

The Impact of Parental Involvement on Children's Piano Learning Performance

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Abstract: Through systematic literature Review (SLR) method, this study integrates empirical studies on the impact of parental involvement on children's piano learning performance from 2017 to 2024, and reveals the multi-dimensional mechanism and interaction effects of parental involvement. The study found that parental involvement affected children's learning outcomes through three dimensions of behavioral supervision, emotional support and cognitive guidance, but its effect was regulated by instructional design, cultural context and learner characteristics. Behavioral supervision can improve skill proficiency, but lack of emotional support is easy to cause rebellious psychology. Cognitive guidance depends on parents' professional background and needs to be optimized collaboratively with instructional design. Cultural differences significantly affect the participation pattern. In collectivist culture, parents tend to be authoritative, while in individualist culture, children's autonomy is emphasized. The study further proposes a "parent-teacher-child" tripartite collaboration framework, emphasizing the key role of instructional design in integrating the dimensions of participation. Despite the significant potential of parental involvement in motivation stimulation, skill acquisition and psychological resilience development, over-intervention, cultural conflict and measurement tool heterogeneity are still urgent problems to be solved. Future research needs to deepen cross-cultural comparisons, explore participation models under technology empowerment, and pay attention to ethical issues. This study provides strategy suggestions for educational practitioners to promote the scientific and personalized development of family participation in music education.

Keywords: Parental involvement; piano learning performance; children.

1. Introductions

With the deepening of the concept of quality education and the popularization of family participation in education, the role of parents in children's learning process has been paid more and more attention. As an important carrier of basic art education, piano learning not only cultivates children's musical literacy, but also exerts a comprehensive impact on cognitive ability, emotional expression and aesthetic consciousness (Wang & Sun, 2022). However, there is still a significant theoretical and practical gap in the current research on the effect of family participation on children's piano learning. On the one hand, parental involvement models are often limited to technical supervision or resource provision, ignoring the synergistic effect of emotional support and cognitive guidance. On the other hand, the regulatory mechanism of family background differences on participation effect has not been systematically explored (Zhao, 2020).

From a theoretical perspective, the multidimensional nature of parental involvement provides a key entry point for the study. Grolnick's three-dimensional theory (2009) divides parental involvement into three dimensions: behavior, emotion and cognition: Behavioral engagement directly improves technical proficiency through supervised practice and resource provision, emotional engagement enhances learning motivation and persistence through encouragement and empathy, and cognitive engagement deepens musical understanding through musical knowledge guidance (Grolnick & Pomerantz, 2009). This classification provides an operational path for quantitative analysis of parental participation behavior. At the same time, Baumrind's theory of parenting style (1967) further revealed the overall model of parental involvement: authoritative parents can not only promote skill progress, but also maintain children's interest by balancing

technical supervision and emotional support. However, authoritarian parents neglect emotional needs and inhibit learning motivation for a long time (Arafat & Khan, 2020).

There are still limitations in the discussion of family participation mechanism in the existing research. On the one hand, most studies focus on a single dimension and lack the systematic integration of behavior, emotion and cognitive participation (Evans & Thompson, 2022). On the other hand, there is insufficient research on how family background and cultural concepts modulate participation effects (Schmidt et al., 2022). In addition, the impact of children's age differences and gender differences on participation patterns has not been thoroughly analyzed (Kraft et al., 2023).

2. Methodology

This study employed a Systematic Literature Review (SLR) method. In the field of children's music education, while the impact of parental involvement is widely discussed, its specific mechanisms and quantitative correlation with piano learning performance still lack systematic research. The SLR approach was selected to ensure that the literature selection process was systematic, transparent, and reproducible. To improve the standardization and academic legitimacy of this review, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines were strictly followed.

2.1 Search Strategy

A comprehensive search strategy was designed to ensure the generality and representativeness of the literature sources. The study utilized CNKI, Google Scholar, and Scopus as the main search databases. CNKI was selected for its rich collection of Chinese local education research, which is particularly useful for analyzing the impact of cultural backgrounds on family participation models. Google Scholar and Scopus were included to provide high-quality empirical studies from the international academic community, covering cross-cultural comparisons between Europe, the United States, and many Asian countries. The keyword design followed the principle of comprehensive coverage and logical rigor, using combinations of key terms ("parental involvement," "piano learning"), determiners ("child," "early childhood"), and method words ("quantitative study," "qualitative study"). The search period was set from January 1, 2017, to December 31, 2024, to cover a key stage in the rapid development of research on children's piano education. To improve retrieval accuracy, the title search in CNKI was limited to the co-occurrence of "parent participation" and "piano learning". The screening process focused on the fields of education, music education, and child development, excluding literature from unrelated fields such as medicine and business. The document management tools Zotero 6.0.36 and Excel were used to deduplicate, classify, and record the screening process to ensure its traceability.

2.3 Eligibility Criteria

To ensure the high consistency and research quality of the literature sample, clear inclusion and exclusion criteria were formulated. To be included, a study had to be an empirical work published between 2017 and 2024. The research subjects must focus on the piano learning of children aged 3-12 and explicitly explore the impact of parental involvement. Furthermore, the research content needed to include the specific dimensions of parental involvement and its mechanism of action on academic performance. Eligible studies employed quantitative, qualitative, or mixed methods and were published as peer-reviewed journal papers, conference papers, or doctoral/master theses.

Conversely, studies were excluded if the subjects were adolescents (aged 13+) or adult learners, or if the research topic deviated from parental involvement. Literature types such as news reports, opinion articles, policy documents, or preprints without references were also excluded. Finally, any literature for which the full text was not available or was in a language other than Chinese or English was removed from consideration.

2.4 Screening and Quality Assessment

The literature screening was divided into three stages and strictly followed the PRISMA process guidelines. In the first stage, an initial title screening of more than 800 articles was conducted, excluding studies unrelated to "parental involvement" or "piano learning". During the second stage, abstracts were read to further exclude literature with a mismatched target audience or a deviated theme, which retained about 150 articles. In the third stage, a quality assessment of the full paper was carried out, eliminating articles with vague research designs, insufficient data support, or no empirical basis, which resulted in a final inclusion of 30 high-quality empirical studies. This process can be seen in full in figure 1.

The quality assessment was conducted across four dimensions: the clarity of the research design, the appropriateness of the data analysis, the consistency between conclusions and data, and a critical discussion of limitations. Each study was independently evaluated by the investigators, and any disagreements were resolved through discussion to ensure that only documents that met all criteria were retained.

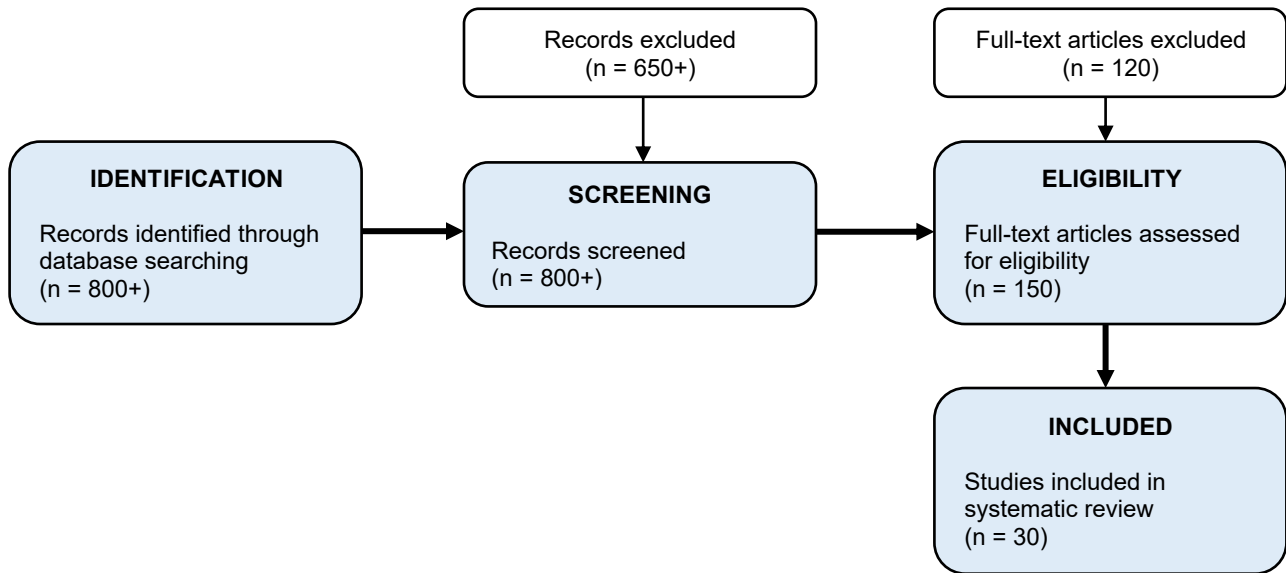


Figure 1. Prisma Flowchart

2.5 Methodological Limitations

Through this systematic approach, the study integrates scattered empirical studies to reveal the multidimensional effects of parental involvement on children's piano learning. However, there are some limitations to this method. Language restrictions led to the inclusion of only Chinese and English literature, meaning studies from non-English speaking countries may have been omitted. A regional deviation was also noted, as most studies focus on China, the United States, and other countries, which means cultural differences may affect the universality of the conclusions. Additionally, the heterogeneity of measurement tools is a limitation; the definitions and measurement methods of "parental involvement" and "academic performance" differ across studies and need to be standardized in the analysis. Nonetheless, this study provides a solid empirical basis for subsequent research through its transparent screening process and rigorous quality assessment.

3. Findings

3.1 Research trends of parental involvement in children's piano learning

From 2017 to 2024, the research on the impact of parental participation on children's piano learning performance has gradually become a hot topic in the fields of education, music education and child development. This trend is closely related to the global focus on the home-school partnership model, especially in early childhood education, where parental involvement is seen as one of the key factors affecting learning outcomes (Evans & Thompson, 2022). Studies have shown that parental involvement is not limited to monitoring practice time or correcting technical details, but also involves emotional support, cognitive guidance, and cultural context penetration (Schmidt et al., 2022). For example, the literature on CNKI shows that Chinese families generally adopt the "authoritative upbringing" model, which emphasizes the dominant role of parents in the transmission of cultural values, and this model is highly consistent with the "grading orientation" goal of children's piano learning (Zhang, 2024). At the same time, international studies have found through cross-cultural comparison that European and American countries tend to encourage parents to participate in the role of "supporters" rather than "controllers", emphasizing the cultivation of autonomy and creativity (Manca & Ranieri, 2017). This comparison reveals the diversity of parental engagement patterns and provides a multidimensional analytical framework for subsequent research.

3.2 Main dimensions and mechanism of parental involvement

Literature analysis shows that parents' participation in children's piano learning can be summarized into three core dimensions: behavior supervision, emotional support and cognitive guidance (Greenhow & Lewin, 2016). Behavior supervision involves parents' direct management of practicing time and task completion, such as setting a fixed practice period or assisting in recording practice progress (Foo & Quek, 2019). Emotional support enhances children's learning motivation through positive feedback, encouragement, and psychological companionship, such as by praising small

improvements or sharing interesting content related to music (Yang et al., 2024). Cognitive guidance is reflected in parents' auxiliary explanation of music theory and performance skills, or providing learning demonstrations for children through their own musical literacy (Ansari & Khan, 2020). These three dimensions do not exist in isolation, but affect children's learning effects through synergistic effects. For example, behavioral supervision ensures the accumulation of basic skills, emotional support maintains interest in learning, and cognitive guidance promotes deep learning (Guo & Chen, 2022).

3.3 Typical research scenarios and empirical findings

Through the thematic analysis of 30 literatures included in the study, the impact of parental participation on children's piano learning is mainly reflected in the following four scenarios:

- a) Optimization of family practice environment: Parents have significantly improved children's practice efficiency by fixing practice time, creating music atmosphere (such as playing classic songs) and reducing interference factors (such as limiting the use of electronic devices) (Chan et al., 2020).
- b) The bridging role of family-school communication: Regular communication between parents and teachers (such as through wechat or Zoom) helps to clarify teaching objectives and solve specific problems in children's learning (Cao et al., 2021).
- c) Inheritance of music culture across generations: Some studies have found that parents' own musical background or interest can subtly affect children's attitude toward piano learning, such as through family concerts or joint appreciation of performances (Reeves, 2019).
- d) The stimulation of social comparison and competition consciousness: Parents can enhance children's achievement motivation by organizing children to observe piano lessons of their peers or participate in grade examination activities (Sabah, 2023).

3.4 Positive effects and limitations of parental involvement

The empirical study shows that active parental participation has a significant positive effect on children's piano learning. Firstly, in terms of learning motivation, parents' encouragement and feedback can effectively improve children's intrinsic motivation, for example, by setting phased goals or reward mechanisms (Hawe et al., 2019). Secondly, in terms of skill acquisition, behavioral supervision ensures the continuity of basic practice, while cognitive guidance promotes the refinement of skills (Greenhow & Askari, 2017). In addition, parental emotional support can alleviate children's frustration in practice and enhance their ability to cope with pressure (Wang et al., 2024). However, research also reveals the limitations of parental involvement: excessive intervention may lead to strong dependence and lack of autonomy in children (Massah, 2018); Cultural differences (e.g., the conflict between "authoritative upbringing" and "democratic upbringing") may lead to parent-child conflicts (Jain & Agrawal, 2020); In addition, due to the lack of music literacy, some parents may misguide children to practice, which reduces the learning effect (Al-Rahmi et al., 2022).

3.5 Challenges and Future research directions

Despite the significant value of parental involvement in children's piano learning, existing research still faces multiple challenges. Firstly, the heterogeneity of measurement tools limits the universality of the conclusions: the definitions and assessment methods of "parental involvement" and "academic performance" vary greatly among different studies, which need to be further standardized (Hu et al., 2024). Secondly, the problem of cultural bias is prominent. Most studies focus on China, the United States and other countries, and there are few cases in non-English speaking countries (Cruz-Benito et al., 2017). In addition, the emerging role of social media in parent engagement has not been fully explored, such as real-time collaboration between parents and teachers through online platforms or visual tracking of children's learning outcomes (Al-Daraiseh, 2017). Future studies should combine cross-cultural comparison, technology integration, and long-term follow-up design to more comprehensively reveal the mechanism of parental involvement.

4. Discussion and critical analysis

4.1 Tension between theoretical framework and practical application

The theoretical basis of parental involvement in children's piano learning is mainly rooted in social support theory (Cohen & Wills, 1985) and family system theory (Bowen, 1978). Social support theory emphasizes the impact of external resources (such as parents' emotional support and behavior supervision) on individual psychological resilience and task persistence, while family system theory believes that family members' behaviors are interrelated, and parents' participation patterns will directly affect children's learning motivation and emotional state. However, there is a significant tension in the connection between theory and practice. For example, some scholars pointed out that the excessive intervention of parents may weaken children's autonomy and lead to the blockage of the internalization of learning motivation (Greenhow & Askari, 2017). This phenomenon is contrary to the principle of "moderate guidance"

emphasized by social support theory, which advocates stimulating learners' potential through support rather than control. In addition, empirical studies have shown that although parents' emotional support can enhance children's interest in learning (Yang et al., 2024), without structured task design, such support may be superficial and difficult to transform into deep learning (Kozyreva et al., 2020). This indicates that the "ideal picture" of the theory should be adjusted according to the specific situation in practice, rather than simply applied.

4.2 Heterogeneity of parental participation mode and learning effect

There is significant heterogeneity in the way parents participate in children's piano learning, which is mainly reflected in three dimensions of behavioral supervision, emotional support and cognitive guidance (Greenhow & Lewin, 2016). However, the existing studies lack of integrated analysis of these dimensions, resulting in one-sided interpretation of learning effects. For example, although behavioral supervision can ensure the regularity of practicing time (Foo & Quek, 2019), the lack of emotional support may trigger rebellious psychology in children (Jain & Agrawal, 2020). In contrast, cognitive guidance, transmitted through parents' music literacy, can promote children's understanding of performance skills (Reeves, 2019), but its effect is highly dependent on parents' professional background. This heterogeneity suggests that future studies should construct more refined engagement models to distinguish the independent and interactive effects of different dimensions, rather than discussing the overall concept of "parental engagement" in a general way.

4.3 The moderating effect of cultural context on participation patterns

Cultural differences have a significant moderating effect on the way and effect of parents' participation in children's piano learning. For example, in the context of collectivist culture (such as China), parents tend to dominate the learning process with an "authoritative" model that emphasizes discipline and goal attainment (Zhang, 2024), while Western countries prefer a "supportive" model that encourages children to explore independently (Manca & Ranieri, 2017). Such differences may lead to limited cross-cultural applicability of the findings. For example, Chinese families reinforce learning motivation through grading orientation (Al-Rahmi et al., 2022), while European and American countries pay more attention to creativity cultivation (Cruz-Benito et al., 2017). In addition, the phenomenon of silent participation (latent) is more prevalent in Asian cultures (Hu et al., 2024), which may weaken the cognitive conflict transformation effect of collaborative learning. Therefore, future studies should incorporate cultural variables to explore the suitability of parental involvement strategies under different cultural backgrounds.

4.4 The mediating mechanism between instructional design and participation quality

The effect of parental involvement depends to a large extent on the quality of instructional design. Existing studies generally ignore the moderating effects of task structure, interaction rules and feedback mechanisms on participation quality. For example, participation without a clear task breakdown can lead to "free rider" (Massah, 2018), while structured role assignment and milestone checking can effectively improve collaboration efficiency (Chan et al., 2020). In addition, collaborative design between teachers and parents has a key impact on learning outcomes: teachers need to clarify teaching objectives through regular communication (Wang et al., 2024), while parents need to adjust their support methods according to feedback (Guo & Chen, 2022). However, most studies only focus on the one-way behavior of parents, ignoring the systematicity of instructional design. In the future, a "parent-teacher-child" tripartite collaboration framework should be constructed to optimize the depth and sustainability of participation.

4.5 Methodological Limitations and Future research directions

There are methodological limitations in the current research on parental involvement, which are mainly reflected in the homogeneity of samples, the singularity of data sources and the inconsistency of measurement tools. For example, most studies focus on China or European and American countries (Sabah, 2023), lacking cross-cultural comparisons; Moreover, it relies on self-reported data (such as questionnaires) and is susceptible to social expectation bias (Greenhow & Chapman, 2020). In addition, the causal relationship between parental involvement and children's piano performance has not been fully tested and needs to be clarified by longitudinal tracking design or experimental studies. Future research can incorporate multimodal data (e.g., observation records, exercise logs, and social media interaction analysis) to build a more comprehensive body of evidence and explore new modes of participation enabled by technology (e.g., real-time collaboration capabilities of online platforms).

5. Conclusions

This systematic literature review integrates empirical studies from 2017 to 2024 to illuminate the multifaceted impact of parental involvement on children's piano learning. The key findings reveal that parental involvement operates through three core dimensions: behavioral supervision, emotional support, and cognitive guidance, whose effects are moderated by factors like instructional design and cultural context. While behavioral supervision can enhance skill proficiency, it risks causing rebellious psychology if emotional support is lacking, and the effectiveness of cognitive guidance often depends on the parent's professional background. Cultural differences were found to significantly alter participation

patterns, with collectivist cultures favoring authoritative approaches and individualist cultures emphasizing child autonomy. A central implication of this review is the proposal of a "parent-teacher-child" tripartite collaboration framework, which emphasizes using instructional design to integrate these dimensions of participation. Despite the significant potential for parental involvement to stimulate motivation and skill acquisition, challenges such as over-intervention, cultural conflicts, and the heterogeneity of measurement tools persist. Therefore, it is recommended that future research deepens cross-cultural comparisons, explores the role of technology in fostering participation, and gives greater attention to ethical considerations to promote a more scientific and personalized approach to family participation in music education

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Conflict of Interest

The authors declare no conflicts of interest.

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