

# The relationship between father involvement and children's academic achievement: a systematic review

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## ABSTRACT

Father involvement in children's education and its impact on children's academic achievement has become a pertinent topic. However, there has not been a systematic assessment of the mechanisms and factors that specifically influence the impact of father involvement on children's academic achievement. To this end, this study reviewed studies published between 2014 and 2024 and identified and analyzed 45 articles from databases such as Web of Science, Scopus, ERIC, and Google Scholar using a two-stage review protocol of automated literature search and manual screening. It was found that the multidimensionality of father involvement has a significant effect on children's academic achievement and that this relationship is influenced by a combination of individual father factors, family factors, school factors, and socio-cultural factors. Based on the limitations of existing studies, this study constructed a structured empirical research framework to categorize the influencing factors and made recommendations for future research, including conducting longitudinal studies, considering different socio-demographic variables, conducting cross-cultural comparative studies, and exploring in depth the potential mechanisms underlying the association between father involvement and children's academic achievement, with the aim of providing stronger support and guidance to promote fathers' active participation in their children's education and better promote children's holistic development.

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## 1. INTRODUCTION

Children represent the foundation of a nation's future development. The family is the primary setting for early childhood development, where parents serve as the child's first role models [1]. The family environment plays a significant role in children's development of good learning habits and academic success, and children will experience economic and social benefits [2], [3]. Studies have shown that family income and parents' education level have different relationships with academic development [4]. Although many studies have confirmed that parental involvement in school is important in influencing children's education, existing studies often focus on mothers' involvement [5]–[7], while ignoring the unique influence of fathers. With the development of research, more and more evidence show that fathers not only promote children's prosocial behavior and social-emotional development [8], but their involvement has many positive effects on children's development, such as improved health, cognitive, emotional and social development, and better

academic and behavioral outcomes [9], [10]. For this reason, in recent years, more and more scholars have recognized the importance of fathers' participation in parenting [11]. Scholars in many countries have conducted research on fathers' involvement and paid more attention to the role and influence of fathers [12], [13]. Academic achievement is an important aspect for children because it is closely related to future success in various fields such as employment, income, health, and social status. Many researchers have studied the relationship between general parental involvement and children's academic achievement [14], [15], but they have focused on either parents or mothers; there are no definite results for this relationship for fathers. Existing research shows that fathers' involvement in parenting may be particularly important for children's academic success because fathers may provide special support and encouragement that is different from mothers [16]. Compared with mothers, fathers may be more likely to provide instrumental support, such as helping with homework, providing educational financial resources, and advocating for their children's educational needs [16]–[18]. In addition, compared with children whose fathers are not involved, children with involved and loving fathers are more likely to perform well in school, have healthy self-esteem, and show empathy and prosocial behavior [19].

On the other hand, how parents choose to raise their children has a significant impact on adolescents. Mothers' parenting style has a greater impact on children's social skills, but father's parenting style has a greater impact on academic achievement, which does not vary by gender for adolescents [20]. Researchers and policymakers have long been interested in the link between father involvement and children's growth [21]. In addition, ensuring basic participation time is a prerequisite for father involvement in children's academic growth. However, in real life, necessary father involvement has become a "luxury". In the PISA 2015 test, the organization for economic cooperation and development investigated the status of parental involvement in 18 countries or regions (including Hong Kong, China, and Macao). The results showed that most parents, especially fathers, were unable to participate in their children's growth due to their busy work schedules. In other words, in reality, fathers' involvement is often limited by work hours and becomes a scarce resource [22]. The flexibility of fathers' working hours helps them participate in family life [8]. This situation has attracted widespread attention to father involvement and stimulated people's interest in the study of father roles [23]. Attention has also been paid to differences in ethnicity and cultural background [24]. For example, a study conducted a meta-analysis of 66 papers to determine the relationship between father involvement and student achievement from preschool to college. The results showed that the association between father involvement and adolescent educational outcomes was statistically significant, and the positive impact of father involvement was effective for both white children and minority children [25]. Although father involvement is crucial to children's academic achievement and is currently a hot topic in this field, few people have paid attention to the current status of evaluating the factors that affect father involvement on children's academic performance and organizing their research results.

Recent literature reviews [23], [26] have investigated the impact of father involvement on children's academic performance, but there are limitations. Rollè *et al.* [26] classified the studies according to themes such as father involvement, quality of father-child relationship, socioeconomic factors and cultural dynamics, and proposed content analysis to study the impact of father involvement on the academic performance of primary school students in Pakistan over the past 20 years. Another study [23] synthesized the research on father involvement and its impact on child development outcomes, made suggestions for counseling practice and education, and pointed out the limitations and directions for future research. Therefore, the studies do not fully present the status of research on the factors affecting children's academic performance. Although these reviews cover a relatively large number of literatures, the research content on the factors affecting children's academic performance is relatively limited. Although father involvement is currently understood as a multidimensional structure, the dimensions covered are not comprehensive enough. Furthermore, the existing research on this topic is still not fully understood. Some articles found a strong positive relationship between father involvement and children's academic achievement, while others found no relationship or even a negative relationship [5], [27]. A study of African American fathers showed that mother's age was related to math achievement, while father's education and family involvement influenced achievement [13], [28]. In a Portuguese study, adolescents' perceptions of their parents' behavior were more important for academic achievement [29]. In addition, the definition and dimensions of father involvement remain controversial in the academic community, making it even more important to understand the literature on the impact of father involvement on children's academic achievement in education.

This study aims to summarize the results of recent papers on the impact of father involvement on children's academic achievement and complete a systematic review of 45 articles published between 2014 and 2024 in Web of Science, Scopus, ERIC, and Google Scholar databases. Understanding the relationship between father involvement in parenting and children's academic achievement is an important part of recent research because it has the potential to inform and improve practice in this field [30], [31]. To this end, this study advances the previous work [23], [26] by updating the current literature on the relationship between

father involvement and children's academic achievement. In addition, this study synthesizes the literature on father involvement and addresses relevant inconsistencies. This study has five objectives:

- i) What is the relationship between father involvement and children's academic achievement?
- ii) How is parenting style related to children's development?
- iii) What factors influence father involvement?
- iv) What are the key factors in the existing literature that may affect the relationship between father involvement and children's academic achievement?
- v) What are the existing gaps in the literature, how can a structured empirical research foundation framework be constructed, and what directions should future research take?

To achieve the goals of the study, through the analysis of 45 articles, we will provide a conceptual framework, outline the current research prospects, and propose a new research agenda. This approach will help deepen the comprehension of the role of fathers and promote the development of practical approach to strengthen the positive role of fathers in their children's academics.

This study highlights several factors related to the role of fathers. First, it will deepen the understanding of the role of fathers in children's education, provide educators and policymakers with a more comprehensive perspective, help them formulate more effective educational strategies and policies, and promote fathers' active participation in their children's education, so as to better promote the all-round development of children. Secondly, this study systematically evaluated a large number of literatures, identified and sorted out the key factors and mechanisms affecting fathers' involvement, provided a clear direction and foundation for future research, and helped promote the in-depth development of this field. The novelty of this study lies in that it not only focuses on the direct relationship between fathers' involvement and children's academic performance, but also deeply explores the influence of multidimensional factors such as parenting style, mediating and moderating variables, and constructs a more systematic theoretical framework, which provides a new perspective for revealing the complex mechanism of fathers' involvement. In addition, this study also provides a theoretical basis and guidance for the formulation of strategies to promote fathers' involvement.

## **2. OVERVIEW OF FATHER INVOLVEMENT**

### **2.1. Dimensions and definitions of father involvement**

The definitions and dimensions of father involvement are diverse in academic research, reflecting its complex nature. The model divides father involvement into participation, accessibility and responsibility, covering direct care, presence support and parenting responsibilities [32]. Lamb *et al.* [33] refined it into interactivity, accessibility, and responsiveness, emphasizing the importance of fathers' interaction, presence and response with their children. Hawkins and Dollahite [34] expanded the role of fathers to include ethics, service, development, leisure, spirituality, guidance, and a variety of responsible behaviors. On this basis, current research has expanded the dimensions of father involvement to include warmth, control/discipline, and family learning motivation [35].

However, father involvement should not be limited to direct forms of participation, but should cover multiple levels such as emotion, cognition, morality, and behavior. Keown *et al.* [36] pointed out that the definition of father involvement includes emotional interaction, responsibility, educational support, unique role in play activities, and creation of a family environment. Another study also examined if three existing instruments for assessing fathers' behavior could consistently and sufficiently measure fathers' involvement when used for fathers and mothers respectively [37]. Fathers' behaviors in caring for and educating their children have different dimensions [36]. This multidimensional understanding of fathers' involvement has promoted in-depth discussions on the involvement of fathers in children's development, recognizing that fathers' involvement is a continuous and multifaceted process rather than a single behavioral manifestation.

It is important to acknowledge that the instruments and definitions used to measure father involvement varied significantly across studies. Some focused on observable behaviors (e.g., helping with homework), while others included affective and cognitive dimensions (e.g., emotional closeness or beliefs). This heterogeneity in operationalization introduces potential measurement bias and limits the comparability of findings. Future studies should aim for greater conceptual clarity and use standardized, validated tools to assess paternal involvement.

### **2.2. The role of father's involvement in children's academic performance**

Fathers as primary caregivers have a beneficial impact on child development. Skwarchuk *et al.* [38] found that these children had stronger intrinsic qualities. Children in role-shared families exhibit stronger verbal skills, and they have higher academic achievement, which is associated with higher educational expectations from their fathers. Baker [5] found that after controlling for the effects of mothers' involvement

in school, the quality of children's home learning environment, and demographic factors, fathers' involvement in school predicted better reading and mathematics outcomes. Despite mixed findings across studies, the literature broadly acknowledges the educational significance of paternal involvement. Next, a systematic review of relevant literature will be conducted to further explore this relationship.

### 3. METHOD

This review followed the guidelines of the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement [39]. We used a two-stage review strategy of automated literature search and manual screening to search for articles from the Web of Science, Scopus, ERIC, and Google Scholar databases, identified and analyzed 45 articles, and examined the factors that influence the association between father involvement in parenting and children's academic achievement, as shown in Figure 1.

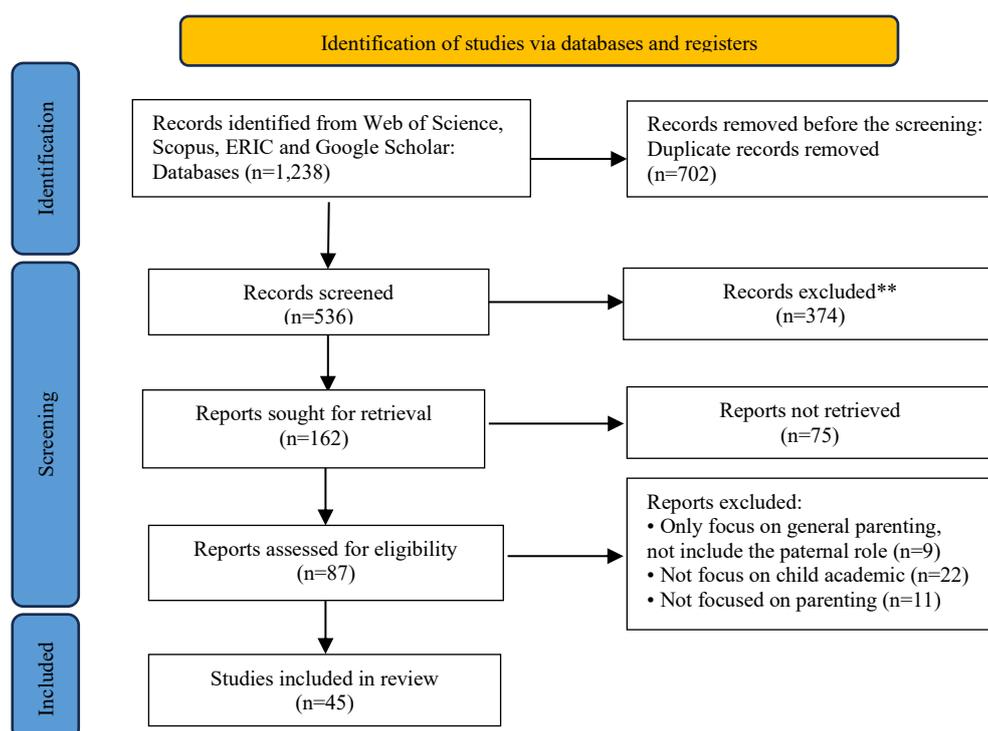


Figure 1. PRISMA flow diagram

#### 3.1. Data source and search strategy

This article was written following the PRISMA statement, which was developed by the international committee on reporting systematic research and meta-analyses [40] to provide a detailed framework for conducting and reporting systematic reviews. The review process included identifying applicable studies, screening and selecting studies, extracting data, and assessing study quality and synthesizing results. The literature search was conducted from March to April 2024, covering academic databases such as Web of Science, Scopus, ERIC, and Google Scholar. The search keywords included “father” or “paternal” or “dad” or “paternal involvement”, “parent-child relationship” or “father involvement”, “parenting style” or “father engagement in parenting” and “academic achievement” or “academic performance” or “child development” or “educational” or “outcomes” or grade point average (GPA) in all the databases, and English literature published between 2014 and 2024 was limited. The initial search yielded 1,238 papers and 536 papers met the criteria after excluding duplicates. After title and abstract screening, 162 papers entered the next step. In second step, the full texts were screened for eligibility in the systematic review. Finally, these 45 papers were retained.

#### 3.2. Inclusion and exclusion criteria

The inclusion criteria were as: i) the relationship between fathers' familial involvement and their children's academic achievement; ii) studies where fathers or other paternal figures are the primary

caregivers or parents; iii) studies employing a reliable and valid method to evaluate the involvement of fathers in childcare; iv) research that measures the academic achievement of students using a valid and reliable metric, such as GPA or teacher-reported academic performance; and v) research publications published in English between 2014 and 2024. On the other hand, the exclusion criteria were as: i) research focusing solely on maternal parental involvement or failure to differentiate between maternal and paternal participation; ii) children's non-academic outcomes are the sole focus of research (e.g., social-emotional development, behavioral problems); iii) research lacking adequate data to evaluate impact magnitude or correlation coefficients; iv) publications are periodicals that cover specific topics (e.g., cancer, neurological journals, gastroenterology, dental journals); and v) non-peer-reviewed studies for which the entire text is unavailable. In addition, two reviewers used the explicit and precise inclusion and exclusion criteria to ensure that only relevant and high-quality papers were included in the systematic review. This will improve the study's validity and reliability, as well as the review's overall quality.

### 3.3. Data extraction and analysis

Two separate reviewers extracted data from the included research as part of the data extraction technique. Any disagreements between reviewers were resolved through discussion and consensus. Data were extracted from each study, including study design, sample size, measures of father engagement in parenting, influencing factors, assessments of children's academic progress, and effect size or correlation coefficients. The data extraction and analysis techniques were designed to provide a full and reliable summary of existing studies on the relationship between father involvement in parenting and children's academic achievement. Using rigorous and transparent methodologies, the evaluation sought to explain the nature of this link and identify any potential moderators or mediators of the effect. Based on data synthesis, the reviewer reviewed and entered the selected paper into two tables, one to assess the association between father engagement and child academic achievement and the other to explore the study design, along with the objects, outcomes, and conclusion of each publication. The PRISMA flow diagram utilized in this systematic analysis is depicted in Figure 1.

## 4. RESULTS

This review included 45 studies that systematically explored the relationship between fathers' involvement in parenting and their children's academic achievement. These studies covered a variety of cultural backgrounds, family structures, and socioeconomic levels, providing a rich perspective for understanding the role of fathers in their children's education. The results were presented in the form of a narrative synthesis, which described the results of the included studies in detail. By comprehensively analyzing these studies, this review revealed the diversity and complexity of fathers' involvement in different family environments, as well as its potential mechanisms of influence on children's academic performance.

### 4.1. Description of studies

As shown in Appendix, numerous studies have shown the importance of parental involvement, which has a favorable impact on student development [41]. The concept of fatherhood is dynamic and multifaceted, and it has direct connections to the physical and mental well-being of children as well as their educational and social-emotional growth [6]. Yet, some studies have shown that the more fathers are involved in adolescents' education, the better their children's academic performance will be [28], [30], [42]. The relationship between father's involvement in parenting and children's academic performance is affected by many factors. The first goal of the study was to explore how to examine the relationship between father involvement in parenting and children's academic performance.

#### 4.1.1. Year and number of articles published

Figure 2 shows the articles published between 2014 and 2024; an average of 4 articles per year. Since the data retrieval ended on April 28, 2024, only one article was published in 2024. Except for 2015, at least three articles were published in all other years, with the most published in 2016 ( $n=7$ ). Since it takes a certain amount of time to publish papers, the relative stability of the number of publications indicates the continued attention of academicians to this primary topic.

This sustained research trend reflects the academic community's enduring interest in father involvement and its educational implications. Over the past few decades, society's awareness of the role of fathers in family and education has gradually increased [43]. More people are beginning to realize that father's involvement has an important effect on children's development and academic performance [44]. This increased awareness has prompted researchers and educators to pay attention and study the topic.

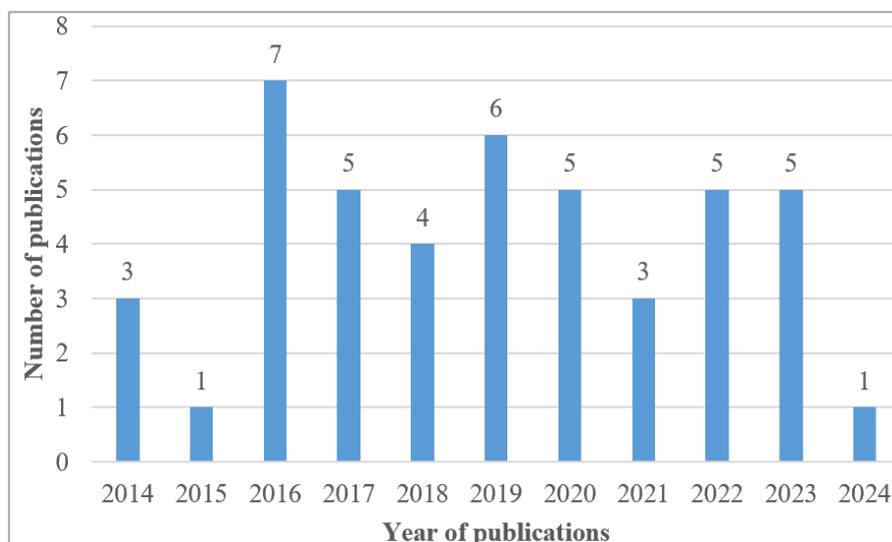


Figure 2. Year and number of publications

At the same time, as family structures change and fathers' roles in the family evolve, the need to study fathers' involvement in childcare is also increasing [45]. In modern families, fathers are taking on the responsibility of actively participating in their children's education, which has prompted researchers to explore the relationship between father's involvement in parenting and academic performance. In addition, education policies in many countries and regions have begun to pay attention to the importance of fathers' participation in child care [46]. Policymakers and educational institutions have recognized that by promoting fathers' involvement, children's academic performance, and development can be improved. This policy concern also drives research in this area. The continued enthusiasm for research on the relationship between father involvement in parenting and children's academic achievement reflects the widespread interest and importance society attaches to this topic. This attention helps promote the development of family education and school education practices, providing better support and guidance to improve children's academic performance and overall quality [47].

#### 4.1.2. Research types

The research categories of each paper analyzed in this study are shown in Figure 3. The main type of research is quantitative research (n=30), accounting for 67%. The second is review papers, accounting for 11%; then qualitative research papers, accounting for 9%. The least is the mixed-methods research and systematic review papers, and the number of them is the same, accounting for 6.5% each.

Quantitative studies face inherent limitations when exploring the connection between fathers' involvement in parenting and children's academic achievement. Although such studies can reveal correlations between the two, it is challenging to determine causality due to the observational nature and the inability to control all potential confounding variables [7]. For example, it was pointed out based on a large-scale sample that policies that encourage parental involvement are beneficial to adolescents, but also emphasized the need to further use panel data to test causal relationships [48]. In addition, questionnaires and self-report data in quantitative studies may be affected by the subjectivity of respondents and memory bias, which may exaggerate or underestimate fathers' involvement and children's academic performance, affecting the accuracy of the research [13], [49].

Quantitative studies, such as questionnaires, may face self-report bias from respondents [13], [49], which may lead to inaccurate assessments of the link between father involvement and children's academic achievement. Due to complex social and emotional factors [50], a single quantitative method may miss key details. To compensate for this limitation, qualitative studies, such as in-depth interviews and observations, can provide richer contextual information [51]. Combining qualitative and quantitative methods can reveal hidden dynamics and experiences, thereby enhancing understanding [31]. Given the inconsistent results of the existing study, future research should consider adopting a longitudinal design with long-term follow-up to reveal the evolution of the relationship [52].

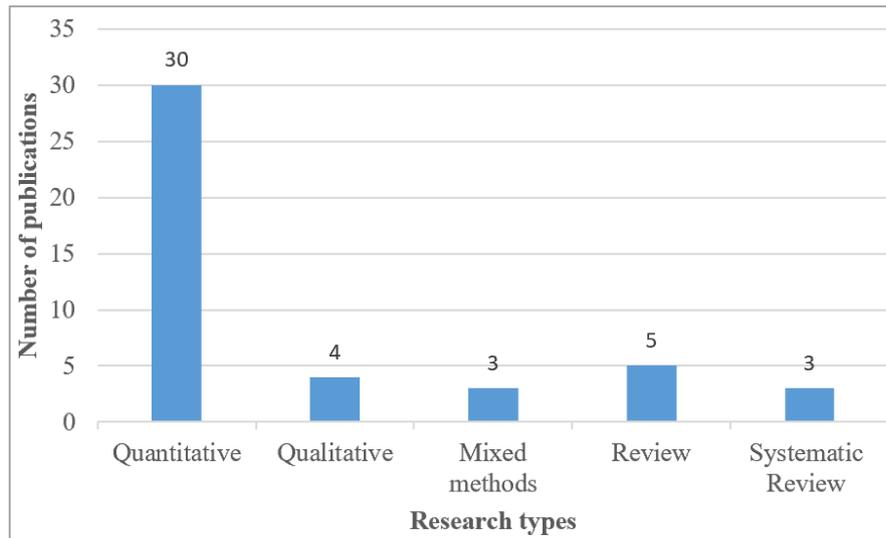


Figure 3. Research types and number of publications

#### 4.1.3. Main research focuses

As seen in Figure 4, the main studies in this study mainly focus on father involvement and children's outcomes as well as intervention (n=15). Many factors influence father involvement, and intervention studies are becoming increasingly common. Therefore, it is significant to consider the social context, culture, ethnicity, and policies surrounding father involvement.

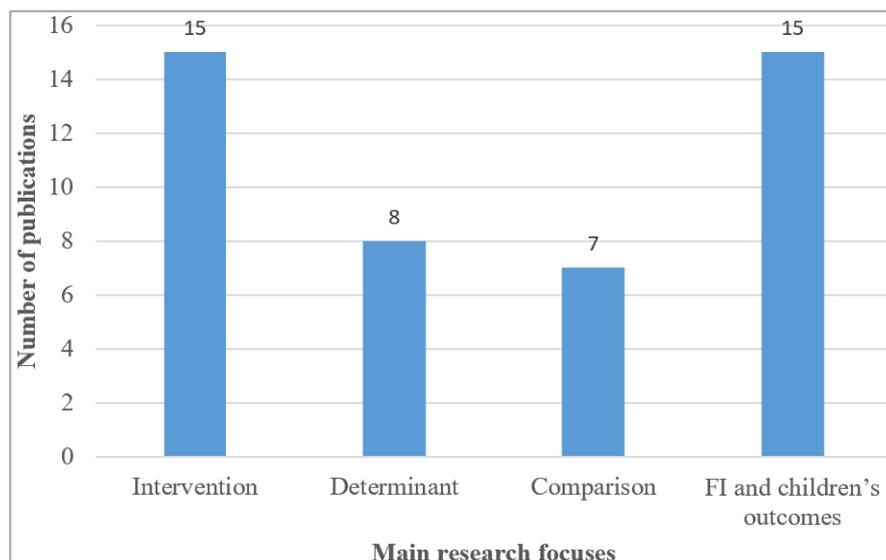


Figure 4. Main research focuses and number of publications

First, researchers and education experts believe that increasing fathers' educational involvement is key because interventions can directly influence fathers' behaviors and thus improve children's academic performance [44], [52]. These strategies aim to increase fathers' involvement through parent-child activities, family support programs such as book clubs, counseling, and home visits [53], and parent-teacher conferences and trainings held in schools and communities [54]. Second, fathers' involvement has been linked to a wide range of developmental outcomes, including cognitive, emotional, academic, and social well-being, as well as improved family dynamics and learning motivation [10], [55], [56]. Fathers' thinking skills may improve preschoolers' academic performance by pushing them to master intermediate skills [57].

Boys perform worse in academics when fathers show more adverse reactions than boys [58]. However, current research has not fully explored the diversity and cultural differences in fathers' involvement. Furthermore, future explorations should refine the different types of father involvement, such as daily care, educational support, and emotional communication [30], and study how they interact and affect children's development. In addition, attention should be paid to the temporal continuity of father involvement and the impact of different stages, such as the role of early involvement in the long-term development of young children [59]. In addition, research on father involvement from a cross-cultural perspective is also important, especially considering the particularity of cultural backgrounds such as China [60]. Through in-depth research, strategies can be provided to promote the active participation of fathers in specific cultural environments to optimize the growth environment of children [61].

#### **4.2. The relationship between parenting styles and children's development**

The second goal is to deepen the exploration of the impact of father involvement on children's development and examine how different parenting styles vary by ethnic and cultural background. Father involvement, often shaped by parenting style, is a critical factor influencing children's academic and social outcomes [61], [62]. Supportive parenting style will improve adolescents' academic performance, while authoritarian parenting style often places high expectations on children's academic performance, ultimately causing them pressure.

Research shows that different parenting strategies may lead to different developmental paths [63]. For example, in Malaysia, authoritative and authoritarian parenting help improve the academic performance of primary school students [64], which echoes the results of a study in Lebanon that confirmed that authoritative parenting styles helped improve children's academic performance [65]. However, in Indonesia, authoritative parenting may have both positive and negative effects, facilitating emotion regulation but also having negative effects on emotions [66]. Due to the cultural background of Asian students, in general the mainstream authoritarian parenting style is considered more effective [64]. There are significant differences in parenting styles between Eastern and Western countries, with Asians tending to prefer authoritative parenting [67], while Western parents are more inclined to demonstrate authority [68]. Western parents generally believe that a balanced approach with moderate academic rigor and increased levels of classroom responsiveness can improve the likelihood of academic achievement in their offspring [69].

In addition, cultural differences significantly affect parenting styles. A cross-cultural study found that authoritative parenting in Australia and Indonesia was positively associated with children's emotion regulation but negatively associated with behavioral problems [69]. Nevertheless, respect for tradition weakened the positive effects of authoritative parenting in both countries. In a study of adolescents in Spain, Portugal, and Brazil, parental care was highly correlated with self-esteem and internalization of social values [7], while warm parenting styles, such as a combination of tolerance and authority, were positively correlated with high self-esteem and internalization of values in adolescents, especially permissive parenting [7]. Taken together, these findings highlight the complexity of father involvement and parenting styles, and the role of cultural context in the relationship between these factors and child development.

#### **4.3. Factors affecting father's involvement**

The third goal is to analyze the key factors that influence father involvement. Research by Planalp and Braungart-Rieker [70] mentioned that Belsky's three-factor model states that fathers' involvement in early childhood education is influenced by three main factors: i) parents' personality and psychological resources; ii) background resources of stress and support; and iii) children's personal characteristics. Further, Parke [71] divided these factors into five categories: personal attributes (father's talents, attitudes, and beliefs), child characteristics (gender and age), family factors (marital quality, mother's employment), cultural background (gender role concepts, cultural expectations, and racial differences), and the influence of public systems (medical experience, workplace policies, and interventions). Belsky's citation pointed out that fathers' personal characteristics play a leading role, followed by social background, while children's characteristics have a relatively small impact. Our analysis will focus on these three dimensions: individual, family, and social to fully understand the driving forces of father involvement.

##### **4.3.1. Personal factors**

Fathers' gender role concepts have a significant impact on their involvement. Fathers with non-traditional gender role orientations and higher self-esteem are more inclined to actively participate in child care [72], [73]. Fathers' attitudes, motivations, and skills, as well as positive perceptions of parenting, such as beliefs about gender roles, also determine their level of involvement [74], [75]. Personality traits such as tendencies to be caring, close, and teaching enable nontraditional fathers to display more positive affect and less stress in parenting [76].

#### 4.3.2. Family factors

Past research highlighted the idea that mothers can significantly influence a father's level of involvement and his parenting practices simply through beliefs and attitudes [77]. Spousal support, including the wife's recognition of the father's caregiving role, has been consistently identified as a key determinant of paternal involvement [71], [78]–[83]. This positive cycle of interactive relationships strengthens the father's role in family education and also promotes the harmony of the relationship between husband and wife. In addition, some researchers have expanded research in this area. Research has found that if the mother has rich knowledge, the child's social skills will be better; on the contrary, if the mother has little knowledge, the child's social skills will be poor [55]. At the same time, mothers' controlling behavior plays a mediating role in the relationship between mother-child contact frequency and children's academic performance [30].

#### 4.3.3. Social factors

Socioeconomic conditions, such as education level, income, and occupation, can affect fathers' engagement [84]. Job stress and time commitment can affect fathers' emotional state and limit their interaction with their children [85]. Social changes, such as greater female participation in the workplace, lead to changes in family structure and parent-child relationships [86]. In dual-income families, alleviating the work demands and work-family conflicts of working fathers is a key factor in increasing father involvement [84]. In general, fathers' personality traits, family environment support, and socioeconomic background jointly shape the role of fathers in family education. These factors are intertwined and affect the degree and quality of fathers' involvement.

#### 4.4. Key factors affecting the relationship between father's involvement and children's academic performance

The fourth aim was to explore key factors in the existing literature across different cultural contexts that may influence the relationship between father involvement in parenting and children's academic achievement. According to Figure 5, a large number of studies have proven that the more fathers are involved in adolescents' education, the better their children's academic performance will be [30], [87]. The specific key impacts are shown in Figure 5.

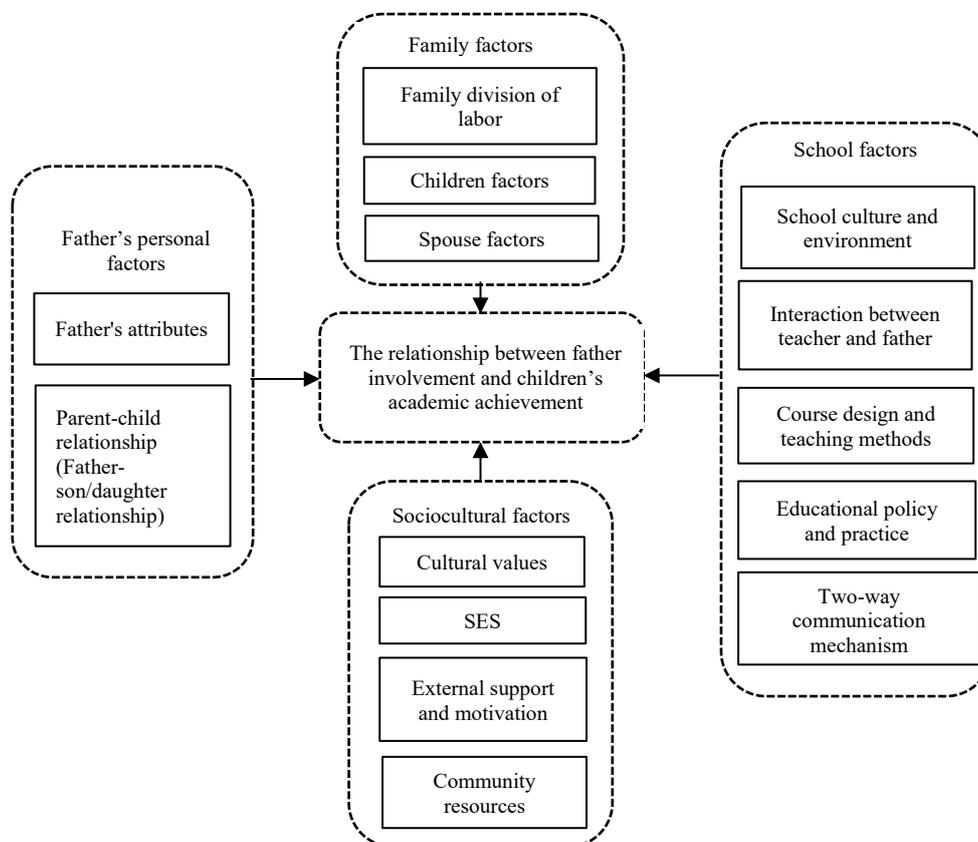


Figure 5. Diagram of key factors

#### 4.4.1. Personal factors of fatherhood

##### a. Father's attributes

The extent to which fathers are involved in their children's lives is influenced by personal beliefs and situational factors that are closely related to child development [43]. Traditional fathering attitudes have been shown to be a barrier to father involvement [87]. To explore this phenomenon further, Fagan and Palkovitz [80] conducted a study using the parental modernity scale, in which parents were asked to rate their agreement with statements about their parenting beliefs. Their responses were then correlated with another scale measuring father involvement. The results showed that parental attitudes were positively related to the quality of involvement. Fathers who reported more nurturing attitudes also reported higher levels of perceived involvement with their children than those who reported more traditional or authoritarian attitudes. Both dimensions of these findings support the hypothesis that fathers' attitudes and beliefs are predictors of their involvement with their children. In addition, advances in education and increasing perceptions of gender equality have led to a shift in the role of fathers from financial provider to partner in shared decision-making and childcare responsibilities [88]. In China, fathers' self-efficacy and positive attitudes towards fathering are important factors in predicting their participation in childcare [29].

##### b. Parent-child relationship

Beyond paternal attributes, the quality of father-child interactions play a crucial role in children's development. These studies support the view that mothers and fathers make different contributions in the developmental domains of socio-emotional, cognitive, and sexual identity development, as well as child protection and safety [89]. The unique role of fathers, especially in play activities, has a positive impact on children's social, emotional, and cognitive development [90]. At the same time, positive parent-child interactions, such as play and emotional support, have significant effects on children's behavior and academic achievement [79], [91]. In addition, the quality of participation is equally important, and fathers' strict attitudes may lead to an exacerbation of children's behavioral problems under high levels of participation [92].

#### 4.4.2. Family factors

##### a. Division of labor in the family

The division of labor significantly affects fathers' involvement in child care. Although traditional gender role stereotypes may limit father involvement, Lucassen *et al.* [93] confirmed that sensitive parenting by mothers was positively associated with children's emergent metacognitive and inhibitory self-control scores, and harsh parenting by fathers was negatively associated with children's emergent metacognitive and inhibitory self-control scores. This is consistent with previous research showing that fathers are more likely than mothers to engage in intense, physically stimulating play or unusual, unpredictable play and more likely to praise their children during play activities. Subsequent research has shown that shared parenting responsibilities lead to better family and child outcomes [94]. However, actual participation is limited by work hours, transportation, and other living arrangements [52], [53].

##### b. Children's factors

Childhood characteristics and responses influence the relationship between father involvement and academic achievement. Child characteristics are positively associated with father involvement [23]. Similarly, children's gender, educational background, and grades influence their receptivity to parental interactions [9], [60]. Children's attitudes towards their father's knowledge are positively related to academic achievement, while positive perceptions of their father's closeness behavior may actually decrease achievement [42]. At the same time, children's feelings also influence the relationship between father involvement and children's academic performance. Research has confirmed that adolescents' feelings about themselves and their abilities are directly related to their academic performance [16]. It is crucial for adolescents to experience being treated fairly in the classroom, as this is directly related to the maturation of learning motivation [13].

##### c. School factors

Schools play a central role in promoting fathers' involvement in their children's education. Schools should create an environment that respects and encourages fathers' involvement and maintain contact with fathers through proactive communication by teachers [52], [95]. Educational policies should support father-specific engagement programs such as "fathers' growth clubs" to increase fathers' educational confidence [96].

#### **d. Sociocultural factors**

Sociocultural background has an important influence on the patterns and effects of father involvement in family education. Socioeconomic status, social support, and community resources are all key factors [97], [98]. External incentives and resources are crucial to fathers' participation, and community resources provide platforms and tools to help fathers participate more effectively in their children's learning and life [99].

#### **4.5. A framework for empirical research on father involvement and children's academic achievement**

According to existing research, when there is a lack of close relationship between parents and adolescents, the effect of parental involvement on improving children's GPA is reduced [86]. Research needs to consider the combined influence of both parents to understand parenting styles. The impact of parents' emotional warmth on academic performance has also been verified in different cultural contexts. For example, in a study in India [100], parents' emotional warmth was significantly associated with both their children's academic performance and behavioral problems. In addition, mothers' beliefs and attitudes about fathers' parenting abilities significantly influence the frequency and quality of fathers' interactions with their children [74], [75].

At present, the study of the relationship between father involvement and children's academic achievement can be divided into two main aspects: first, the overall impact of father involvement on children's academic development; second, the relationship between specific forms of involvement and academic development, considering moderating variables such as involvement type, race, and socioeconomic status. Based on existing research results, combined with social capital theory and ecological systems theory, this study divided the dimensions of father's involvement into nine types: the first is discipline and teaching responsibility, that is, father's involvement in the role of educating children to abide by rules and cultivating a sense of responsibility; the second is school encouragement, which is the father's participation and encouragement in the child's school life, including participating in school activities and encouraging the child to participate in school affairs; the third is mother support, which is the father's participation in school affairs. Mother's support in raising and educating children, including emotional support and sharing of joint parenting responsibilities; the fourth is providing, that is, the father provides necessary material conditions for the child, such as food, clothing, and educational resources; the fifth is time and talking together, which emphasizes the importance of fathers taking time to communicate effectively with their children; the sixth is praise and affection, which is the way fathers give positive feedback, praise and express love to their children; the seventh is developing talents and future concerns. That is, the father discovers and cultivates the child's talents and pays attention to the child's future planning; the eighth type is reading and homework support, that is, the father provides help in cultivating the child's reading habits and completing homework; the ninth type is attentiveness, that is, the father pays attention to details in the child's growth process, including emotional needs, and academic progress.

Although the current framework references social capital theory and ecological systems theory, their integration into the analysis remains limited. To strengthen the conceptual basis, future research should explicitly map how elements of Bronfenbrenner's ecological systems theory, such as microsystem (father-child interactions), mesosystem (school-family links), and ecosystem (parental work environments), interact to influence academic outcomes. By doing so, it would provide a richer theoretical grounding for understanding the multifaceted role of paternal involvement.

Based on this, in order to provide a structured perspective for understanding the relationship between father's involvement and children's academic achievement, Figure 6 shows the basic framework that can be used to conduct empirical research derived from the review of this review. The independent variable is father's involvement, which covers multiple dimensions, including discipline and teaching responsibility, school encouragement, mother support, providing, time and talking together, praise and affection, developing talents and future concerns, reading and homework support, and attentiveness. The mediating variable is father-child relationship, the moderating variable is mother's participation, and the control variables are: father's age, education level, income, and child's grade and gender. The variables are children's academic performance (Chinese, mathematics, English, and science). Through this framework, researchers can assess how multiple dimensions of father involvement influence children's academic achievement through the father-child relationship and examine how mother involvement moderates this relationship. At the same time, the inclusion of control variables will help researchers eliminate other potential interfering factors and obtain more precise research results.

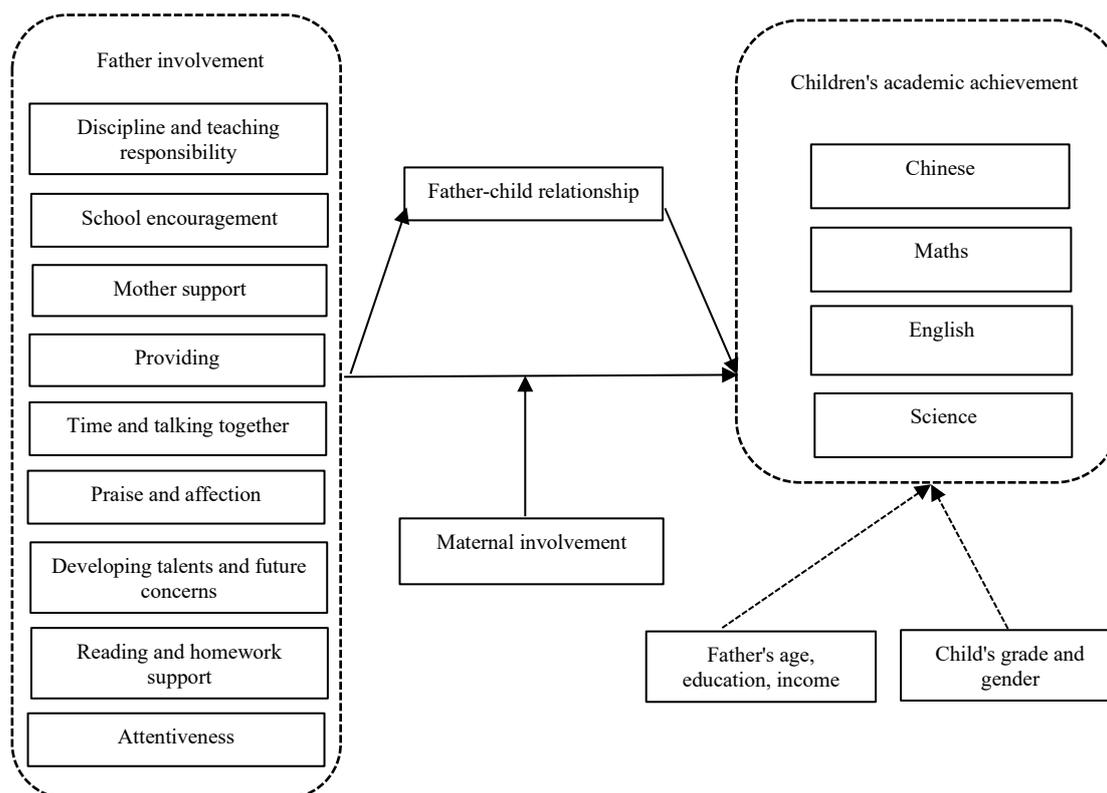


Figure 6. A framework for empirical research on father involvement and children's academic achievement

## 5. CONCLUSION

This study comprehensively analyzed studies from 2014 to 2024, revealing the important impact of father involvement on children's academic performance, but existing research still has limitations in terms of causality and mechanism. Father factors, family factors, school factors, and sociocultural factors jointly shape this relationship, emphasizing the combined effect of multiple factors. These findings provide valuable references for educators and policymakers to help them better support the role of fathers in their children's education and promote the all-round development of children. However, in order to further deepen the understanding of the role of father involvement, future research needs to overcome the limitations of existing research, adopt a longitudinal research design, combine quantitative and qualitative methods, cover a diverse sample, focus on the role of fathers in shaping their children's values, explore personalized participation methods, popularize father education, and reveal specific paths and mechanisms through mediation and moderation analysis.

One notable gap in this review is the absence of a systematic appraisal of the methodological quality of the included studies. Although inclusion and exclusion criteria were applied, no formal tools were used to assess rigor of the studies or potential bias. Future reviews should incorporate established critical appraisal frameworks such as the mixed methods appraisal tool (MMAT) or Joanna Briggs Institute (JBI) tools to enhance the validity and reliability of the evidence base. Specifically, future research should also focus on the following directions: i) longitudinal studies with long-term follow-up: through long-term observation, determine whether father involvement is the cause or result of children's academic success; ii) combining quantitative and qualitative methods: using quantitative methods such as questionnaires and experiments to collect data, combined with qualitative methods such as in-depth interviews and observations, to fully understand the influencing factors; iii) diversified samples: covering different genders, ages, education, income, and social backgrounds, revealing the diversified patterns of father involvement; iv) value cultivation: focusing on the role of fathers in shaping children's values, moral values and cultural identity; v) personalized involvement: emphasizing that father involvement should be adjusted according to family and child individual differences; vi) popularizing father education: improving fathers' educational awareness and skills through various platforms; and vii) deepening the understanding of the mechanism: through mediation and moderation analysis, revealing the specific path of the relationship between father involvement and academic achievement.

Another important limitation of the current review lies in the absence of a structured critical appraisal of the methodological quality of the studies included. Although the inclusion and exclusion criteria were clearly defined, the review did not utilize formal appraisal tools to evaluate the risk of bias, methodological rigor, or internal validity across studies. This may limit the interpretability and generalizability of the synthesized findings. Therefore, future systematic reviews in this area are encouraged to incorporate established quality assessment frameworks to systematically assess study quality and enhance the credibility of evidence synthesis.

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C : **C**onceptualization

M : **M**ethodology

So : **S**oftware

Va : **V**alidation

Fo : **F**ormal analysis

I : **I**nvestigation

R : **R**esources

D : **D**ata Curation

O : **O**riginal Draft

E : **E**diting

Vi : **V**isualization

Su : **S**upervision

P : **P**roject administration

Fu : **F**unding acquisition

#### CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

#### DATA AVAILABILITY

Data availability is not applicable to this paper as no new data were created or analyzed in this study.

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## APPENDIX

## Studies incorporated into the systematic review

No.	Author/s and year	Research type	Objectives	Focus	Conclusion
1	Baker (2014)	Quantitative	To investigate the role of African American fathers in the reading and mathematical development of 24-month-old children in the context of their involvement in literacy, play activities, and childcare.	FI and children's outcomes	The endorsement pertains to the increasing corpus of evidence that highlights the role of parents in fostering their children's growth and progress.
2	Hornby <i>et al.</i> (2018)	Review	The aforementioned comprises a revised version of a published article from 2011, alongside a brief inquiry into the current status of parental engagement within 11 primary schools located in the UK.	Determinant	It seems that more parents are getting involved in education, which might be a very good thing for the kids.
3	Cruz. <i>et al.</i> (2020)	Quantitative	To examine how adolescents perceive their mother's and father's parenting behaviors and how it predicts school performance.	Intervention	Adolescents' perceptions of parenting styles have different effects on their development. While adolescents' perceptions of their mother's parenting styles had a positive impact on their social skills.
4	Baker <i>et al.</i> (2018)	Quantitative	To examine direct and mediating factors affecting the academic achievement of children from poor families.	Determinant	There is an investigation of direct and indirect connections between parental poverty and children's performance in preschool education.
5	Paddock <i>et al.</i> (2014)	Qualitative	To investigate and characterize fathers' perspectives regarding their involvement with children and interactions with social workers.	Intervention	The engagement of biological fathers is essential to the administration of fair and effective child welfare services.
6	Miller <i>et al.</i> (2020)	Quantitative	To find out whether the involvement of fathers reduces the differences in children's academic outcomes due to socio-economic differences.	FI and children's outcomes	Increasing specific types of father involvement may be beneficial in reducing the gap in academic achievement due to differences in socio-economic status.
7	Carrillo <i>et al.</i> (2016).	Qualitative	To find out fathers' perceptions of their children in the Colombian context.	Determinant	Better recognition of fathers' involvement with children will help to develop measures that will benefit family members.
8	Fajoju <i>et al.</i> (2016).	Quantitative	To investigate the correlation between the level of parental participation and the academic success of Primary 6 students in Nigeria.	FI and children's outcomes	Parents are urged to involve in their children's educational endeavors and to keep a close eye on their children's attendance records at school.
9	Yoon <i>et al.</i> (2021)	Quantitative	To look at the different ways in which fathers are involved with their children and interrelationship with their children's social and cognitive abilities in low SES families.	Determinant	Findings underlined the important role that active father engagement plays in healthy child development, particularly in the form of cognitive stimulation by fathers.
10	Malik <i>et al.</i> (2022)	Quantitative	To examine the relationship between father involvement, quality of co-parenting relationships, and children's socio-emotional behaviors in a Pakistani social context.	FI and children's outcomes	Appropriately reducing fathers' working hours and encouraging to become more involved in family life is highly beneficial to children and whole families in Pakistan.
11	Machebe <i>et al.</i> (2017)	Quantitative	To evaluate the effect of students' socioeconomic background, notably the income of their parents and the quality of their relationships with their parents, on their academic achievement in high school in Japan.	Intervention	Parents need to involve more children and provide them with moral support, encouraging them to be confident in their studies to achieve better results.
12	Curtis <i>et al.</i> (2017)	Quantitative	To clarify the impact of father-child relationships on black youth's academic achievement by increasing the sample of Black youth in the study.	FI and children's outcomes	Encouraging father involvement has a significant impact on children's academic achievement, regardless of their ethnicity and residential status.
13	Cano <i>et al.</i> (2019)	Quantitative	To identify the relationship between the time and manner fathers involved and children's cognitive development, as well as to examine whether father involvement moderates the associations.	FI and children's outcomes	A high level of father involvement, especially in education, will benefit the child's cognitive abilities.

Studies incorporated into the systematic review (*continued*)

No.	Author/s and year	Research type	Objectives	Focus	Conclusion
14	Lechowicz <i>et al.</i> (2019)	Review paper	Identify specific recommendations to enhance fathers' involvement through a study of the literature.	Intervention	Father involvement is good for child development and a variety of policies and measures should be examined to enhance father involvement.
15	Norman <i>et al.</i> (2015)	Quantitative	Develop quantitative tools to measure fathers' involvement in childcare and household tasks.	Intervention	Father involvement and responsibility vary according to race, with culture influencing father involvement capacity.
16	Murayama <i>et al.</i> (2016)	Quantitative	Examines the relationship between parents' aspirations for their children and academic performance.	Determinant	Parents who expect too much from their children, even more than they are capable of, often have difficulty in their children achieving well.
17	Fernández <i>et al.</i> (2017)	Quantitative	Examine whether the way parents are involved affects academic performance.	Intervention	Schools that require greater parental involvement in home education have lower levels of variation in student achievement between students.
18	Chung <i>et al.</i> (2020)	Quantitative	To examine the interaction between parenting styles and parental warmth, and the impact of parental warmth on children.	Comparison	When studying influences on children, the influence of both fathers and mothers should be considered, otherwise, the findings will be inaccurate.
19	Toor (2018)	Quantitative	To compare the relationship between higher and lower achieving students and their parents across different school types.	Intervention	Many factors are influencing the relationship between parents and children, such as the gender of the child and the type of school.
20	Costello (2014)	Qualitative	Survey parents' perceptions of their involvement in home-school activities and identify measures to enhance parental involvement to create a harmonious home-school environment.	Intervention	Explore measures for teachers and school staff to promote the active involvement of fathers in schools and lay the policy foundations for good father-school relationships.
21	Zhao <i>et al.</i> (2021)	Mix Method	To examine the different effects of different types of father involvement on children.	Determinant	Parents who talk more about learning and plan for the future with their children can have a better suggestive effect on their children's mathematics.
22	Ki (2018)	Quantitative	To examine whether the relationship is influenced by warm parental behaviors.	Intervention	The degree and level of involvement of fathers and mothers are influenced by parental warming behaviors.
23	Gordon (2017)	Quantitative	To examine the effects of self-perception and parent-child relationship quality on the relationship between father involvement and adolescent achievement.	Intervention	Personal characteristics and parent-child relationships influence the relationship between father involvement and adolescent academic achievement.
24	Pečnik <i>et al.</i> (2022)	Mix method	To estimate the outcomes of a parenting support program "Growing up together fathers' club".	Intervention	Fathers' perceptions influenced their children's physical and psychological well-being, while their level of education did not.
25	Berti <i>et al.</i> (2016)	Quantitative	To explore the impact of whether teachers are fair in their evaluations of parental involvement in their children's academic achievement.	Determinant	Fair treatment of students by teachers facilitates children's academic performance as it leads to higher levels of student motivation.
26	Sira <i>et al.</i> (2016)	Mix method	To examine the relationship between parental involvement in parenting and children's personal achievement and academic performance.	FI and children's outcomes	Schools and the community adopt a variety of measures to encourage parental involvement in school affairs to effectively raise student achievement.
27	Lv <i>et al.</i> (2019)	Quantitative	To identify the different dimensions of parental involvement as things related to achievement and emotions.	Comparison	Active parental involvement in school and providing warmth and emotion can contribute to the healthy development of the child.
28	Baker (2016)	Quantitative	To examine whether father involvement in school enhances children's skills	FI and children's outcomes	Children's reading and mathematics achievement is better when fathers are more involved in school.
29	Otani (2019)	Quantitative	To examine the relationship between parental involvement, expectations of children, and children's academic achievement.	Intervention	Not only mothers but fathers have a significant impact on the academic performance of their children.

Studies incorporated into the systematic review (*continued*)

No.	Author/s and year	Research type	Objectives	Focus	Conclusion
30	Liu <i>et al.</i> (2021)	Quantitative	Exploring the relationship between the involvement of fathers in Chinese contexts on the influence of their children.	Determinant	Authoritative father involvement behaviors are good for children's adjustment, but neglectful companionship is detrimental to children's development.
31	Liu <i>et al.</i> (2022)	Quantitative	To explore how fathers' involvement in parenting may be influenced by multiple factors.	Intervention	To increase the extent and level of father involvement, the focus should be on father role perceptions, self-efficacy.
32	Cai (2023)	Review	To explore the importance, methods, evolution, and current situation of father involvement in children.	FI and children's outcomes	Provide an assistant interpretation of how father involvement has been developed and the related children's development outcome for researchers, educators, and parents.
33	Jeynes (2016)	Meta-analysis	Compare and contrast the involvement of fathers with that of mothers, looking for differences in the approaches they use and their effects.	Comparison	Fathers are involved in parenting in different ways and with different effects than mothers, and scholars should increase research on father involvement in parenting to draw the attention of society.
34	Rollè <i>et al.</i> (2019)	Systematic review	A summary of the literature on the relationship between father involvement and children's cognitive development.	FI and children's outcomes	The findings on father involvement and children's cognitive abilities vary and even disagree across the literature.
35	Nataša <i>et al.</i> (2022)	Systematic review	Incorrect quantifiers with uncountable nouns that concentrate on a variety of facets of father engagement were analyzed and synthesized, and an overarching measurement of the efficacy of father involvement was investigated.	FI and children's outcomes	The findings of the meta-analysis that was carried out provided support for the notion that father engagement relates to favorable outcomes for children's academic performance.
36	Kim (2017)	Review paper	Understand the trends and patterns of research and compare the status of fathers' and mothers' involvement in parenting.	Intervention	Father involvement and mother involvement have different impacts and need to be studied more, while more consistent standards for measuring father involvement should be developed worldwide.
37	Seet <i>et al.</i> (2022).	Quantitative	To explore the relationship between parenting styles and academic success in the Malaysian context.	Intervention	Parents have expectations of their children's learning and academic performance is relatively high.
38	Boediman <i>et al.</i> (2019)	Quantitative	To examine the relationship between parenting styles and children's emotional regulation in an Indonesian context.	FI and children's outcomes	Authoritative parenting styles are conducive to enhancing children's emotional regulation.
39	Divina <i>et al.</i> (2020)	Quantitative	To contrast whether parents' cultural values moderate the relationship between parenting styles and child outcomes.	Comparison	Children's emotional regulation is related to parenting style and is almost independent of cultural background.
40	Martinez <i>et al.</i> (2020)	Quantitative	To compare the impact of parenting styles on the perceptions of adolescents in Spain, Portugal, and Brazil.	Comparison	Parents' involvement in their children's upbringing with warmth is conducive to the development of self-esteem.
41	Saifuddin <i>et al.</i> (2024)	Review	To exam the impact of father involvement on the academic performance of primary-level children in Pakistan.	FI and children's out-comes	Father's involvement significantly affects children's academic performance, the extent and nature of father's involvement in Pakistan vary depending on the socio-cultural context.
42	Paquette <i>et al.</i> (2023)	Quantitative	To explore the possible links of father-child rough-and-tumble play and also father's involvement in child schooling with two dimensions of school adjustment: social adaptation and academic achievement.	FI and children's out-comes	Boys performed less well academically when fathers demonstrated more negative reactions than boys.
43	Zulfiqar <i>et al.</i> (2023)	Quantitative	To examine the inter-relationships among perceived parental involvement, autonomy support, academic motivation, and academic achievement of first-generation university students.	Comparison	The academic motivation of FGCS was a positive direct effect of parental behaviors, in particular, fathers' involvement and autonomy support.

Studies incorporated into the systematic review (*continued*)

No.	Author/s and year	Research type	Objectives	Focus	Conclusion
44	Zhu <i>et al.</i> (2023)	Quantitative	To examine whether parenting styles and parental involvement predicted adolescent-reported academic burnout and engagement directly or indirectly via adolescents' perceived parental support.	Comparison	Father's time and energy involvement predicted lower perceived paternal support, especially for boys.
45	Bernier <i>et al.</i> (2023)	Quantitative	To test a 5-year sequential mediation model linking paternal mind-mindedness in toddlerhood to child early academic achievement through a developmental process unfolding in the preschool years.	FI and children's out-comes	Paternal mind-mindedness may support child academic outcomes by promoting the acquisition of intermediate skills during preschool years.

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