational resources, while western regions and rural areas may face resource shortages [29]. Parents may view extracurricular tutoring as a necessary means to provide high-quality education, so policy adjustments can increase their anxiety. Furthermore, Chinese families generally place a strong emphasis on education, desiring better future opportunities for their children, which also contributes to heightened education anxiety [30–32]. Finally, policy uncertainty and families already heavily invested in extracurricular tutoring may worry that policy changes will impact their children's academic progress and future, thereby exacerbating their anxiety.

Moreover, there are significant differences in parental education anxiety when facing policy changes based on the economic status of different families. Affluent families are generally more likely to accept policy changes because they have more resources to offer a wider range of educational choices and opportunities to their children. They may have greater confidence that, even with policy changes, their children can still receive quality education and succeed in competitive environments. Additionally, they may be able to afford the additional costs of extracurricular tutoring to adapt to policy adjustments. In contrast, economically disadvantaged families may be more passive in their response because they might not easily afford the extra

educational expenses and may have limited access to diverse educational resources. This could make them more concerned that policy changes will negatively affect their children's educational opportunities, leading to greater education anxiety.

It's also worth noting that the accessibility of alternative educational resources plays an intermediary role between the degree of policy changes and parental education anxiety. When the government restricts resources such as extracurricular tutoring, parents may actively seek alternative learning pathways, such as private education institutions or online education platforms, to ensure their children receive a high-quality education. This results in a positive correlation between the accessibility of alternative educational resources and the degree of policy implementation. However, this proactive approach may, in turn, increase parental education anxiety as they need more time, money, and effort to manage and support their children's education, thereby intensifying their anxiety.

Indeed, we acknowledge the crucial role that the double reduction policy plays in alleviating parental anxiety and reducing social competition [33,34]. However, policy formulation and implementation should not stop here; there should be an ongoing monitoring and feedback mechanism in place, with particular attention paid to listening to parents' feedback and opinions. Most importantly, educational policies should have the core objective of serving the general public rather than merely managing society. Furthermore, policymakers should not overlook the ever-evolving nature of society and should adopt more flexible approaches, avoiding one-size-fits-all policy implementations.

Policies should take into account the diverse social strata, varying income levels, and disparities in educational resources within society. Additionally, attention should be given to the distribution of alternative resources, allowing for timely adjustments to policies to better cater to the diversity of societal needs. In conclusion, this is not a critique of the double reduction policy but rather an emphasis on the need for policies to closely align with real-world conditions to better meet the needs of all segments of society.

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The authors declare no conflict of interest.

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