

# The Impact of Grandparenting on the Learning Engagement of Left-Behind Children in Rural Primary Schools

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**Abstract.** The education of left-behind children has garnered significant attention, with intergenerational parenting identified as a critical factor, although its specific mechanisms remain unclear. This study focuses on left-behind children in rural elementary schools, specifically those in grades 3 to 6. Using the Learning Engagement Scale and the Intergenerational Parenting Style Questionnaire, 300 questionnaires were distributed offline through cluster sampling, and multiple analytical methods were employed. The findings indicate that: (1) the guiding parenting style is the most effective for fostering children's learning engagement, while the neglectful style performs the worst. Indulgent parenting is associated with low attention levels, whereas authoritarian parenting results in good attention but weak intrinsic motivation. (2) The nurturing dimension of intergenerational parenting positively correlates with vigor and motivation in learning engagement, while the psychological pressure dimension has a moderate positive effect on motivation and attention. However, excessive pressure yields negative effects. These findings provide theoretical support and practical guidance for improving the educational conditions of left-behind children.

## 1 INTRODUCTION

### 1.1 Research Background

The educational issues of left-behind children, as a special group, have become a focal point in China's education field. Intergenerational education, as an atypical family education model, has a significant impact on the learning engagement of left-behind children. On the one hand, the elderly often dote on left-behind children and take good care of them in daily life; on the other hand, due to differences in age and knowledge structure, the elderly may not be able to provide sufficient support and guidance for the children's learning. In this situation, left-behind children may lack motivation and attention in their studies, which in turn affects their learning engagement. Previous researchers have conducted studies on the influencing factors of left-behind children's learning engagement, but the deeper reasons behind it still need further exploration. Therefore, this study analyzes the specific impact of intergenerational education on learning engagement

through questionnaires for left-behind children and explores how to more effectively promote their learning and development under this circumstance. Thus, this paper takes left-behind children as the research object to explore the impact of intergenerational education on their learning engagement. It is hoped that the research results can provide theoretical support and practical guidance for improving the educational situation of left-behind children and enhancing their learning effectiveness.

### 1.2 Literature Review

Grandparenting refers to the phenomenon where grandparents take on the responsibility of raising and educating their grandchildren in the absence of parents. The concept of grandparenting includes the role of grandparents in education, differences in educational methods, the impact on children's psychology and behavior, and the influence of the social and cultural background. Grandparenting can mainly be classified into three categories: (1) participation style: This includes complete

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grandparenting (where grandparents independently raise the children, such as with left-behind children) and incomplete grandparenting (where grandparents and parents jointly raise the children, such as with 'weekend parents'); (2) participation time: Based on the amount of time grandparents care for the children, it is divided into dominant (when grandparents spend more time than parents) and auxiliary (when grandparents spend an equal amount of time as parents); (3) care responsibility: This includes whether grandparents take on full or partial responsibility for raising the children. Grandparenting is a common phenomenon both domestically and internationally, but the manifestation of grandparenting differs between China and the West due to cultural differences (Lu et al., 2020).

Lu Furong et al. conducted a study based on long-term data of left-behind children both in China, analyzing the multiple effects of grandparental care on these children's physical, psychological, and social development (Lu et al., 2020). The study delves into the 'double-edged sword' effect of grandparenting on left-behind children. However, the grandparenting model, being lagging behind the natural growth patterns of children and the social development process, has actual adverse effects on children's development. This model not only affects the physical and psychological development of children, but it may also lower the overall quality of future generations, thereby restricting further societal development and progress (Zhou, 2013). With the increasing phenomenon of rural parents working away from home, grandparental care has become an unavoidable part of the growth process for many left-behind children. Parents play an irreplaceable role in children's development (Holdsworth, 2004). For children who lack parental companionship, especially rural left-behind children, their physical and psychological development faces more challenges, which necessitates greater attention and support from society.

The impact of grandparenting on left-behind children is multifaceted, affecting not only their mental health, behavior, academic performance, and social adaptation, but also having long-term effects on their personality and emotional development. Pilkauskas et al. studied the characteristics of 'grandparent families' in the U.S. context, where grandparents are the primary caregivers, and focused on the relationship and dynamics between grandparents, non-resident parents (non-custodial parents), and children (Pilkauskas & Dunifon, 2016). The study found that while the stable care provided

by grandparents somewhat mitigates the impact of absent parents, grandparent families often faced low socio-economic status and limited resources, which may negatively affect children's cognitive and emotional development. Additionally, it was noted that children in grandparent families tend to perform lower academically than those in traditional two-parent households. Academic development is an important task in the growth of children and adolescents, and both society and families have continuous expectations regarding their academic achievements (Carmona-Halty et al., 2021).

As a crucial part of academic development, learning engagement refers to the sustained positive attitudes and motivation that individuals exhibit during the learning process, and learning engagement is positively correlated with academic performance (Chen et al., 2021). Research shows that learning engagement not only influences academic achievement but is also related to physical and mental health development (Chen et al., 2021). Therefore, learning engagement holds significant importance in children's development. Family relationships have a notable impact on learning engagement. Research results show that positive family relationships, such as parental support and involvement, are positively correlated with students' learning engagement, while family conflict or lack of support may lead to a decrease in learning engagement, further affecting academic performance (Fute et al., 2024).

Previous studies indicate that the learning engagement of rural left-behind children is influenced by various factors, with parental expectations directly or indirectly impacting the learning engagement of left-behind children (Zhang et al., 2020). Therefore, under the unique context of grandparenting in rural China, it has a multi-dimensional impact on left-behind children's physical and mental health, as well as their academic development. Although grandparents can to some extent fill the gap caused by the absence of parents, the limitations of grandparenting—due to their educational background, economic conditions, and social support—also present certain challenges. Consequently, policymakers should pay attention to this phenomenon and adopt measures to improve the quality of grandparental care, thereby enhancing the growth environment and development potential of left-behind children.

### 1.3 Research Questions

Existing studies have explored the relationship among intergenerational parenting models, left-

behind children and their learning engagement, but several issues remain unresolved. First, while prior Chinese research has suggested that intergenerational parenting may impact left-behind children's learning engagement, the specific mechanisms of this influence require further investigation. For example, it remains unclear how specific factors within intergenerational parenting—such as guardians' parenting styles, cultural literacy, or emotional support—affect children's learning attitudes, motivation, and strategies. Second, although some studies have pointed out that intergenerational parenting may lead to psychological challenges for left-behind children (e.g., introverted personalities or unhealthy psychological development), these studies have not thoroughly examined how such challenges influence the psychological mechanisms underlying learning engagement. To address these issues, this study focuses on left-behind children and investigates the effects of intergenerational parenting on their learning engagement. The study hypothesizes that: (1) Neglectful and indulgent intergenerational parenting styles may lead to reduced learning motivation and lower learning engagement among left-behind children. Conversely, guiding and authoritarian caregiving styles may stimulate learning motivation and enhance learning engagement. (2) Emotional support and learning guidance provided within intergenerational parenting positively influence learning engagement among left-behind children. Emotional support enhances their sense of belonging and security, while learning guidance improves their learning abilities and outcomes.

## 2 RESEARCH METHODS

### 2.1 Research Subjects and Specific Quantitative Research Methods Used

This study employs stratified sampling, with the research subjects being left-behind children in grades 3 to 6 at a rural elementary school in a southwestern region of China. The gender ratio of the subjects is approximately balanced, and the students are within the age range of 9 to 12 years old. The sample size is 210, with no fewer than 30 participants from each grade. The parents of the participants work away from home year-round, and the children are cared for by their grandparents or other relatives. Since most grandparents are illiterate, and in consideration of the practical situation, the survey on the parenting styles

of grandfathers and grandmothers will be filled out by the students themselves. The study aims to assess the grandparental care model and its impact on the children's learning engagement. The goal of this research is to explore the differences in learning engagement under the background of grandparenting and to identify potential influencing factors.

### 2.2 Scale Description

#### 2.2.1 Learning Engagement

The Learning Engagement Scale is adopted (Lam et al., 2014). This scale consists of 10 items and includes 3 dimensions, namely the "vigor" dimension (e.g., "I feel energetic when studying" and "Even if my studies do not go well, I am not discouraged and can persevere"), the "motivation" dimension (e.g., "My purpose of learning is clear, and I think learning is very meaningful"), and the "concentration" dimension (e.g., "Time flies when I am studying"). Students fill out the questionnaire, which uses a 5-point rating scale from "1 completely disagree" to "5 completely agree", with higher scores indicating a higher level of individual learning engagement.

#### 2.2.2 Grandparenting Methods

The questionnaire used in this study is an adaptation of the Parent Behavior Report (PBR), designed to evaluate grandparents' parenting behaviors toward their grandchildren. The original PBR questionnaire included three dimensions: Acceptance/Rejection, Psychological Autonomy/Psychological Control, and Strict/Permissive Control. The revised Grandparenting Behavior Questionnaire simplifies these dimensions into two: Nurturance and Psychological Pressure. The first dimension—Nurturance: This dimension evaluates the warmth, care, and affection grandparents show toward their grandchildren. It includes 12 items, such as "I often smile at my grandchildren" and "I care about and support my grandchildren." The second dimension—Psychological Pressure: This dimension assesses the psychological stress, demands, and constraints imposed by grandparents on their grandchildren. It consists of 10 items. The scoring system uses a 3-point Likert scale: 1 = "It's not at all like my situation;" 2 = "It's somewhat like my situation;" and 3 = "It's very much like my situation." For the Nurturance dimension, the score is calculated by summing the scores of all 12 items, dividing by 12, and then multiplying by 10. For the Psychological Pressure dimension, the score is the total sum of all item scores.

As for the parenting style classification: Based on the median scores for Nurturance and Psychological Pressure, four parenting styles are identified: Inductive (high Nurturance, low Psychological Pressure), Indulgent (high Nurturance, high Psychological Pressure), authoritarian (low Nurturance, high Psychological Pressure) and Indifferent (low Nurturance, low Psychological Pressure). Moreover, the internal consistency reliability (Cronbach's alpha) of the Nurturance subscale in this study is 0.84, and its split-half reliability is 0.83. The internal consistency reliability of the Psychological Pressure subscale is 0.82, with a split-half reliability of 0.81. Both subscales demonstrate high levels of internal consistency and split-half reliability, indicating the stability and reliability of the questionnaire in measurement. The questionnaire is based on the existing Parent Behavior Questionnaire (PBR), retaining its core content and making appropriate adjustments for the Chinese cultural context to ensure content validity.

### 2.3 Data Analysis Methods

The questionnaire survey was conducted offline, targeting students in grades 3 to 6 at a rural elementary school. A total of 300 questionnaires were distributed, and the collected data were processed using SPSS. First, invalid questionnaires were excluded, and missing data were handled, resulting in 175 valid responses. Descriptive statistical analysis was then used to summarize the basic characteristics of the sample, and correlation analysis was conducted to test the research hypotheses. Specifically, the methods used included: (1) Descriptive statistics,

which were employed to present the basic characteristics of the sample and the mean and standard deviation of learning engagement and grandparental care dimensions; (2) Reliability testing, with Cronbach's  $\alpha$  used to assess the internal consistency of the questionnaire; (3) Correlation analysis, where the correlation coefficients between learning engagement and the dimensions of grandparenting were calculated to reveal the relationships between variables.

## 3 RESULTS AND ANALYSIS

### 3.1 Descriptive Statistics

#### 3.1.1 Scale Consistency Test

A total of 175 valid questionnaires were collected in this survey, with 87 responses from male students and 88 from female students. The questionnaire was divided into two scales: the Grandparent Behavior Scale and the Learning Engagement Scale. The Grandparent Behavior Scale contains 10 items, primarily used to assess the behaviors or methods employed by grandparents in the grandparenting process of left-behind children in rural elementary schools. As shown in Table 1, the internal consistency reliability of this scale is 0.644, which is considered moderate. The Learning Engagement Scale also contains 10 items, mainly assessing the students' engagement in learning, including three dimensions: learning motivation, concentration, and vitality. The internal consistency reliability of this scale is 0.843, indicating that it has very good internal consistency.

Table 1: Results of reliability analysis

Subscale	Number of Items (N)	Internal Consistency Reliability ( $\alpha$ )
Grandparenting Behavior	10	0.644
Learning Engagement	10	0.843

#### 3.1.2 The Impact of Different Grandparenting Methods on the Learning Engagement of Left-Behind Children in Rural Primary Schools

After comparing the learning engagement scores, it is revealed that among the four types of grandparenting styles, the guiding style yielded the best results across all dimensions, particularly in learning motivation and overall learning engagement. This indicates that the guiding style is the most effective parenting

method, significantly enhancing children's learning enthusiasm, vitality, motivation, and concentration. In contrast, children raised under the neglectful style performed the worst across all dimensions, especially in concentration and overall learning engagement, suggesting that this style may lead to a lack of learning motivation and engagement, making it difficult to improve learning quality effectively. Although children raised under the indulgent style showed some motivation and vitality, their concentration was low, and their overall learning

engagement was relatively weak. This suggests that overindulgence may weaken children's self-control, affecting learning outcomes. Students raised under the authoritarian style performed better in concentration, but showed weakness in motivation and vitality. This indicates that overly strict discipline may increase concentration but lacks intrinsic motivation and enthusiasm, which could negatively affect long-term learning outcomes for children.

### 3.2 The Impact of Different Dimensions of Grandparenting on the Various Dimensions of Learning Engagement of Left-Behind Children in Rural Primary Schools

As mentioned above, grandparenting can be divided into parenting dimensions and psychological stress dimensions, while learning engagement can be divided into three dimensions: motivation, concentration, and vitality. The study further analyzes

the impact of different dimensions of grandparenting styles on the learning engagement of left-behind children in rural elementary schools from the perspective of various learning engagement dimensions. Correlation analysis shows that different dimensions of grandparenting styles have varying effects on the different dimensions of learning engagement in left-behind children. As shown in Table 2, there is a positive correlation between the parenting dimension and the vitality dimension; the parenting dimension also shows a significant positive correlation with the motivation dimension, indicating a positive relationship between the two; however, there is no significant correlation between the parenting dimension and the concentration dimension. The psychological stress dimension shows no significant correlation with the vitality dimension; it has a significant positive correlation with the motivation dimension, indicating a positive relationship between the two; and there is a positive correlation between the psychological stress dimension and the concentration dimension.

Table 2: Results of correlation analysis.

		Parenting Score	Psychological Stress Score	Vitality Dimension Score	Motivation Dimension Score	Focus Dimension Score
Parenting Score	Pearson Correlation	1	0.035	.268**	.242**	0.134
	Significance(2-tailed)		0.646	0	0.001	0.077
Psychological Stress Score	Pearson Correlation	0.035	1	0.124	.188*	.330**
	Significance(2-tailed)	0.646		0.103	0.013	0
Vitality Dimension Score	Pearson Correlation	.268**	0.124	1	.631**	.443**
	Significance(2-tailed)	0	0.103		0	0
Motivation Dimension Score	Pearson Correlation	.242**	.188*	.631**	1	.623**
	Significance(2-tailed)	0.001	0.013	0		0
Focus Dimension Score	Pearson Correlation	0.134	.330**	.443**	.623**	1
	Significance(2-tailed)	0.077	0	0	0	
	N	175	175	175	175	175

Note: \*\* Significant at the 0.01 level (2-tailed); \* Significant at the 0.05 level (2-tailed)

Therefore, higher parenting scores from grandparents help to increase the vitality and motivation levels of left-behind children, resulting in stronger learning engagement. Higher psychological stress scores have a certain positive impact on children's learning motivation and concentration.

Students with higher levels of stress tend to perform better in motivation and concentration. Based on these results, the positive influence of the parenting dimension on learning engagement is primarily reflected in the students' vitality and motivation, while the psychological stress dimension may

promote learning engagement by enhancing students' motivation and concentration. However, excessively high levels of stress may have negative effects. Therefore, both grandparents and left-behind children need to balance psychological stress in their daily lives.

## 4 DISCUSSION

The research results of Lu Furong et al. found that intergenerational upbringing has a significant impact on the learning engagement of left-behind children, pointing out that intergenerational upbringing has both positive and negative aspects, which is also confirmed in this paper (Lu et al., 2020). It also echoes the research of Chen et al., both of which emphasize the important role of learning engagement in children's development and believe that learning engagement is positively correlated with academic performance (Chen et al., 2021). The current study is also consistent with prior studies, finding that family relationships have a significant impact on learning engagement, indicating that positive family relationships are positively correlated with students' learning engagement (Fute et al., 2024; Liu et al., 2022).

However, there are also some differences. For example, the current study uses quantitative research methods to analyze the impact of intergenerational education on learning engagement through questionnaires and scale assessments, while previous studies may rely more on qualitative analysis or case studies. The current study also delves into how specific factors in intergenerational upbringing (such as the guardians' parenting methods, cultural literacy, emotional support, etc.) affect the learning attitudes, learning motivation, and learning strategies of left-behind children, while previous studies did not explore these specific mechanisms in such depth. The current study provides specific data and analysis results, such as the impact of different intergenerational upbringing methods on each dimension of learning engagement. Different studies may have different research purposes and focuses. The current study focuses more on the learning engagement of rural left-behind children, while previous studies may more broadly explore the impact of intergenerational upbringing on children's development.

Parental parenting styles can be divided into three types: authoritative, authoritarian, and permissive. Authoritative parents usually adopt supportive parenting methods such as warmth and support,

understanding and guidance, and behavioral supervision; authoritarian parents often use controlling parenting methods such as scolding, corporal punishment, and psychological control; permissive parents often use indulgent parenting methods, such as spoiling, indulging, being tolerant, and not constraining. This study divides intergenerational upbringing into four types: instructive, indulgent, authoritarian, and neglectful. Instructive grandparents score higher in upbringing and psychological pressure and can significantly enhance children's learning enthusiasm, vitality, motivation, and concentration; indulgent grandparents have certain motivation and vitality, but their concentration is lower, and their overall learning engagement is weaker; authoritarian grandparents perform better in the concentration dimension, but are weaker in motivation and vitality; neglectful grandparents perform the worst in all dimensions, which may lead to children lacking learning motivation and engagement. There are significant differences between parental parenting styles and intergenerational upbringing styles in terms of parenting style classification, etc. Parental parenting styles usually have a more direct and significant impact, while intergenerational upbringing styles have a unique impact on children's development in specific social and cultural contexts.

## 5 CONCLUSION

This study investigates the impact of intergenerational parenting on the learning engagement of left-behind children in rural primary schools. In rural areas, the migration of parents for work often leaves children in the care of their grandparents, making intergenerational parenting a prevalent practice. Given that learning engagement is crucial for academic development, it has garnered sustained attention from both society and families.

On the impact of parenting styles: Inductive parenting proves to be the most effective for enhancing children's learning engagement, as it fosters learning enthusiasm, vitality, motivation, and concentration. Indifferent parenting performs the worst, resulting in low learning motivation and poor concentration. Indulgent parenting reduces children's focus and weakens self-discipline. Authoritarian parenting, while improving concentration, may adversely affect learning outcomes in the long run due to weakened intrinsic motivation. About the influence of parenting dimensions: The nurturance dimension is significantly and positively correlated

with learning vitality and motivation. A higher nurturance score contributes to improved engagement. The psychological pressure dimension shows a positive correlation with learning motivation and concentration. While moderate pressure can be beneficial, excessive psychological pressure has negative effects, highlighting the need for a balanced approach in practice.

In summary, grandparents should improve their educational literacy, avoid extreme parenting styles, provide children with autonomy, strengthen emotional care, and actively guide their learning. At the societal level, greater attention and support are needed to provide educational resources, establish psychological counseling services, and improve the learning and development environment for left-behind children. As for the significance, this study deepens the understanding of the relationship and mechanisms between intergenerational parenting and children's learning engagement. It enriches research on the education of left-behind children, provides empirical evidence for subsequent studies, and contributes to the refinement of family education theories, particularly regarding the influence of intergenerational parenting on children's learning. Moreover, it offers practical guidance for improving the education of left-behind children by helping educators design personalized strategies, encouraging parents to adjust their parenting behaviors, and supporting policymakers in formulating relevant policies. These efforts aim to enhance rural education quality and promote social equity and development.

## AUTHORS CONTRIBUTION

All the authors contributed equally and their names were listed in alphabetical order.

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