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The impact of parental involvement in school readiness on first-grade students' learning style and cognitive development in Shenzhen, China

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THE IMPACT OF PARENTAL INVOLVEMENT IN SCHOOL READINESS ON FIRST-GRADE STUDENTS' LEARNING STYLE AND COGNITIVE DEVELOPMENT IN SHENZHEN, CHINA

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DOCTOR OF POLICY STUDIES

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THE IMPACT OF PARENTAL INVOLVEMENT IN SCHOOL READINESS ON FIRST-GRADE STUDENTS' LEARNING STYLE AND COGNITIVE DEVELOPMENT IN SHENZHEN, CHINA

By Li Hua

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Abstract

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on first-grade students' learning style and cognitive development in Shenzhen, China
by
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In recent years, children's school readiness has become a hot spot in child development research. Cognitive development and learning style are critical to children's growth and development. Further research on this topic can help parents participate in their children's admission preparation and aid in the early recognition and timely intervention of children facing potential risks.

Guided by Bronfenbrenner's ecological theory, this qualitative study used the socioeconomic profile data of 24 parent participants to understand how their participation in their children's school readiness affects these children's cognition and learning style after entering the first grade in public, private, and international primary schools in Shenzhen, China. By doing so, this study contributes to the literature on the school readiness involvement of parents with preschool children. Semi-structured interviews were conducted to analyze the above parental behaviors and their influencing factors, to develop practical strategies that positively impact children's cognitive development and learning styles, and to formulate positive intervention strategies that reduce inequalities in their school readiness.

Results show that parental involvement in school readiness is critical to children's cognitive development and learning styles. However, the way of parental involvement varies across different types of schools. Parents' active involvement in different dimensions of their children's cognitive development can help improve their children's cognitive development and learning style as they enter first grade. Previous research shows that parents' lack of understanding of their children's cognitive development and learning styles compromises their involvement in their children's school readiness (Liu & Wu, 2018). SES is the main

factor influencing parents' participation in their children's school readiness. Other influencing factors include stability of family income, level of education, occupation of parents, quality of family caregivers, and adequacy of human resources (McLoyd, 1998).

Parents' arrangement of their children's extracurricular time also determines the latter's cognitive development and learning style after entering first grade. For example, playing mobile games has a significant negative impact on children's learning styles (Chen, 2009). Parents need to control their children's use of mobile phones to help them adapt to their academic demands. Parent's involvement may also exert different effects on their children's academic performance. Given that parents generally lack an understanding of their children's school readiness, kindergartens and primary schools should guide them in formulating scientific and educational theories and improve their awareness of school readiness. Governments should also support those parents who are unable to participate in their children's school readiness due to various restrictions in order for their children to meet the basic requirements of school readiness and to adjust to their academic life.

The significance of this study lies in its use of semi-structured interviews with people of different backgrounds. Findings from these interviews can offer parents with practical guidance in involving themselves in their children's school readiness. These findings also benefit educators and parents by improving their understanding of the focus of school readiness. Governments are encouraged to adopt various policies and measures to mobilize parents' enthusiasm for school readiness and to realize a smooth transition from kindergarten to primary school. They should also support single-parent and multi-children households, actively participate in children's educational activities, improve the confidence of multi-children families in their 'children's education with an open and accepting attitude, prepare children for school, and prevent intergenerational poverty

DECLARATION

I declare that this is an original work based primarily on my research, and I confirm that all references to previous research, whether published or unpublished, have been duly acknowledged in this work.

Signature of student_____

Date_____

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CERTIFICATE OF APPROVAL OF THESIS

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Chapter 1 Introduction

1.3. Background

Children's school readiness is a crucial topic for policymakers, education advocates, teachers, and families (Whitebread & Bingham, 2011). According to the "de-primary" school readiness policy released by the Ministry of Education in 2018, primary school teachers are prohibited from 'developing the literacy skills of children. However, some parents want their preschool children to develop their academic knowledge and skills before entering first grade to ensure their readiness in facing a fierce academic and social competition. This phenomenon reflects the school readiness reality of Chinese schools (Wesley & Buysse, 2003; Snow, 2006; Dockett & Perry, 2007).

The family provides the most important environment for early childhood development; thus, parental involvement and family learning environment can significantly impact children's school readiness levels (Parker et al., 1999). Gilliam and Zigler (2000) proved that the early identification and intervention of children with poor school readiness can effectively improve 'their school adaptation and reduce 'development risks. Given that parents' 'understanding and behavior toward school readiness are significantly correlated with their children's school readiness (Liu, 2013), their intervention in children's school readiness warrants further study (Zhang et al., 2005).

1.2. Current school readiness situation in Shenzhen, China

Chinese preschools, primary schools, and parents have different understandings and practices of school readiness. For primary schools, according to the compulsory education law, children are permitted to enter primary school upon reaching the age of 6. 'Following its introduction of the "two-way connection" between preschool and primary school, the Ministry of Education implemented the "double reduction" policy in 2021, which aims to expand the responsibility of school readiness from preschools to include both preschools and primary schools. However, the new primary-child transition policy emphasizes that primary schools are mainly responsible for developing children's school readiness. Specifically,

primary schools should help children adapt to first-grade education and teaching methods. The national curriculum expect to change the phenomenon of neglecting children's physical and mental characteristics in the past. However, primary school teaching tasks and syllabi have yet to be adjusted, thus preventing the current policies and learning environments from addressing the school readiness problem(Chen, 2018).

Each parent has a unique understanding of school readiness. Some parents equate school readiness with primary school knowledge preparation (Wang & Yang, 2011), while others let their children study literacy and arithmetic too early. Many children also participate in extracurricular classes, such as piano and calligraphy. Some parents even enroll children as young as 3 or 4 years old in calligraphy classes to ensure their school readiness yet entirely ignore these children's cognitive development (Zhang, 2012). By contrast, many parents play a passive role in their children's school readiness and ignore their essential role (Jiang, 2014).

Some preschool educators and parents must emphasize the importance of children's academic preparation and even go beyond the mastery standards requested for students' entering primary school (Liu, 2014). At the same time, the cultivation of children's emotional, social, and cognitive styles is ignored despite its great significance to children's effective school learning and adaptation to their future academic life (Cui, 2011). Pressured by parents, some private preschools offer school readiness courses that mainly involve primary school courses. Those children who learn these courses in advance may easily transition into primary school. However, taking these courses may also lead to poor learning habits (Jiang, 2014). Many private preschools that offer these courses also have the short-sighted behavior of sacrificing children's sustainable development (Chen, 2018).

Preschools in China, which formerly used games to deliver their curriculum, gradually adopted 'the teaching methods, teaching content, and class length being observed in primary schools. Moreover, some preschool teachers purposely deliver difficult and abstract primary school knowledge to satisfy the demands of parents. A "spoon-fed" teaching style replaced the preschool teaching mold, and game time was changed to assembly class, which violates early-age children's cognitive development constructed by direct experience (Jiang, 2014).

The proportion of public preschools in Shenzhen jumped from less than 4% in 2018 to

51.6% in 2022 (Shenzhen Education Bureau, 2022). The large and rapid transition from private to public preschool has brought about curriculum content changes. Under the pressure of student recruitment, private preschools can covertly teach primary school contents to students to cater to their parents' requests. By contrast, public preschools follow the "de-primary" school readiness policy, which prohibits teaching primary school content in kindergarten. Due to the lack of scientific understanding of school readiness and vague policy guidance, another extreme phenomenon has emerged in preschools. Specifically, most public preschools and families follow the "de-primary" policy requirements. Under this policy, "it is forbidden to teach pinyin, math, and counting," thereby forcing preschool teachers and parents to arrange simple activities for children aged 5 to 6 years (Wang, 2020). Preschool arrangements revolve around eating, drinking, and playing low-quality games. Some even preschools equate school readiness with some superficial activities. For example, many kindergartens only arrange a few primary school simulation classes before the end of K3, visit primary schools, and invite primary school students to share their primary school experiences. While these practices will help children establish some simple understanding of primary school, such understanding is superficial and does not meet the children's expectations for their 'learning and deep involvement in school readiness. Meanwhile, some parents send their children to extracurricular classes after school. The results of the 2010–2011 Second Longitudinal Study of Early Children Report show that only a quarter of the surveyed children were ready to go to school and learn reading and math, while less than half achieved proficiency in engagement, social effect, and executive skills (Tu, 2023).

In the United States, former President Bush advocated that every state should enact a clear goal and standard for school readiness (Liu, 2006). The United States is increasing its investment in high-quality care and education. In 2011, the federal government launched the Race to the Top — Early Learning Challenge program, wherein the funded states are required to develop and implement statewide early childhood enrollment assessments to promote consistency in early learning systems and support school readiness. Good life experiences and early childhood care can help close this gap before children enter formal education. In August 2021, the Learning Policy Institute released the High-Quality Early Childhood Assessment:

Learning From States' Use of Kindergarten Entry Assessments in response to the controversial nature of the Kindergarten Entry Assessment. This report aimed to improve such assessment system and promote early learning for young children. Meanwhile, the National Education Goals Council (National et al., 1990) requested teachers to achieve four primary goals, namely, (1) to master knowledge about the growth and development of younger children; (2) to understand the children's interests, abilities, and needs; (3) to know the social and cultural background of each child and their family; and (4) to help children transform their knowledge (Wu & Mao, 2011). However, meeting such requirements proved to be a difficult task for domestic teachers.

1.3. Research Gap

Previous studies have rarely examined 'the differential impacts of parental involvement on children's learning styles and cognitive development upon entering primary school. To fill such gap, this study explores the experiences of parents with children studying in diverse types of schools in Shenzhen. The findings of this work may help identify high-risk school-ready children and develop interventions for improving children's school readiness, reducing their risk of encountering problems in primary school, and mitigating educational inequities in school readiness. Therefore, early identification and timely intervention for high-risk school-age children have important practical significance.

By focusing on the parents of school children, this study explores the status of parental involvement in school readiness, examines the practical problems faced by parents in promoting children's cognition development and learning style, and discusses how family involvement activities effectively promote children's school readiness, learning style characteristics, and family preparation strategies. This study also helps parents establish a scientific and educational understanding of the scientific content of school readiness and provides valuable references for the 'early education activities of families.

Due to the COVID-19 pandemic, preschool and training centers in Shenzhen experienced two significant delays in their school calendars. First, in 2020, the spring semester was delayed from March to June, which was immediately followed by a summer vacation in July. Second,

in 2022, Shenzhen primary occurred school semester delay experience in 2020. Preschool and training centers in Shenzhen were ordered to close from January 7, 2022 to April of the same year, while primary students shifted to online classes. However, arranging online classes for preschool children was deemed inappropriate, leaving parents with no choice but to shoulder the responsibility of ensuring the school readiness of their children. Therefore, investigating how parents involve themselves in their children's school readiness and the impact of their involvement on their children's cognition and learning styles is particularly meaningful in the context of the COVID-19 pandemic.

This qualitative interview case study aims to explore the beliefs and practices of parents involved in their children's school readiness. A qualitative approach is used to examine the influence of 'parental involvement on children's cognitive and learning styles after entering first grade. The socioeconomic status (SES) factors that influence parents' participation in school readiness are then evaluated for their importance. The findings will also show preschool parents how to scientifically engage their children in school readiness.

Located in Guangdong Province, South China, Shenzhen is one of the four central cities in the Guangdong–Hong Kong–Macao Greater Bay Area. Shenzhen has gradually become a super international mega city since its establishment in 1978 as a special economic zone, a scientific and technological innovation center, and a financial and commercial center in China. Shenzhen is a typical diversified city with residents coming from all over the country. Data from the "Shenzhen Statistical Yearbook 2021" reveal that at the end of 2020, the registered resident population of Shenzhen breached the 1 million mark. However, the unregistered population reached 1768.16 million (Shenzhen Municipal Statistical Yearbook 2022, Shenzhen Municipal Bureau of Statistics), far outnumbering their registered counterparts (Shenzhen Statistical Yearbook, 2021).

Moreover, Shenzhen ranks first among the first-tier cities in China in terms of new resident population. The proportion of public preschools in Shenzhen dramatically increased from only 3.8% in 2018 to 51.6% by the end of 2021 (Shenzhen Education Bureau, 2022). By 2020, the number of kindergartens in the city reached 1,967, of which more than 50% (984) are public kindergartens (accommodating a student population of 93,568), 30% (591) are private

kindergartens (with a student population of 56,141), and less than 20% (393) are profitable nature private kindergartens (with a student population of 37,427) (Shenzhen Statistical Yearbook, 2021). Most preschool and primary teachers view school readiness from a localized perspective (Brown & Lan, 2015). Therefore, regional school readiness needs to be studied while considering the actual local situation. Shenzhen also has a diverse cultural background, and the selected interview cases are distributed across different types of schools. Adopting such a broad perspective may help in formulating decisions that influence the implementation of school readiness policies (Wei, 2022).

1.4. Aim and Objectives

This study analyzes the impact of parental involvement in school readiness on children's cognitive development and learning style upon entering the first grade in primary schools in Shenzhen, China. School readiness is a problem in preschool education that involves educational equity (Zhu & Zhang, 2006). Parents scientifically support their children's school readiness to effectively reduce the inequity in education caused by the level of family SES. However, this line of thought presupposes that parents know what is scientifically effective to support their child's school readiness in their sociocultural context. This study then explores the scientific strategy intervention for promoting the cognitive development and learning styles of children and evaluates the effectiveness of the school readiness policy. Under this policy, low-SES families can acquire more public resources to support their children's cognitive development and learning style instead of causing a vast gap when their children step into primary school (Liu, 2006).

After the outbreak of COVID-19, preschools in Shenzhen were ordered to close, and children were deemed unsuitable for online classes because of their unique learning styles and age. In this case, parents had to take the responsibility of supporting their children's school readiness. By exploring this situation, the findings of this study provide insights into how parents can effectively and scientifically support their children's cognitive development and learning during the pandemic.

Interviews are conducted with parents whose children are studying in public primary schools, private primary schools, and international primary schools in Shenzhen. These parents expect that their experiences also apply to other Chinese cities.

The specific objectives of this research are as follows:

(1) To analyze the understanding and behavior of parents with regard to their involvement in their children's school readiness and how such involvement affects their children's cognition and learning styles after entering the first grade of primary school.

(2) To analyze those factors that affect parental involvement in children's school readiness and examine the diverse parental involvement modes under these factors.

(3) To explore scientific and practical strategies that parents can use to positively impact their children's cognitive development and learning styles and to propose intervention strategies for reducing inequities in children's school readiness.

1.5. Research Questions

The primary purpose of this study is to understand the parents' understanding and behavior toward their involvement in their children's school readiness and to explore how such involvement affects their children's cognitive development and learning style upon entering the first grade of primary school. The following research questions are proposed:

1. How do parents involve themselves in their children's school readiness, and how does their involvement affect their children upon entering the first grade?
2. What are the factors that shape the perspectives and behaviors of parents toward their involvement in their children's school readiness, learning style, and cognitive development?
3. How do different parental involvement beliefs and behaviors affect children's learning styles and cognition development?
4. What intervention strategy can parents apply to reduce gaps in their children's learning styles and cognitive development after entering primary school?

To answer these questions, this study adopts the theoretical framework of Bronfenbrenner and conducts a SES questionnaire survey and semi-structured interviews. A literature review is conducted to clarify the concepts of school readiness, parental engagement, learning style,

and cognitive development and to underscore the importance of parents' understanding and behavior toward their involvement in their children's school readiness. This study also explores scientifically effective strategies for parental participation in school readiness that positively influence children's cognitive development and learning style and then proposes active intervention strategies for reducing the inequalities in school readiness.

Results show that parents regard their involvement in their children's school readiness as essential to their children's cognitive development and learning style. However, the way and degree of parental involvement vary across different types of schools. Parents' active involvement in the different dimensions of their child's cognitive development can help improve their child's cognitive development and learning style as they enter first grade. These parents also require a highly scientific understanding of cognitive development and learning styles to maintain their involvement in their children's school readiness (Liu & Wu, 2018). SES is the main factor influencing parents' participation in school readiness. Other influencing factors include stability of family income, parents' level of education, parents' occupation, quality of family caregivers, and adequacy of human resources (McLoyd, 1998).

The discussion and conclusion chapters explain that although knowledge preparation is not the core of children's school readiness, the habits and learning methods developed shape their learning styles. With excellent academic performance, parents tend to be purposefully, actively, and systematically involved in their children's school readiness. Meanwhile, parents of academically underachieving children tend to be passive. In addition to parental SES, parental involvement in school readiness is also influenced by mobile game addiction.

Chapter 2 Literature Review

This chapter reviews the key terminologies related to school readiness, the importance of a child's school readiness, the influence of children's school readiness on their cognitive development and learning style, and the ecological theory of school readiness. Previous studies exploring the parents' understanding and behavior toward their involvement in their children's school readiness, the impact of such involvement on children's cognitive development and learning style upon entering the first grade, and the factors influencing such participation are also reviewed.

2.1 Key Terminologies

School readiness

School readiness can be broadly defined as the readiness of children, preschools, primary schools, community services, and family support. In a narrow sense, school readiness only refers to children. In the United States, students adapt to the primary requirements proposed by the National Education Goals Panel (NEGP) for physical fitness, sports and healthy development, social and emotional development, learning styles, language development, cognition, and general knowledge development (Wang, 2011). A child's learning readiness is related to his/her acquisition of specific skills demanded in school settings, such as being able to sit in silence and respond by instruction (Borko et al., 2000). Children can work collaboratively, listen to teachers, and benefit from educational activities arranged by their schools (Yang, 2012).

Learning style

Learning style refers to individual differences that learners develop during their learning process, including stable personal preferences related to a particular learning behavior. Learning styles include learning attitude, learning skills, learning interest, curiosity, imagination, creativity, willingness to explore, persistence, and concentration (Yu et al., 2010). The parents' understanding of learning style includes listening carefully, showing curiosity,

focusing, taking the initiative, sitting upright, correctly holding a pen, and raising questions. Children also encounter problems when mastering specific skills and general knowledge, such as arithmetic expressions (Liao, 2007).

Cognitive development

Cognitive developmental abilities include attention, memory, language, spatial, and sensorimotor abilities (Cao, 2000). The cognition of children's learning includes preschool children's attention, perception, memory, imagination, thinking development, and learning ability (Li, 2014). Cognitive development also involves cognitive skills and general basic knowledge (Maxwell, 2004) about objects (such as physical properties of objects), relationships between objects (such as mathematical logic knowledge), and customs (such as traditions or rules) (Yu et al., 2010).

Parental involvement

The children's primary caregivers (parents) actively cooperate with other educators and organize educational preparation activities for their children to meet formal education requirements. Parental involvement refers to the direct or indirect involvement of parents in their children's school readiness (Zhang, 2012). As a broad and multifaceted process, parental involvement includes supporting the development of children at home, such as by reading to them or organizing activities. Parental involvement may also be observed in school activities, such as by attending school activities, volunteering, providing companionship, and participating in parent–teacher conferences (Zhang, 2004). Other parental involvement practices include assisting children with their homework, monitoring their homework completion, and managing their schedules (Ma, 2021). Parental involvement strongly impacts preschool children's learning behaviors and cognitive development (Fantuzzo et al., 2004; Lauey et al., 2011).

Parental involvement in school readiness refers to the specific practices, behaviors, and technologies that parents apply to support their children's development and education (Fan & Chen, 2001). Parental involvement in children's school readiness is a multifaceted construct

that includes three main dimensions, namely, parent involvement in school activities, parent involvement in home activities, and parent involvement in school meetings (Fantuzzo & Tighe, 2000). Parent involvement in school activities includes volunteering at the school or in the class. Parent involvement in home activities includes parents providing enriched literacy reading environments for their children, assisting them with their homework, and discussing school issues. Parent involvement in schooling meetings include attending parent–teacher exchanges about children's progress or problems (Xiao et al., 2020).

The disparity among these three dimensions may be shaped by a variety of factors. For example, Fantuzzo (2004) reported that parental involvement in school readiness and school meetings does not affect preschool children's literacy and behavior (Xiao et al., 2020). Meanwhile, volunteering at school and directly communicating with teachers have a less pronounced effect on children's school readiness, while the former only has a limited impact on children's performance. Several studies have also identified a negative relationship between these two forms of parental involvement and children's academic performance (Graves & Brown & Wright, 2011; McNeal, 1999). For example, Wen, Bulotsky-Shearer, Hahs-Vaughn, and Korfmacher (2012) found that parental involvement in school readiness is negatively linked to preschool children's literacy and math skills, while McNeal (1999) found that teachers frequently talk to parents whose children are facing academic or behavioral problems (Xiao et al., 2020). When children face academic and behavioral problems, parents must involve themselves in their children's learning or communicate with their schools. The negative relationship between parental involvement and academic or behavioral problems may be ascribed to two-way interactions. Specifically, a greater parental involvement in school events and meetings does not necessarily reflect better school readiness (Sun, 2007).

Liu and Li (2009) found that involvement in family education activities is the most decisive predictive factor for children's enrollment preparations. Parents and children talk about schoolwork, and participating in regular school activities can help children strengthen their learning in school. These children also recognize their parents' emphasis on education. Therefore, parents' active involvement in education can stimulate their children's initiative to learn and strive for improved academic performance.

Children's school readiness impacts their primary, middle, and college education. Improving children's school readiness quality will directly help them adapt to school and obtain academic achievements (Zhang, 2012). The family is the most important environment for early childhood development. From the perspective of ecological theory, understanding the impact of parents' attitudes and behaviors toward school readiness will help improve their children's school readiness (Wang & Dong, 2018).

The NEGP proposes five domains of children's school readiness, namely, cognitive and general knowledge, learning styles, emotional and social, verbal ability, physical health, and motor skills development. NEGP realized that school readiness is not only about ABC 123 knowledge preparation but also focuses on the interaction among the above five aspects. Zhang Xiangkui et al. interviewed 76 primary and 65 first-grade teachers in primary schools. The first-grade teachers believed that learning skills, cognitive development, and learning styles are the weak links in preschool education (Wu & Mao, 2011). This study then explores cognitive development and learning methods as the main focus and challenge in enhancing children's school readiness. Education experts point out that children are not ready for school. Naturally, their physical and mental development is affected by their preschool, family, and surrounding environments (Yan, 2005).

Among all dimensions of school readiness, cognitive ability is the most stable and predictable factor of student academic performance (Wang & Dong, 2018). Extensive research also shows that language and math skills do not predict children's academic success. While many parents place too much emphasis on their children's primary school knowledge and skills, doing so will negatively affect the other developmental dimensions of these children. However, Chinese empirical studies on the impact of parents' involvement in their children's school readiness on these children's learning style and cognitive development are relatively limited (Wang & Dong, 2018).

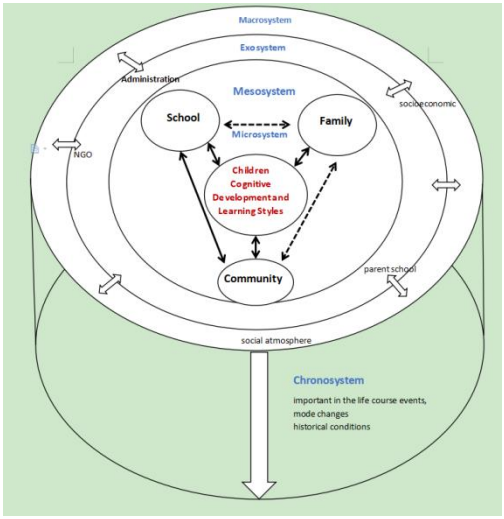
2.2 Theoretical framework

An ecological perspective has been increasingly being applied in previous research on children's school readiness, with family, community, and school receiving increasing attention as impact factors (Gai & Zhang, 2005). The research perspective of ecological theory shows from emphasizing the factors of the individual child to emphasizing the child's environment, from emphasizing children's adaptation to school to emphasizing children and two-way school adaptation (Xue & Zhu, 2007). This study also focuses on the interaction between children's school readiness and parental involvement and the relationship between children's school readiness and family SES.

2.2.1 School readiness and ecological model

Bronfenbrenner proposed the ecosystem theory in 1979 to study the influence of the environment on children's individual development and then described the environment that constitutes the psychological development of children from five different levels, including from the nearest parent–child and teacher–student relationships to the most distant social culture. An environment is a network that includes intertwining levels and properties, which form a central and diffuse network. Meanwhile, the children's education ecosystem contains a microsystem, mesosystem, exosystem, and macrosystem. This ecosystem also puts forward policy and practice recommendations for promoting children's development (Wang, 2021) (Figure 2.1).

Figure 2.1 Bronfenbrenner's ecological chart (Source: *Wang, 2021*)



Microsystem

A microsystem mainly refers to an environment in which children interact with one another and establish direct and close connections. This environment is mainly reflected in how parents and other family members treat their children and their responses to the environment. Microsystem is the inner circle layer that affects children's development. Every factor in the microsystem will have a positive or negative impact on the development of school-ready children. From the perspective of a microsystem, parents' educational level, parenting style, and family resources (such as book and multimedia resources) affect the development of children's speech, cognitive skills, learning styles, motor skills, and emotional and social aspects (Wang, 2021). Parents' involvement in their children's school readiness should provide favorable conditions for the development of these children's cognitive skills and learning styles. Parental involvement also significantly impacts these children's interactions with other microsystems.

The ecological model is a widely accepted theory for studying children's school readiness. Many studies have adopted such perspective in investigating left-behind and rural children (Wang, 2021). Specifically, they examine the education problems faced by left-behind preschool children in rural areas and formulate support strategies in consideration of three aspects, namely, children's preparation, family preparation, and kindergarten preparation (Li, 2020). School readiness education for rural and left-behind preschool children should provide an effective support system to meet their essential needs. Families should provide internal support for their children's school readiness, and kindergartens should provide adequate education (Wang, 2021). This study focuses on parents in Shenzhen who are involved in their children's school readiness. Unlike rural areas, Shenzhen has a relatively high level of developed. School-aged children in this city are also highly diverse and are distributed across public, private, and international schools.

Mesosystem

A mesosystem refers to the relationship between two or more microsystems in which an individual is located. A school-readiness mesosystem for children often refers to multiple connections among families, schools, and similar groups, particularly between families and

schools, between families and communities, and between families and children's peers. From the mesosystem perspective, families should establish good interactive relationships with schools, communities, children, and colleagues. The key objective for families and schools is to reach a consensus on the connotation, value, and realization of school readiness. Meanwhile, families and communities should jointly support and promote children's school readiness. Handling relationships between families and children's peers also affects the quality of children's school readiness. Parents care about their children's social interactions and consciously train their social interaction ability by providing them with opportunities for social interaction (Chen, 2012). Therefore, a close cooperation among various microsystems should be actively mobilized in order to maintain good interactions and a high degree of consistency among parents, schools, communities, and other factors.

Exosystem

An exosystem is an extension of mesosystem wherein children are not directly involved. Factors in such an environment play an indirect role in preparing children for school. These factors include parents' work environment and educational background, families' social networks and community background, mass media, government agencies, and service agencies. School-ready children themselves are not directly involved in the exosystem. Events in such an environment influence parental involvement in their children's school readiness (Wang, 2021).

SES can be classified in different ways. Usually, SES includes family income, parents' education level, and parents' occupation. Parents in poor families must keep busy making a living and thus have no time to provide sufficient educational guidance for their preschool children. Meanwhile, children raised in a wealthy family may develop a sense of superiority. Some scholars have pointed out that parents with low economic status tend to adopt educational and upbringing methods, such as authoritative, arbitrary, unjust, or corporal punishment, and place additional emphasis on their children's obedience (Liu & Wu, 2018). Meanwhile, parents with high economic status are highly democratic toward their children and pay attention to their verbal communication. For example, parents' work units can provide

employees with good benefits and adequate rest time, thus giving them more time to participate in their children's school readiness. Having enough rest time also allows parents to accompany their children to school, understand their children's behavior patiently and meticulously, and learn about their school readiness. However, some parents may need additional time to rest in order to have the time and energy to participate in their children's school readiness (McLoyd, 1998). Parents' working hours will thus impact parental involvement in children's school readiness.

Macrosystem

A macrosystem refers to the cultural and sub-cultural background of the country or region where the child lives. The family's income, parents' education level, and maintenance of marriage are all affected by the macrosystem, which involves economic, social, educational, legal, and political systems. Microscopic, intermediate, and external systems are concrete manifestations of a macrosystem. Belief systems in a macrosystem, which are transmitted through family, school, neighborhood, and workplace cultures, shape the learning patterns of school-ready children and ultimately affect their cognitive development and learning styles (Ma & Ma,2011). In a macrosystem, social and cultural backgrounds impact parents' lifestyles, psychological characteristics, values, and standards of acceptable behavior, which in turn affect their children's development. Preschool education research highlights the importance of exploring the significance of the early education policy for children's development and education. For example, in its "de-primary" schooling policy, the Ministry of Education emphasized the importance of the game orientation teaching model in kindergartens, thereby reversing their previous model of teaching primary school content and conducting primary school classes. Individuals cannot change their macro environment (Zhu, 2006). In China, the admission policy is the primary macrosystem that faces parents.

Scientific school readiness is vital in children's subsequent learning and lifelong development. The evolution of the school readiness policy over the past 70 years can be divided into three periods. In the first period, kindergartens and preschools are mainly responsible for preparing children for primary school. The policy does not clearly distinguish

kindergartens from school readiness education, so the basic principles and main tasks of school readiness must be clarified. The two-way executive body between kindergartens and primary schools from 1989 to 2009 also needs to be clarified. In 1989, the State Education Commission promulgated the "Working Regulations for Kindergartens (Trial)," which stipulated that kindergartens and primary schools should cooperate closely. The idea is that the scientific connection between these institutions depends on their two-way cooperation instead of the unilateral responsibility of kindergartens.

Take the "Several Opinions on the Current Development of Preschool Education" issued by the State Council in 2010 as a watershed. For more than 10 years, the Chinese school readiness policy started from carrying out the unique governance of "primary school" in kindergartens, insisting on de-primary teaching, and setting up transitional policies for the beginning grades of primary schools. Regarding activity courses and other aspects, the basic requirements, essential tasks, and development directions of the transition work in the new era have been further clarified.

As a milestone event in promoting the connection between kindergarten and primary school science since the founding of the People's Republic of China, in April 2021, the Ministry of Education issued the "Guiding Opinions on Vigorously Promoting the Science Connection Between Kindergartens and Primary Schools" (hereinafter "Guiding Opinions"), which is the first document promulgated at the national level that provides action guidelines for the smooth development of early childhood connection work in the future.

The constant change in its policies reflects the Chinese government's continuous exploration of school readiness that suits the background of the current era. The macro policy environment also affects parental involvement in children's school readiness.

2.2.2 Reason for adopting Bronfenbrenner's theoretical framework

The purpose of preschool education is to help children develop in all aspects. The policy and strategy of preschool education heavily rely on investigating children's development. Given that ecological theories and psychology focus on children's development, ecological theory has many connections with preschool education research. Therefore, ecological theory can

provide a unique perspective that enlightens and guides preschool education research (Zhu & Xue, 2007).

2.3 Importance of school readiness

"The Guidelines for Primary Education" issued by the Ministry of Education define early childhood education as the initial stage in school and lifelong education. Early childhood education must lay a good foundation for children's short-term and lifelong development (Wei, 2013). These guidelines propose two goals of early childhood education. The short-term goal is to prepare children for school, while the long-term goal is to lay a solid foundation for children's lifelong learning (Wu & Mao, 2011). School readiness provides a head start for children's future development, and having a good school readiness may increase the possibility of success in future education. However, only some children are ready to adapt to school life in all aspects. Due to gaps in their starting points, these children tend to experience school adaptation problems (Gai et al., 2008). The school readiness program has also effectively narrowed racial and ethnic disparities. Since the anti-poverty movement in the 1960s, the United States government organized public funds to provide compensatory nursery services and early education for children in socially and economically disadvantaged families, with poor academic performance, and with special needs. Young children who participated in the intervention government project showed significant improvements in their academic performance compared with those children living in poor communities and did not receive the intervention (Yan, 2005). The improvement effect on these children's performance in reading and was sustainable, thus effectively reducing their repeat rates, juvenile delinquency, and antisocial behavior during school education (Liu, 2006). In addition to academic performance, cognitive development problems in children from low-income families can mostly be improved through early learning. A wider gap between the school starting age of children only increases the difficulty in closing such gap (Liu, 2006). Actions to close the gap in test scores for students of different races may advance racial equality more than any broad-based political strategy (Liu, 2006). Excellent school readiness is seen as an effective strategy to close this gap.

School readiness serves as the foundation and the head start of the whole lifelong education system. Therefore, school readiness should be deployed around governments, schools, societies, and parents and involve multiple subjects to promote the sustainable development of young children (Wang & Yang, 2011). School readiness is an essential part of people's livelihood in preschool education. However, the importance of school readiness beyond the domain of preschool education and its role building a harmonious society should also be recognized (Liu, 2006). In 2021, the Ministry of Education issued the "double reduction" and "school readiness" policies, which are oriented toward the connection between primary schools and preschools. China's preschool education reform, which lasted for more than 20 years, followed the direction of the National Association for the Education of Young Children (NAEYC), which not only advocated child-centered games and early literacy education but also triggered de-primary school blind obedience (Yan, 2005). The dual reduction policy is also important to relieve the burden of children's school readiness to primary school.

Children's school readiness is a good starting foundation for children's lifelong development and a meaningful way to improve the education status of children in low-income families. Improving the overall cultural quality of people and maintaining the country's long-term strength and competitiveness can lead to education fairness. However, preparing for admission requires various qualities from preschool children before they can enter primary school. The key features or potential conditions of school readiness include personal and environmental characteristics, but the latter is often ignored (Gai et al., 2008). As a systematic project of primary education, school readiness needs the support of societies, schools, parents, and other players in order to be carried out smoothly.

2.3.1. Status of parental involvement in school readiness in mainland China

Chinese parents attach great importance to education and believe that a good starting education can lay a solid foundation for the future development of their children. Therefore, in addition to investing a considerable amount of time and money in preparing for enrollment, these parents also actively participate in the academic preparations of their children (Xiao et al.,

2020). Parents in mainland China often involve themselves in their children's education, help them learn at home, and support teachers in their work. They believe that as parents, they should abide by the school requirements and supervise their children's learning at home (Li, 2019). This culture originated from respecting teachers, and children perceive teachers as experts in school education. However, parents prefer using family resources or paying tuition to compensate for a school's deficiencies instead of communicating directly with the school.

Compared with their participation in family education, parents in mainland China participate in school activities less actively. Some kindergartens organize "parent conferences" and "special lectures" and use family visits to promote relevant knowledge, encourage family cooperation and exchanges, strengthen relationships, and support parents in preparing their children for school (Wang & Yang, 2011). However, despite involving themselves in their children's preparations for school admission, parents generally lack consciousness and understanding of school activities. Coupled with the few opportunities provided by schools to parents, the activities organized by these schools sometimes come in conflict with the schedules of the participating parents. Therefore, the involvement of these parents tends to be limited to family participation.

In China, parents participating in school education are generally passive and marginalized. They usually attend parent meetings just to passively listen about their children's performance and problems in school. However, these parents should be given a chance to communicate their children's questions to their teachers (Xia, 2019). Therefore, many parents in mainland China require further scientific school readiness. Some families also do not involve themselves in their children's school admission preparation, while others are anxious about the capability of their children to adapt to primary schools. While some parents unilaterally understand school readiness, they are preparing without thinking, thereby causing prejudice in helping children (Zhang, 2013).

The above literature reveals that parents generally lack scientific and systematic school readiness. Therefore, this research focuses on parental involvement, school readiness, and behavior.

2.3.2. Difference between primary school and kindergarten

The preparation stage from preschool to primary school is known as “"the transition between preschool and primary school (children’s connection) and between preschool and primary school” instead of “preparation for enrollment” or “preparation of development tasks.” School readiness emphasizes that the entire development task of children aged from 0 to 6 years is to prepare themselves for their academic life. The readiness to transition from preschool to primary school needs to recognize the differences in age, intervention perspective, and focus groups (Gai et al., 2008).

Children’s enrollment needs to be adapted because of the differences in the learning methods, learning requirements, and cognitive development of students in primary and kindergarten. Upon entering primary school, the learning and cognitive methods of children become vastly different from those in preschool. Learning method is the most critical issue in school readiness (Zhang, 2011). After entering primary school, children experience significant differences in teaching content and education requirements. For example, preschool children are not given any homework, examinations, or grades. However, in primary school, children not only have to complete their homework every day but also need take irregular exams, thus adding to their pressure of learning (Yan, 2005).

From the perspective of the learning model, students will be grouped into collective classes upon entering primary school. However, in kindergartens, students usually play games as their main activity, with group classes only being a supplement. In the first grade, students are required to complete an abstract logic collective course quickly. Children’s cognitive activities are reflected in their thinking activities. They grasp the concept, understand, make judgments, and move things forward. They have a relatively fast speech development in early childhood . However, the coherence, integrity, and logic of their speech remain in the development process and only reach maturity at the end of their childhood. Children also show limited development in their abstract logical thinking, which only appears in late childhood (Li, 2007; Guo, 2012). Learning models for preschool children can be mainly grouped into four categories, namely, observation and comparison, operating experience, companion cooperation, and testing and exploration. Mr. Chen Weimei pointed out that children

understand the world through shapes, colors, and sounds rather than relying on language exchanges to gain knowledge and understanding (Lin, 2015). Due to the above cognitive age characteristics and the influence of children's psychological development, the study arrangements for preschool students significantly differ from those for primary school students.

A game-based learning environment based on preschool education must be transferred to structured and systematic primary school courses. Through this process, children's identity, learning location, psychology, cognition, and daily life will undergo massive changes, and children will face various difficulties in their cognition and psychology. Aside from the vast differences in their curriculum settings, these children need to familiarize themselves with their primary school environment. In addition, these children witness changes in their class scale, proportion of teachers and students, and study and rest times when transitioning to primary school (Liu & Li, 2015).

In terms of duration, kindergarten students only attend group classes for less than 30 minutes per day, while primary school students need to attend 6 sessions of 40-minute group classes every day. Such changes impose high requirements on children's continuous attention and self-control, which are necessary for their cognitive development (Xu, 2019).

Given the changes in their teaching methods, teachers also set new expectations for their students' performance. Preschool education requires and accepts children's cooperation in an "activity" manner, while primary school education requires students to participate in the class in a "quiet" manner, which poses strict requirements on their attention and self-control. In addition, teachers in preschools use the game teaching mode to teach their students, interact with them, and learn from them through doing and creating, whereas students in primary schools are required to sit in their classrooms for several hours, listen carefully to what their teachers are saying, and ask for their teacher's permission before answering questions. Each class in an primary school usually has 50 to 55 students, which makes classroom games a challenging endeavor. As a result, students no longer feel free in the classroom (Wang & Dong, 2018) and feel a severe and rigorous atmosphere in their classes.

Children also have a short attention span, poor control and suppression ability, and low learning efficiency (Zhang et al., 2018). For example, some children aimlessly walk around in

their classrooms, excuse themselves to go to the toilet during class, and be in a daze or even play with toys while their classes are ongoing. Therefore, when preschool children are given less than two months to transition to primary school, they are unable to meet the requirements of their new learning environment, thus leading to their poor adaptation.

Considerable differences can also be observed in the curriculum requirements and models of primary schools and kindergartens that may bring discomfort to children. Teachers in primary schools also exclusively focus on their students' education and completely ignore the continuity of their development. Preschool and primary school students show different characteristics across various stages of their learning, and preschool students are unable to instantly transition to primary school a day after finishing kindergarten. If these students are unprepared for admission, then they will be unable to adapt to their new primary school environment or satisfy the demands of their teachers (Chen, 2002). As stated in the review, a big gap can be observed in the cognitive and psychological development of preschool and primary school students. The transition from preschool education to primary school is gradual and does not take place overnight. Due to the vast differences between primary schools and kindergartens, children require the support of their parents during their transition. This study then aims to support parents in helping their children prepare themselves for primary school.

2.3.3 Impact of parental involvement on children's school readiness

Parental involvement is an indispensable prerequisite for school readiness (Yan, 2005), especially during the COVID-19 pandemic when many children had to study at home and parents had to participate in their children's school readiness actively or passively. Various family factors directly or indirectly impact the development of children's psychology, behaviors, interests, sociability, and other aspects (Rui, 2008; Li, 2005). As an environment that fosters children's growth and development, a family provides significant support for children's school readiness (Zhang, 2012). Professor Cai pointed out that children acquire initial life experiences, social cognition, and behavior norms through parental guidance and influence (Zhang, 2012).

School readiness is a critical stage in the transition of children from preschool to primary school. This process affects the achievement patterns established by children at the beginning

of their formal education and profoundly influences their subsequent academic achievements. Therefore, the impact of parental involvement on children's school readiness warrants further investigation. Although scholars have underscored the importance of parents and school engagement in school readiness for children's education (Epstein, 2010), the mechanisms that shape parents' school readiness practices need to be explored further (Jaime, 2018). To fill such gap, this study mainly explores the impact of parental involvement in school readiness on children's academic and cognitive development and learning styles.

Numerous studies have demonstrated the prominent effect of parental involvement in school readiness on children's academic performance, social skills, and school behavior (Cooper, 2004). By involving themselves in their children's educational activities in their own homes, parents can make a huge difference in their children's school readiness (Lau, 2011). Parents' quality time at home with their children may significantly impact children's school readiness levels, and parental involvement in children's school readiness may help prepare kindergarten students for primary school (Xiao et al., 2020). Families engage in their children's homework exercises, read to them, engage them in family-related learning activities (such as singing and playing games), and talk to them about school and daily life issues. These parental involvement behaviors are consistently and positively associated with children's academic performance.

Parental involvement in school readiness strongly impacts a child's development in various dimensions, including emotional, social, language, and learning styles (Yuan, 2021). In early childhood, parents often involve themselves in the early literacy and numeracy exercises. Shared book reading, storytelling, singing, and book writing can encourage children to develop their literacy skills and positively impact their reading performance and cognitive development (Norman & Ortiz, 2010). Related learning activities also positively affect children's early mathematical development (Yuan, 2021).

Parent–child cooperation in literacy-related and numeracy activities can predict early math achievement (Zhou et al., 2007). Parents can contribute to their children's cognitive development in many ways. For instance, they can arrange for their children to do housework independently to effectively promote their motor skills development. Taking these children

out for a walk will also contribute to their emotional and social development, which are positively correlated with their school readiness (Sun, 2007).

Children's language development is another essential aspect of cognitive development. If parents take the initiative to teach their children some natural and scientific knowledge or often read books to them, then they can effectively promote their children's cognitive development. Parent–child reading activities can promote children's language skills, oral expression, and academic achievement. They can also provide children with opportunities to develop essential social skills, such as conversational switching, self-expression, and self-regulation (Farver, 2006). Both parent–child play and problem-solving interactions are related to school readiness. Parental effective and scientific participation in school readiness can promote children's cognitive development, academic performance, and social development, thus effectively avoiding behavioral problems upon entering primary school (Hill, 2001). Watching TV together and teaching nursery rhymes and music can effectively promote the development of children's cognition and general knowledge. Other parental behaviors can also promote children's school readiness, such as sending children to extracurricular classes and participating in committee activities (Sun, 2007).

Parents' educational practices, including their involvement in children's education, parent–child reading, parent–child interactions, and tutoring, all impact their children's development. Parents' active involvement in their children's education promotes a healthy and all-around development. Parents take the initiative to explain natural knowledge and common scientific sense to their children. They often take their children to watch movies and performances and participate in sports competitions. Fathers tend to arrange family upbringing activities that prepare preschool children for primary school. In parent–child activities, children's language skills and cognition development are related to their mother's sensitivity. Similarly, parents often tell their children stories, read to them, and teach them characters, words, and numbers to improve their children's early literacy skills and language and spelling awareness (Zhang, 2013).

Among various family learning activities, the impact of parent–child co-reading on early childhood psychological development cannot be ignored. Parent–child reading refers to the

practice where parents and children read story or picture books together. The frequency of parent–child reading is significantly and positively correlated with children's early literacy skills, and the quality of parent–child reading interaction can predict children's reading motivation and reading interest to a large extent. The amount of parent–children co-reading may also affect children's current or subsequent school adaptation outcomes (Gai & Liu, 2008).

Parental engagement with children in literacy-related activities and involvement in numeracy activities strongly predict early learning (Manolisis et al., 2013). Home reading and literacy environments and the quality of books that children read serve as strong predictors of early childhood math learning (Barnes & Puccini, 2017). Parents' involvement in their children's learning and emphasizing parent–child reading practices at home can positively affect children's academic performance (Jaime, 2018). Mothers' academic orientation beliefs are positively correlated with home reading and literacy environments, which in turn are positively correlated with children's reading and math performance (Jaime, 2018). Studies have shown that children with better development of number skills have the opportunity to gain experience with various numbers at home. Their family members tend to use numbers frequently, and they often observe their mothers using math to solve daily problems (Zhou et al., 2007).

In a study on the effect of family environment on children's school readiness, Sun Lei found that parents provide their children with educational resources, such as books and toys, at home. Parents explaining nature and scientific knowledge to children, taking them to performances, zoos, and museums, reading books together, and helping them with their schoolwork are significantly and positively correlated with their children's school readiness. In this case, enhancing parental involvement can effectively promote children's school readiness (Sun, 2007).

Hill and Craft (2003) found that parental involvement in children's school readiness improves primary school children's emotional regulation, prosocial behavior, and academic skills in reading and math (Cooper, 2010). Parental involvement in school education activities can subtly communicate to children the importance of school learning, thus motivating them

to gradually internalize academics. The school's value is also conducive to students forming a positive attitude towards their school (Zhou et al., 2007).

However, parental involvement in children's school readiness takes many forms. A mix of positive, negative, or even no relationship between these forms and children's academic performance can be observed (Boonk, 2018). Some scholars suggest that the impact of different dimensions of parental involvement in school readiness on early childhood academic performance needs further investigation (Xiao et al., 2020).

Some researchers find that parental involvement in children's learning has a stronger relationship with children's learning styles and cognitive development than parental participation in school activities and meetings (Fantuzzo, 2004; Lau et al., 2011). Wu and Qi (2006) reported some adverse effects of direct parental involvement in children's learning on preschool children's academic scores. Using a sample mainly comprising African–Americans with low income and education levels, they found that parents with low income and educational attainment may need adequate access to excellent educational resources. Therefore, parental involvement in school readiness may have harmful practical impacts when parent–child interactions have poor quality (Xiao et al., 2020). Children with low SES are also given relatively few opportunities to participate in parent–child reading activities.

The impact of parents' participation in their children's school readiness may be positive or negative depending on their family's SES. Therefore, this study will also investigate the SES factor that affects parents' participation in children's school readiness.

2.3.4 Adverse effects of knowledge preparation on school readiness

Parental involvement in children's school readiness faces three problems. First, a developmental imbalance can be observed among the five areas of parental involvement in children's school readiness. Specifically, there is over-preparation in some areas of development (e.g., cognitive and general knowledge and language), and there is little readiness for emotional and social learning styles (Gai et al., 2008). Due to the lack of scientific and comprehensive educational concepts and awareness in parent and kindergarten education, children's development in their learning styles, emotions, and sociability has yet to receive

enough attention (Jiang, 2014). Emotionally and socially, children's life and social skills still need to be fully developed and exercised due to their short play and peer group activity times. These children lack basic self-care skills due to their excessive self-centeredness and demands in getting along with peers, and they lack enough confidence and experience to solve problems independently (Gai et al., 2008). Meanwhile, some parents overemphasize the development of their children's cognitive and language areas, but they also need to pay attention to how their children exercise their motor skills. Some children develop fragile motor skills because they spend much of their time in learning activities, such as reading. According to the Research on the Connection between Preschool and Primary Schools, a survey jointly conducted by UNICEF and the State Education Commission of China, about 21 to 25 million new students enter primary schools in China every year. Many of these students feel that their class time is extended, that they receive too much homework, and that they are facing heavy psychological pressures and mental burden. Some students also develop physical reactions, such as fatigue, lack of sleep and appetite, and weight loss. As a result, many of these students show poor academic performance and face many classroom violations, which fuel their frustration for having low self-confidence, their fear or dislike of learning, and their nostalgia for kindergarten life (Jiang, 2014).

Second, given that families, kindergartens, and societies emphasize the early intellectual development of children, the children's cognitive ability, knowledge mastery, and written language development tend to be overdeveloped. In terms of knowledge acquisition, many children have far more knowledge than necessary before entering primary school. While early development in children's cognitive ability, knowledge acquisition, and written language is beneficial, this competition-style overdevelopment consumes much of these children's time, leaving them with no time to meet their developmental needs in other areas. Regarding cognitive ability, the thinking development of children aged 3 to 6 years is characterized by concrete image thinking, and abstract logical thinking is the initial germination. However, due to accelerated education, abstract logical thinking has developed significantly, while concrete image thinking has yet to be fully exercised and developed (Gai et al., 2008).

Third, regarding learning methods, children form negative attitudes toward learning when they have learned too early and too much, thus stifling their innate desire for knowledge. In addition, when they finish the learning content for lower primary school grades in kindergarten, these children become disinterested in their learning content upon entering primary school. Therefore, these children become prone to forming bad habits, such as being distracted during class and fiddling with things in the classroom (Jiang, 2014). To further understand the influence of parent participation factors on children's school readiness, this study explores the actual situation of parents' participation in their children's school readiness. Results of such investigation can help enrich the relationship between parental participation and children's school readiness and provide theoretical and practical guidance for parents.

2.3.5 Parental involvement in understanding school readiness

Children should have equal access to formal school education, that is, their academic achievement relies on the provision of fair and equal learning opportunities by schools. Children's academic achievement is not solely determined by the availability of equal opportunities in school education but also by their level of school readiness. Children's school readiness level comes from their families' (mainly parents) condition or their preschool teachers' emphasis on school readiness and the training and experience they have gained in an environment where they are valued (Yang et al., 2006). Many studies report a significant correlation between children's cognitive, emotional, and health readiness when entering school and their subsequent academic performance (Xu, 2019). The understanding of parents' emphasis on school readiness affects the school readiness level of their children.

Adults' expectations, demands, and structures constantly change in the social and cultural environment in which children live (Vygotsky, 1978). The expectations set by adults nowadays for their children are greater than those set by their own parents, thus assigning more responsibilities and adult-like tasks and roles to children (Mary et al.,1989). Given that these complex social factors shape the cognitive development of contemporary children, individual and cultural differences and family backgrounds can also lead to significant differences in children's cognitive abilities.

Parents' notions of school readiness include their cognition and attitude toward school readiness, their educational expectations for their children, their attribution attitudes, and their knowledge of child development. Their different understandings can impact the development of their children's personal characteristics, labor quality, behavior, intelligence, and other aspects. In this case, parents' understanding of their children's school is inevitably linked to their children's readiness. Therefore, to understand the status quo of children's school readiness, we can start by investigating parents' school readiness understanding and practice (Zhang, 2012). The correlation between children's school readiness understanding and behavior can improve the family's comprehensive understanding of school readiness (Zhang, 2012).

Parents' school readiness understanding is equally essential (Belfield & Garcia, 2014). By understanding the importance of school readiness, parents can help build the preparedness of their children for school. Parents can actively support their children's school readiness by exposing them to experiences that inspire their interest in what is to come at school (Sahin & Sak, 2016). They should also understand their children's general growth rhythm and different development stages considering that each child has a unique development speed and background. They should not expect their children to develop at the same level and speed as the other children (Sahin & Sak, 2016). According to Taylor (2004), parents' beliefs about school readiness can influence their parental engagement and subsequently affect their children's early learning outcomes (Jaime, 2018).

Some parents can quickly understand the importance of developing their children's social adaptability. However, some parents have a one-way, one-sided, and superficial understanding of school readiness. They regard school readiness as knowledge preparation, thus blindly emphasizing their children's reading, writing, and arithmetic skills (Wang & Xiao, 2011). Some parents may adopt incorrect attitudes toward unprepared children, such as offering invalid criticism or accusations, setting inappropriate demands, or misclassifying the ability of their children, which will damage children's self-confidence and become failure factors that influence children's follow-up learning motivation, learning interest, and ability to satisfy learning requirements. Some parents think that cultivating skills and knowledge is an integral

part of school readiness, but primary school teachers believe otherwise (Yang et al., 2006). As a result, early home education deviates from the expectations of formal schooling, thus creating adaptation-related problems for many children because they need to be genuinely prepared for a new learning style and cognition development. Parents should also raise questions about their children's school readiness perceptions. Their understanding of scientific school readiness can help prevent certain problems, such as incompatibility with children's development and education (Yang et al., 2006).

The differences in parental school readiness perceptions may lead to differences in children's achievements. Nevertheless, parents' perceptions of school readiness are correlated with their educational level, race/ethnicity, immigrant background, and local educational background. When parents show positive attitudes toward their children's school and learning, these children tend to respect their teachers and their studies and experience few conflicting experiences at school. The failure to have a comprehensive understanding of educational knowledge will cause family cultural activities to lag behind family cultural resources, thus resulting in an imbalance in parents' investments in their children's school readiness education and development (Yu, 2009). The differences in such perceptions can also lead to different developmental outcomes for children in education. Authoritarian parenting styles are often detrimental to children's emotional and social preparation, while gentle encouragement, patience, and support are conducive to their healthy physical and mental growth. Children's pre-reading and pre-mathematics test scores significantly correlate with mild behavior, positive support, and acceptance attitude from parents (Hess, 1984). Parents showing aggressive, violent, and harsh attitudes toward their children's education may also limit their children's vocabulary association ability, distract them from learning after school, and increase their risk of developing aggressive behavior (Zhang, 2012).

During the early childhood stage, parents place too much emphasis on their children's academics and even limit or strongly oppose the "learning interference" brought about by playing games and interacting with peers. However, a "free" learning style is a characteristic of children's self-discipline (Zhang, 2001). Such understanding and behaviors of parents will harm their children's future development because they no longer emphasize children's

attributes that they acquire through play, such as self-control, interest in learning, and emotional and physical health. Preschool children generally learn by constructing their own knowledge, interacting with their environment, and exploring, observing, comparing, and interacting with their peers (Vygotsky, 1978; Andrea, 2017).

Parents' beliefs about school readiness influence their children's early academic achievement through parental engagement behaviors; given that parents hold different beliefs about readiness, the relationship among those beliefs that influence behavioral orientation should be examined (Jaime, 2018).

2.4 Main body of school readiness

The United States Department of Education's 2000 Goals Working Committee (NEGP) believes that children's school readiness should act as an ecological support system that includes the aspects of child readiness, school readiness, and family and community support. These three parties should support one another and combine organically (Gai et al.,2008).

School readiness has been widely investigated over the years from different perspectives, starting from the original theory of physiological maturity to the now generally accepted ecological theory model. According to Gesell's theory of developmental maturity, children's physical maturity serves as the basis of their school readiness, and age is the essential indicator of their school entry. Children have a self-matured biological clock, and their physical and psychological development will proceed smoothly according to this clock. Children become ready for school upon reaching a certain age (Yue, 2017). However, children's school readiness follows a biological schedule that varies widely among children (Catherine et al., 2006). Therefore, providing school experiences before these children reach maturity may prove to be useless. Influenced by the development of mature theory, "delayed school enrollment" has become a primary school readiness intervention (Yu et al., 2010).

According to the maturity model, children's academic readiness should be determined by their biological age. In other words, children should attend primary school when they reach a certain age. According to the compulsory education law in mainland China, parents or legal guardians have the obligation and right to send school-age children to complete compulsory

education, except for those children's having physical health problems. The age of compulsory education in mainland China is six years old, which means that primary schools must unconditionally accept any child above this age. Every child has different characteristics and cognitive development levels, and the starting point of compulsory education varies across countries. In mainland China, "enrollment" refers to entering the first grade of primary school. Regardless of competence, primary schools must be prepared to welcome school-age children to receive compulsory education. The underlying logic behind maturation is that schools are responsible for building children's school readiness instead of their individuality (Yue, 2017).

However, in European and American countries where preschools serve as the starting point of compulsory education, "enrollment" refers to the act of entering preschool; each country has a different definition of school age (Liu, 2006). In New Zealand and Australia, children are allowed to go to school upon reaching the age of five. Meanwhile, the United States has a highly flexible school age, although some public primary schools stipulate that the legal school age ranges from six to eight years. However, children under six years can still apply to primary school if they pass some quality examinations. This flexible arrangement allows school-aged and talented children to receive primary education promptly, thus matching national primary education to these children's needs (Que, 2017).

For a school-age child, starting primary school can be as tricky as a newborn facing a new world alone. The school environment, family, teachers, environment, and facilities all influence children's school readiness. Directly entering primary school is particularly difficult for those children who have skipped preschool. Children are also subjected to a new set of rules. Therefore, children, families, and schools should work together to facilitate children's adjustment to primary school (Zhao, 2011).

As their children's first and most essential enlightenment teachers, parents profoundly impact their children's school readiness. During the COVID-19 pandemic, students must study at home due to the closure of schools and training centers. Parental involvement in school readiness is much more feasible than their involvement in the community, and preschools, especially domestic ones, do not arrange online classes for young children. During the

pandemic, parents replaced preschool students' learning tutorial functions entirely. Therefore, this research focuses on parental involvement in school readiness.

Community is one of the central bodies of school readiness. School readiness not only refers to the preparation of individual children but also requires the preparation of parents, communities, preschools, and primary schools. Parents must develop the corresponding educational understanding and improve their parenting strategies as their children grow up. The community must provide parents and children with the connection between early preschool and primary school. In other words, a community is a systematic project comprising schools, families, and other aspects. Therefore, cultivating children's social adaptability requires the cooperation and support of many parties to achieve an excellent educational effect. Preschools need to focus on children's overall development under the guidance of school readiness theory. Primary schools need to provide individualized and differentiated instructions to meet the learning requirements of children at different readiness levels. However, due to the imperfect construction of educational service mechanisms in mainland China, the abovementioned preparations need further improvement (Gai et al., 2008).

To support children's school readiness, the United States government's "Guide to School Readiness" states that "a child's social and academic success is essential to the family, community, nation, and the nation's economic growth. National and state governments should lead in providing basic foundations and coordinated services for families" (Liu, 2006). Developed countries have succeeded in improving school readiness support for children with poor socioeconomic and academic backgrounds. For example, the Head Start Program in the United States is an internationally renowned school readiness intervention program that was launched in 1965 to reduce the gap between children with poor academic performance and those children who are just starting school. By contrast, mainland China has an insufficient number of such programs. The country also needs to implement universal community-based interventions for school readiness (Liu, 2006).

According to the maturity model, biological age is the only threshold for school readiness, and the school acts as the main body of school readiness. Children should only enter primary school and be educated at a certain age regardless of their developmental status. From a broad

perspective, if school readiness is regarded as a combination of the above three preparation parties, then the protagonist must include children, parents, schools, preschools, communities, and even the government. While these preparation parties may have different focus, they all share the same purpose, that is, to help children's adapt to their academic life. From the perspective of children's preparation, it is unreasonable for five- or six-year-old children to prepare for school spontaneously and consciously. After all, primary school life and learning are abstract concepts for these children. They can only prepare themselves for school under the guidance and support of schools and their families. Therefore, schools, families, communities, and the government should provide valuable resources and support to help children prepare for school (Wang & Dong, 2018).

Many factors in the above five circles of the ecosystem affect the cognitive development and learning style of school-ready children. However, this study only focuses on the factor of parental involvement. Compared with schools, community, policy, and cultural factors, parental involvement in children's school readiness is the most adaptable and modifiable micro-factor.

2.5. Family factors affecting children's school readiness

Family SES plays a significant role in parents' understanding of school readiness, parenting style, family's social disadvantage, family learning environment, and other aspects (McLoyd, 1998). Bronfenbrenner's ecosystem theory usually divides variable indicators in the family environment into non-process and process variables. Non-process variables include family income, family structure, and parents' education level, while process variables include parent–child reading activities, available learning tools, and TV watching. The difference between these two variables is that the non-process variables are relatively stable, whereas the changes in the process variables are relatively significant. In addition, non-process variables cannot directly act on children but act through the process variables. The positive effects of children's school readiness are mainly manifested in their cognitive development, general knowledge

expansion, and language development (Sun, 2007). Both parents' professional knowledge and the availability of multimedia resources in the family affect children's school readiness.

Family support, including parents' parenting cognition, parenting style, family's economic and cultural resources, and family education investment, is essential to children's school readiness. Many studies also show that various family factors substantially impact children's school readiness (Wang & Wang, 2017).

Parents' physical health level, mental health status, age, intelligence, income, marital quality, expectations for their children's academic achievement, language level, emotional investment in children, frequency of corporal punishment, and parenting pressures may affect children's early education experiences and behaviors and the atmosphere in their family environment, thereby indirectly affecting school readiness. For example, poor parental health can reduce home learning experiences for children and affect their relationships with their parents, whereas children raised in a wealthy family language environment tend to develop excellent vocabulary (Brooks & Griffin, 2006).

The impact of family SES on children's school readiness is reflected in two aspects. First, family SES directly affects children's school readiness; second, family SES modulates the relationship between other family participation factors and children's school readiness (Costeff & Kulikowski, 1996). Family SES indirectly affects children's school readiness through parental involvement in children's upbringing, family social status, and family learning environment (McLoyd, 1998). Therefore, this study also analyzes the influence of parents' participation in children's school readiness through family SES factors.

2.5.1. Importance of family SES

Families also play an essential role in children's school readiness education. The family is the primary environment in which children grow up, and previous studies have mainly examined the two aspects of family SES and family learning resources (Wu & Mao, 2011). Several studies have shown that the home's learning environment positively impacts children's outcomes and is positively related to family SES (Jaime, 2018). Families with different SES significantly differ in their school readiness understanding and behaviors, and high SES

families have higher understanding and behaviors compared with low SES families (Zhang, 2012).

Scholars have also established a strong correlation between family SES and children's health status, cognitive development, socio-emotional development, and learning quality, whose impacts last from birth to adulthood (Robert & Robert, 2002). McLoyd (1998) pointed out that SES can affect children and argued that parents need to realize the impact of family SES on their children's development by directly participating in their educational activities.

Studies on the impact of socioeconomic disadvantage on child development show that the development of children's cognition is significantly affected by family SES, especially family income (Yin, 2019). McLoyd (1998) concluded that the family's socioeconomic level can predict early childhood cognitive function, speech development, academic achievement, social skills, and emotional and behavioral adaptations. Similarly, SES indirectly affects child development through other aspects, such as parenting styles, social risk factors in the family, and the home learning environment (Yin, 2019). For example, Martha (2003) found that SES is based on the risk factors in the family, such as violent criminal exposure, depression of the caregiver, control of the caregiver, and lack of social support. The home learning environment includes in-person reading, rich stimulation, unique learning activities, and reading materials at home.

Many studies have established a strong correlation between family SES and children's cognitive and language development. Family SES is significantly related to children's mathematical preparation, language preparation, and learning quality. A survey of preschool children in Australia found that family income is significantly and positively correlated with children's cognitive development outcomes, such as vocabulary, early literacy, and math skills. Meanwhile, a study of preschool children aged ~6 years found that family SES is significantly and positively correlated with children's early literacy and math skills (Xia, 2020).

Families with superior SES significantly improve children's math skills, such as in time and space, patterns and statistics, and quantitative calculations. The language skills (listening, speaking, reading, and writing), learning qualities (imagination and creativity, curiosity, and initiative), purpose awareness, and focus of children from families with superior SES are

significantly better than those of children from low SES families. Children from low-income families who lack educational resources are also exposed to high amounts of stress, thus affecting their probability of achieving academic success (Farver, J. M., 2006).

Children with low SES also have slower speech development than children with high SES. This trend starts at a young age and continues until their school years. SES is highly correlated with how many words parents say to their children. The richness of vocabulary, the speed of questioning, and the language length used by families effectively predict children's language development. The use of these languages is highly correlated with family SES (Gai & Liu, 2008). Children with different SES also show significant differences in their complex sentence comprehension scores. Preschool children with socioeconomically well-off parents score higher on word recognition and oral fluency tests than preschoolers from families with financial difficulties (Xia, 2020). The relationship between SES and cognitive performance in cognitive development begins in infancy, with SES predicting low intelligence scores and cognitive performance (Xia, 2020). The number of family books and multimedia resources can actively promote the development of children's cognition and general knowledge. If parents often buy new books and read books for their children, then they can promote their children's development of learning styles. Children with different SES also show significant differences in their mathematics knowledge at the start of their preschool education. Children from economically poor academic performance and racial minority families show lower math achievement levels than advantaged children. A growing number of evidence also shows that SES-related differences in mathematics knowledge emerge during early childhood because children from economically poor academic performance families receive less mathematical development than children from middle-class families (Gai & Liu, 2008).

Family SES can predict children's school adaptation after enrolment. Relative to their counterparts with low family SES, children with high family SES are more likely to acquire positive school attitudes and better academic performance, show more positive social adaptation behaviors and less externalized social adaptation problems after entering school, establish close teacher–student relationships, achieve a popular status among their peers, and exhibit positive social interactions in their interpersonal interactions (Yu, 2014). Family SES

has an essential impact on the development of children in all aspects. Children with high family SES often have access to rich educational resources, excellent education, and companionship. An ideal growth environment is conducive to children's positive school adaptation and reduces the possibility of problems (Yu, 2014).

Family economic backgrounds are closely related to children's achievement gaps. Children from low-income families score significantly lower on various tests compared with those coming from high-income families. Neuroscience research also finds significant socioeconomic gaps in cognitive control, learning and memory, and reading, which are three critical indicators of school readiness (Liu, 2006). Children from middle-class families also outperform those from economically poor academic performance families on tasks involving the left hemisphere language system (by 1.1 standard deviations) and frontal cognitive control systems (by 0.68 standard deviations). Childhood poverty and its associated effects largely explain the racial and ethnic disparities in school readiness (Liu, 2006).

Home learning resources have two sources, namely, home resources (e.g., computers, books, and toys of educational value at home) and other learning resources provided by families to children (e.g., taking children to libraries and museums). Williams found that learning resources in the home (including specific educational materials, toys of educational value, home computers, and books) are significantly and positively associated with children's school readiness. The more these children use learning tools, the more likely they are enrolled in school (Wu & Mao, 2011). Family SES and learning resources include family income, family size, books, toys, audio-visual electronics, and computers. Children from low-income families often have limited educational resources and face high levels of stress, which reduce their likelihood of achieving academic success (Farver & Xu, 2006). Home computer use is associated with children's school readiness and cognitive development. Children who use computers regularly at home and school score higher on school readiness tests than those who use computers less often (Li et al., 2006). While the literature has already established the impacts of SES on children's cognition, this study continues to explore how SES affects the cognitive development and learning style of children entering the first grade of primary school through parental involvement in their school readiness.

Some studies have shown that SES is positively correlated with the home learning environment, which in turn positively affects the learning outcomes of children (Wang et al., 2010). These studies suggest that parents with more financial resources can provide their children with more cognitive stimulation materials, thereby positively impacting these children's school readiness outcomes (Zhu & Zhang, 2006).

2.5.2. Influence of family SES on children's school readiness through parental involvement

The problems associated with the school readiness of children with poor academic performance and SES are mainly caused by several factors. First, the preschool education experience received by these children is generally insufficient or of low quality. Second, these children lack family learning resources. Third, the parents of these children have poor parenting ability (Gai et al., 2018). Children's school readiness skills are related to their families' socioeconomic resources. Children from low-income families face higher risks and difficulties in school readiness than those from upper-middle-income families (Wolf & McCaw, 2017). The socioeconomic gradient of children's school readiness is mediated by parental involvement. However, the effect of SES on children's school readiness becomes insignificant when parents engage in parent–child reading and recreational activities (Xiao et al., 2020). Studies show that children's school readiness is less likely to be affected by SES when their parents regularly engage in parent–child reading and recreational activities (Wu & Yang, 2019). Although SES dramatically influences children's school readiness, active parental involvement continues to exert a positive effect.

Although SES cannot be easily changed as a non-process influencing variable, family SES, as a moderating factor, can influence children's development through parental participation in their education. Meanwhile, parental involvement in children's school readiness has a significant predictive effect on early childhood development (Sun, 2007). For example, the American scholar Fan Tzu pointed out that parental participation in children's home learning activities is positively related to preschool children's learning motivation, attention, and language development and is negatively related to their problematic behaviors

(Sun, 2007). Parents' direct participation in their children's educational activities can effectively cultivate these children's self-discipline ability and reduce the occurrence of problematic behaviors. Domestic studies also show that the school readiness level of preschool children can be effectively predicted based on parental participation in family education activities, such as early childhood literacy and cognitive activities (Sun, 2007).

Parent–child reading, encouraging conversations, outdoor activities, and problem solving can affect a child's development. Parent–child reading activities can effectively promote children's language skills, oral expression, and academic achievement and provide them opportunities to develop essential social skills. Parent–child play and interaction in problem solving are all linked to school readiness. Mothers' reading habits and educational styles are also associated with children's school readiness. Previous studies show that parental language use characteristics and educational strategies in the home account for 25% to 60% of the differences in the school readiness of white and black children (Brooks & Griffin, 2006). In parent–child activities, the mother's sensitivity, support, and encouragement are related to children's language skills and cognitive development. Those children whose mothers provide high support and involvement in their education demonstrate high school readiness levels and expressive language skills (Brook & Griffin, 2006).

Numerous studies show that the children of parents with high levels of participation develop better cognitive skills and learning styles (Xia, 2020). Parents carry out parent–child reading activities and games to stimulate their children's cognitive development and improve their early reading and math skills. Taking children to museums, zoos, and other places can expand children's humanistic knowledge. High-level parental participation in preschool children's academics is closely related to the development of cognitive school readiness. The excellent educational participation of parents with low SES can narrow the gap between their children and other children with high cognitive school readiness. Children learn basic adaptation skills from their parents during the early stages of their development. Parents spend their time and energy on their children, guide them in their homework, and provide them emotional support, which are conducive to developing their children's positive emotions. Through excellent communication and interactions with children, parents subtly demonstrate

to their children how to communicate, cooperate, and negotiate with others and help them develop their social abilities. Parents with socioeconomically poor academic performance can contribute to their children's acquisition of social-emotional and cognitive school readiness skills by actively participating in their children's education (Xia, 2020). Parents can take the initiative to explain TV shows to their children while they are watching TV together. They may teach these children nursery rhymes or ancient poems, which can promote their language and cognition development. Parents also frequently teach songs and ancient poems and read them with their children. Enrolling children in extracurricular classes can also promote their school readiness. If children can perform their housework independently, then their parents may take them outdoors for a walk as a reward. By reading stories to their children, fathers can effectively improve their children's cognition development and learning style. However, frequently taking children to playgrounds can harm their learning styles and school readiness (Sun, 2007). Understanding those factors that affect children's cognitive development and learning styles is valuable for designing the interview questions. This study then adopts variable and non-variable research perspectives to explore those family factors that affect parents' involvement in school readiness and children's cognitive and learning styles.

2.5.3. Family-related factors affecting school readiness

2.5.3.1. Impact of parental income on school readiness

Williams found that household income has the strongest association with children's school readiness, followed by parents' educational attainment. Family income directly determines a family's material living standard, and income is among those factors that influence the number of educational materials that a family buys for a child (Xia, 2020). High-income families are highly likely to provide their children with rich learning resources and a conducive learning environment. The family's use of learning resources is significantly and positively correlated with children's school readiness. The more these children use such learning resources, the higher their school readiness will be (Gai & Liu, 2008).

Meanwhile, children in low-income families are at risk of having inadequate school readiness (Wu & Mao, 2011). Hill found that family income moderates the relationship

between parenting style and children's school readiness and that parenting styles in low-SES families significantly impacts such readiness (Wu & Mao, 2011). Rafoth found that low-income children's school readiness is influenced by their mothers' education and fathers' occupation, but such effect is not observed in high-income families. Instead, the parenting attitudes in families with high SES significantly influence children's school readiness (Wu & Mao, 2011).

Family income is correlated with self-regulation in learning quality. Gershoff (2003) reported that a high household income is associated with high social competence, high self-regulation, and less problematic behavior of children graduating from kindergarten (Huang & Huo, 2014). Compared with their low SES counterparts, children with high SES show better physical and mental health, family material resources (e.g., nutritional environments), living conditions, and family psychosocial processes (e.g., parents' emotions and educational understanding). Families with low SES receive less community support (e.g., recreational and healthcare services), community resources (e.g., security and trust), and school resources (e.g., guidance materials and library collections). Family SES affects children's physical health and cognitive development, and emotional and behavioral problems affect children's school adaptation (Yu, 2014). Despite not directly affecting children's development, family SES plays an indirect role through income as a moderator.

2.5.3.2. Effect of parental education level on school readiness

Family background characteristics, such as the mother's education level and family economic status, are usually regarded by researchers as essential background variables that affect children's learning quality. Children of mothers with low education and household income score relatively low on learning quality, while children of mothers who did not finish high school rate lower on task persistence and eagerness to learn than those of mothers who finished high school. In addition, Bundy (2006) found that children of mothers with a four-year college degree score higher on learning styles than those of mothers who had just completed secondary school (Yu, 2014). The quality of children's learning is affected systematically when their mothers have a high school diploma, vocational or technical school degree, or part-time

college experience. However, children of mothers with a graduate or professional degree obtain the highest scores for study quality (Yu, 2014), thereby suggesting the importance of children's mothers having at least a four-year college degree. Mother's education level also explains 2% of the variation in learning styles (Yu et al., 2010) and affects children's school readiness and school adaptation levels. Specifically, a higher mother's education level corresponds to a higher children's school readiness and school adaptation levels (Yu, 2014).

In a 2000 survey by the National Center for Education Statistics, only 38% of children whose mothers have low levels of education already know the alphabet upon entering kindergarten, while 86% of children whose mothers have high levels of education already know these letters (Shan, 2020). Maternal educational attainment is positively correlated with children's school-ready academic performance. Meanwhile, mothers of children with learning difficulties generally have lower educational attainment. This finding can be explained by the fact that mothers are in close contact with their children and thus have the most significant impact on them. Mothers' low education level poses a challenge in guiding their children's learning, which in turn has a non-negligible effect on these children's learning difficulties; in other words, parents' literacy undoubtedly affects preschool children's cognitive development and learning (He, 1999). In families headed by parents with specific cultural accomplishments, children may ask their parents for advice without any worries. Under such a family culture and learning environment, children's learning enthusiasm is quickly aroused, and their thirst for knowledge is greatly satisfied, which is conducive to their development of cognitive abilities.

2.5.3.3. Impact of different educational institutions on children's school readiness

The SES situation of the family determines the quality of educational institutions that parents choose for their children. The quality of early childhood education institutions also affects children's school readiness, and children with low SES often face difficulties in obtaining quality education. Early childhood education institutions are essential in children's development of cognitive skills and learning styles. The participation of children from poor SES families in an early education institution promotes their cognitive verbal, literacy, and math skills (Gai & Liu, 2008).

The influencing factors of qualified early education programs in preschools can promote children's development, but some of these factors can directly affect the quality of these programs and thus subsequently affect children's school readiness. Some structural features of the program, such as teachers' characteristics, number of children involved, teacher–student ratio, teachers' training, program location, and computer usage, can affect its quality and the children's social, emotional, and cognitive knowledge development (Li, 2006; Yu et al., 2010).

Preschoolers develop better academic skills and cognitive development when they enter good educational institutions (Magnusson et al., 2004; Jaime, 2018). Changes in the educational understanding and behaviors of preschool teachers with different qualities directly affect the results of children's school-readiness education and are related to the level of children's development. Therefore, improving teachers' quality of education is necessary for children to adapt to a regular school life (Wu & Mao, 2011). Kindergarten quality is also an indirect factor that parents choose for their children. Kindergarten is not a compulsory education stage, and parents can choose different kindergartens at different costs. About 50% of public kindergartens in Shenzhen have sufficient and stable government funds to ensure the stability of their teachers and staff, the abundance of teaching tools, and the training of teachers and staff. Parents can also enroll their children in public kindergartens for a low fee. They need to have a local hukou and real estate in Shenzhen to meet the enrollment admission conditions. Therefore, in the interviews, kindergarten quality will be treated as a reference factor affecting children's cognitive development.

2.5.3.4 Double-edged sword of electronic products as a learning resource

Electronic devices are learning resources with have pros and cons for school readiness. Children's e-learning plays an essential role in the development of their school readiness. Some studies show that children who watch more programs and cartoons for children in their early years are not as good as those watching educational programs in terms of language ability and school readiness. Watching educational programs can help children develop their language, vocabulary, and reading abilities (Sun, 2007).

Some parents allow their children to play with a variety of electronic devices to stop them from crying. In a sense, electronic devices act as “babysitters” that divert children’s attention. Those parents who often work overtime and have little time for their children use electronic products as electronic nannies. Therefore, many children are took care by their grandparents, and provided mobile phone without any phone usage limitation, and the doting of the elderly children promotes the fascination of young children with electronic devices (Sun, 2019). This practice is not conducive to cultivating children’s self-control and even destroys children’s school readiness and cognitive skills and learning style development.

Some studies show that children from low SES families use electronic products for extended periods. A multivariate analysis identifies low maternal education as a risk factor that is highly correlated with children’s excessive usage of mobile devices. Mothers with low educational levels have poor self-control and do not realize that the long-term use of electronic products harms their children’s physical and mental health. Several foreign studies also point out that children at the bottom of society use electronic products more frequently than their relatively well-off counterparts. Parents themselves often watch TV or play games in their spare time, which harms the development of their children.

Preschool children have intense curiosity. If parents do not guide and educate them correctly, then these children will have poor self-control. Grandparents have limited energy for taking care of children, and babysitters need to exercise great responsibility and restraint to prevent children from excessively using electronic products (Zhang et al., 2018). Self-control is an integral part of cognitive development in school readiness. If parents do not interfere with their children’s use of electronic products, then the excessive use of electronic products will be detrimental to children’s school readiness.

2.6 Children’s cognitive development and learning styles

Early childhood is a crucial stage of cognitive development where children develop various thinking and intellectual processes. Cognitive ability mainly refers to how individuals process information and includes their attention, memory, learning and general knowledge, problem-solving skills, imagination, and creativity (Lin, 2011). Many factors affect the learning and

adaptation of primary school students, and cognitive ability is critical to their academic performance in primary school; thus, cognitive development should be the primary task of children's school readiness (Lin, 2016), and understanding preschool children's cognitive development is particularly significant.

2.6.1 Children's learning style

Learning style includes learning attitude, learning interest, curiosity, imagination, and creativity (Yu & Gai, 2010). Each individual demonstrates different learning tendencies, including learning emotions, attitudes, motivation, persistence, and preferences for learning environment and content, in his/her learning process. Changes in a learning environment and content may also shift some individuals' learning strategies and tendencies.

The learning strategies and tendencies consistently demonstrated by learners reflect their learning styles. In addition to information processing, the learning process reflects learners' physical, psychological (in addition to cognition, emotion, and intention), and social characteristics or preferences (Li & Zhou, 2004). This influence comes from parents' demonstrations and rewards for specific interactions between their children and their physical worlds and social environments; through the reinforcement of these rewards, children gradually become accustomed to a specific behavioral pattern, which affects their interpretation of certain situations and their responses to others, thus gradually leading to a unique cognitive style (Yu & Gai, 2010). At least four environmental factors influence the development of children's cognitive and learning styles, namely, gender role expectations, family environment, school education, and culture (Li & Zhou, 2004). These factors form their unique learning style.

2.6.2. Importance of cognitive development for school readiness

Children's school readiness emphasizes the suitability of preschool children's actual knowledge and psychological development levels for primary school. The learning readiness of preschool children consists of three factors. First, the physiological factor concerns the maturity of children's brain development. Second, intellectual development, which includes

learning content, methods, and quality, is an essential guarantee of children's learning effects. Third, non-intellectual factors, including learning interest, motivation, attitude, and social development, affect children's school readiness for learning. Learning style and cognitive and general knowledge domain scores positively predict children's academic performance (Yu, 2014). Studies show that children's cognitive abilities significantly impact their intellectual and academic development (Guo, 2004). The academic performance gap among students has complex underlying reasons. Meanwhile, the gap in children's learning ability and academic performance can be attributed to the difference in their levels of cognitive ability, which in turn leads to variations in their academic performance (Yu, 2010). Children's cognitive development prepares them for the mental work involved in learning reading, math, and other primary school subjects. The development of these cognitive abilities affects not only children's academic and intellectual activities but also their social knowledge, moral reasoning, and language abilities. The development of social cognitive abilities is a crucial aspect of child development, and cognitive ability is a core indicator of intelligence. Cognitive development is also related to the social status of children during adulthood. Cognitive ability may even be described as a decisive factor affecting children's upward mobility (Yu, 2014). Therefore, this study focuses on the two dimensions of learning style and cognitive development.

Piaget argued that children's intelligence will roughly develop following a particular order, and the development of each stage depends on the completion of the previous stage. Family education should adapt to the cognitive development sequence of children and conform to their age characteristics. Parents should always know the stage of development of their children and the best family education strategy to implement (Wang, 2016). The development of children's cognitive abilities should be investigated to guide future scientific interventions (Lin, 2016). Therefore, this study explores the parents' understanding and behaviors toward their scientific participation in their children's school readiness and how their participation impact their children's cognition development upon entering primary school.

2.6.3. Strong predictability of control inhibition

Both self-control and executive control are essential components of cognitive development. Many studies show that self-control and executive control functions are essential predictors of individual learning achievement and are even more predictive than intelligence quotient (Wang & Dong, 2018). However, neuroscience research identifies cognitive control, learning, memory, and reading as substantial predictors of school readiness that also lead to significant socioeconomic class gaps (Zhang et al., 2018).

Control inhibition refers to the conscious inhibition of dominant and automatic responses, such as avoiding distractions and resisting inappropriate responses or activities (McClelland, 2010). Therefore, children's inattentive listening in the classroom and inability to keep up with their teachers' teaching rhythm may not only be a problem of habit formation but may also be due to their limited cognitive ability.

2.6.4. Status of cognitive development and learning styles

A large number of studies reveal that cognitive development and learning style are the most stable and significant predictors of school readiness, while emotional sociability, including social skills, problematic behaviors, and mental health, are less correlated with school achievement (Claessens et al., 2009; Claessens & Engelm, 2013; Duncan, Dowsetfc, & Ciaessensa, 2007). Cognition development and learning style readiness have essential impacts on children's academic performance and school readiness. Between these two, cognitive development has received the most attention in the literature due to its role as the basis for children's future learning. Cognitive development also prepares children for the mental work involved in learning reading, math, and other subjects in primary school. Therefore, cognitive development affects their academic and intellectual activities, social knowledge, moral reasoning, and language abilities (Harradine, 1996).

Gai et al. (2003) found that some children face problems with their learning styles and cognitive development of school readiness. Although cognitive development is a significant predictor, parents pay more attention to their children's learning skills, such as learning English letters and cultivating their counting ability (Harradine, 1996). Therefore, this study

explores how parents' involvement in children's school readiness promotes the latter's cognitive skills and learning style development.

Cognitive ability is often associated with learning mathematics and Chinese. The level of cognitive ability also affects the mathematics achievement of lower-grade students. Therefore, systematic cognitive ability training improves the cognitive ability of lower-grade students and simultaneously enhance their learning ability and mathematics performance (Zhang, 2020). Overall, cognitive development shapes learning and is formed from the process of learning (Bransford et al., 1999).

2.6.5. Children's cognitive development level indicators

Cognitive development affects school readiness, and children's cognitive development level has many indicators. A study on children's cognitive development under the condition of learning readiness reveals that the perceptual-motor ability, inhibitory control ability, working memory, figure-spatial ability, and language fluency of children around 6–8 years old are essential indicators of their cognitive development (Lin, 2008). Therefore, this study examines these aspects of school readiness, learning styles, and cognitive development. Cognitive ability includes inhibitory control ability, working memory, figure space ability, verbal fluency, and Chinese and mathematics performance of primary school students. Working memory has a higher predictive ability than the three indicators of literary adaptation (i.e., teacher evaluation, Chinese academic performance, and mathematics academic performance), thereby indicating that working memory is the most critical factor affecting the literary adaptation of primary school students. Graphical space ability significantly influences first-grade primary school students' mathematics and Chinese academic performance and has the highest predictive ability for mathematics academic performance. Inhibitory control ability significantly predicts teachers' evaluation of first-grade primary school students. A weaker inhibitory control ability corresponds to a lower evaluation of task focus. Verbal speed and fluency significantly predict the academic performance of first-grade primary school students in Chinese and mathematics (particularly their Chinese academic performance). Sensorimotor ability is significantly correlated with the verbal fluency of primary school students (Lin, 2016). Therefore,

understanding children's cognitive ability can guide future scientific interventions in children's school readiness.

2.7. Supporting parents' involvement in school readiness

Improvements in parent–child relationships and the home learning environment can significantly improve children's school readiness, so many support programs have shifted from child- to parent-oriented interventions. For example, the "Parents to become teachers" intervention program launched in Missouri, United States aimed to improve parents' support for their children by promoting responsive parent–child interactions, parent–child reading activities, and family cultural activities. Those parents who participated in the program increased their frequency of reading with their children, and as a result, their children's scores on the school readiness test improved significantly (Gai & Zhang, 2005).

Children from low SES families often have poor physical health and cognitive, language, social, and emotional outcomes. Therefore, intervention programs targeting parents' economic conditions are increasing, such as the Aid to Families with Dependent Children program, a traditional early financial intervention program in the United States. Recent projects of this program include the New Hope Project, the Family Transition Program, the Minnesota Family Investment Program, and the Self-Sufficiency Project, which indirectly affect children's development by improving their parents' economic conditions, parenting behaviors, family resources, and parent–child relationships (Gai & Zhang, 2005). These programs also aim to improve child development, parenting skills, and family economy (by offering employment opportunities for parents) (Wu & Mao, 2011). As such, these programs positively impact parents' involvement in their children's school readiness.

China lacks programs that support disadvantaged families' involvement in children's school readiness. Therefore, this study explores the impact of family SES on parents' involvement in children's school readiness and how vulnerable families involve themselves in such initiative.

2.8. Children's school readiness assessment criteria

2.8.1. Evaluation scale of cognitive development of children

Children's school readiness is mainly evaluated in three ways, namely, standardized individual tests, adult evaluations, and ecological orientation evaluations. The five domain structures in the American NEGP model are suitable for describing the school readiness of Chinese children, but some differences are observed in the content of specific items. Based on the NEGP five-domain model, the School Readiness Test Battery (SRTB) (Gai, 2007) is a series of tools for assessing Chinese children's school readiness. These tests address the problem that the previous measurement tools are overly limited to cognitive and verbal measurement while ignoring the other areas of entrance preparation and can comprehensively reflect the five areas of entrance preparation. Gai Xiaosong et al. compiled a series of tools for investigating children's school readiness based on NEGP's five-domain model of children's school readiness and for tracking the development of children's school readiness tests in recent years abroad. Among these tools are the School Readiness Checklist (SRC)-Teacher version, SRC-Parent version, SRTB-Comprehensive Version, and Physical Fitness and Motor Skills Assessment tools for the five sub-areas of development, speech development, learning styles, emotion and sociability, cognition, and general knowledge. These tools have been proven reliable and valid after testing among kindergarten and first-grade primary school children. They are also easy to use and have a reasonable structure, making them applicable across different situations to measure children's school readiness and to identify those with insufficient school readiness (Lv, 2008).

Children's school readiness can also be evaluated using scientific measurement tools, such as the Early Development Instrument (EDI) compiled in the study. Most Chinese measurement tools focus on testing language, cognition, knowledge, and skills yet relatively ignore the physical, emotional, and social domains. EDI consists of 103 items spread across 5 domains of study, namely, physical health, social competence, emotional familiarity, language, cognitive skills, and general knowledge, with each domain having several questions. The score for each domain ranges from 0 to 10. The Chinese version of the Chinese EDI was implemented in Hong Kong and was proven a good instrument for assessing the school readiness level of Chinese children (Sun, 2007).

The Children's Learning Aptitude Test, which was adopted in the China Urbanization and Labor Migration Research project of the Chinese Economic and Social Data Center of Tsinghua University, is a cognitive assessment tool for evaluating children's understanding of primary school textbooks. This measurement tool is suitable for Chinese children aged 3 to 15 years and includes three sub-tests for evaluating children's Chinese language, mathematics, and English abilities (Tao et al., 2013). Meanwhile, the state of vocabulary list in Chinese language ability reflects children's learning and memory abilities and their ability to reason, judge, understand, and classify.

With accumulating experience, researchers have gradually reached a consensus on the characteristics of early childhood development assessment tools. Early childhood development assessment evaluates cognitive function and routine reading and writing skills. However, other areas of development need to be covered, including motor, socio-emotional, and physical fitness, which affect children's ability to improve in school. Those factors affecting early childhood development not only involve the individual abilities of children but also the influence of families, communities, and societies. Therefore, early childhood development assessment should consider not only the abilities of children but also their living environment and the education they will receive. The assessment should also consider the impact of the external environment on children's abilities and be oriented toward providing recommendations for early development programs and strategies. Early childhood development assessment differs from other individual assessment tools aimed at identifying children's developmental defects; instead, this assessment mainly evaluates the development level of the entire group. The application value of this assessment lies in its evaluation of the target population's development level and the implementation effect of early development projects, and the results can be used to mobilize society toward continuously improving early childhood development. Based on this consensus, a research team from the McMaster University in Canada developed EDI in the 1990s. This scale comprises 103 questions that are answered by kindergarten teachers and covers 5 major energy areas. EDI mainly targets children aged 3.5–6.5 years. Since its launch in 1998, EDI has been used as a tool to monitor

the early development of preschool children in Canada. This scale has also been used in dozens of countries, such as Australia and the United States (Zhang et al., 2018).

The Brief Early Skills and Support System Assessment for Entrance Readiness was proposed by the Cambridge University Family Education Research Centre Index to measure children's school readiness level. This scale comprises 18 items covering the dimensions of behavioral adaptation and language and cognitive development. Sample items include "usually willing to share with peers" and "understand interrogative sentences," which are rated on a scale of 1 ("completely disagree") to 5 ("completely agree"). A higher score corresponds to a better development level, and the items are scored in reverse (Kan & Zhou, 2021).

The group early childhood development assessment tool is an essential indicator of early childhood development. This tool, which was initially used to evaluate school readiness, has an excellent predictive effect on children's future development (Zhang, 2004). Unlike developmental screening tools that screen for particular developmental abnormalities, the group early childhood development assessment tool evaluates the early developmental abilities of a group of children. Having many low-risk children with academic difficulties is believed to impose a far more significant burden on society than having a small number of high-risk children with developmental disabilities. Therefore, from a population perspective, research on this topic is socially meaningful (Zhang et al., 2018). The criteria and orientation of the assessment are also important in determining how children are assessed for their school readiness.

The Bracken Basic Concepts Scale, an ability test for kindergarten children, has been confirmed as a good predictor of children's performance after school. This test has attracted increasing attention as it can be completed in only a few minutes. A series of assessment tools for children's school readiness, referred to as the Children's School Readiness Study, were also developed to identify whether preschool children are generally developing in five areas, namely, learning styles, cognition and general knowledge, emotion and sociability, verbal ability, and motor skills (Sun, 2007).

Recent studies have employed the Gesell School Readiness Screening Test to assess whether children are ready for primary school. The Developmental Indicators for the

Assessment of Learning-Revised is another widely used screening test that uses graphic matching, graphic copying, duplicating block combinations, basic concepts and words, and repeated sentences. While this test has a specificity index of 0.98, its sensitivity index is only 0.43 (Stebbins & Mclntosh, 1996), which needs to be improved to efficiently detect high-risk children. The Brigance Primary and Grade 1 Screen is an assessment tool designed for assessing primary and early school children on their motor skills, counting, body parts recognition, ability to follow verbal instructions, understanding of numeral concepts, writing their own names, grammar, and language fluency. The Bracken Basic Concept Scale is an ability test designed for primary children that has been widely proven to be a precise predictor of children's performance after primary school.

Given that adult evaluation is based on the evaluations made by parents or teachers on the long-term observation of children, such evaluation reflects the typical and representative behavior or development level of children over a period, which is more ecologically valid. However, in adult evaluation, the subjectivity of the evaluators and relativity cannot be easily excluded due to the different evaluation standards of evaluators (Yu et al., 2010).

This general information is part of children's cognition and reflects their learning style, memory skills, and cognitive development. Given that school-aged children need to answer these basic information questions, they need to recall the information they have acquired from formal or informal educational experiences to gain a high score. However, measurement tools for the learning style and cognitive development of children in the lower grades of primary school are rare (Lin, 2016). Therefore, this study develops a set of cognitive development measurement standards that are suitable for the research context.

In 2000, the National Association of Early Childhood Education, the American Association of Early Childhood, and the United States Department of Education published "The Kindergarten Enrollment Standard" by using natural observation methods to collect evidence related to children's real lives and by using historical perspectives to collect evidence on children's development. Each assessment tool should be suitable to the language and culture of the target subjects. Information may be collected through multiple channels, such as by checking children's homework, observing and interviewing children, and listening to their

parents' reports. Evaluations should be helpful enough to guide teaching instead of improving children's academic performance, and simple rankings should be performed (Yan, 2005). Given that data for assessing school readiness are often used to assess individual performance, a wrong assessment can create an assessment risk. For example, even though a child has reached school age, s/he may be rejected by schools when s/he fails the school readiness assessment. Meanwhile, teachers may be penalized for having below-average classroom assessment scores. Therefore, school readiness assessments should consider these potential dangers before collecting evidence to minimize risks (Yan, 2005).

The school readiness scale is simple, convenient, easy to operate, comprehensive, and has good measurement properties, making it convenient for research involving a large sample. The adult evaluation method can be easily implemented on a large scale, can cover a broad range, and can obtain evaluation results in areas that are difficult to cover by individual tests, such as children's emotional sociability. This study aims to explore the cognitive development of first-grade students in primary schools with strong and weak learning styles. To this end, this study combines quantitative tables and observation evaluations to define those students with and without suitable qualifications. The adult evaluation method is then mixed with qualitative research to select the interview subjects.

The literature review investigates the parents' understanding and involvement in their children's school readiness, those factors that influence such involvement, and the impact of such involvement on children's cognitive development and learning styles. This section also clarifies the Bronfenbrenner theoretical framework, the current situation of parents in mainland China and their need to involve themselves in their children's school readiness, the impact of such involvement on children's school readiness, and the important role of family SES. The review also highlights the importance of influencing children's cognitive development and learning styles through parental involvement in school readiness. The management of electronic products, although outside the scope of SES, is another factor that affects parents' involvement in their children's school readiness. School readiness is a comprehensive concept where cognitive development and learning styles play core roles. High-quality early childhood care helps children prepare for school and lays the foundation

for them to adapt to their school learning and life. Teacher–child interactions are integral to the quality of early childhood care and education process and are closely related to children's school readiness. Hamre et al. and Leiva et al. argued that high-quality teacher–student interactions predict preschool language, writing, and arithmetic performance. Howes et al. and Marshburn et al. established an association between the quality of teacher–student interactions and the social achievement of preschool children. High-quality early childhood care is particularly helpful in addressing the cognitive, emotional, behavioral, and school readiness risks posed by poverty to infants and young children. Birchener et al. found that high-quality teacher–student interactions predict higher levels of social skills and lower levels of behavioral problems among children. Therefore, this study focuses on the impact of parents' involvement in school readiness on their children's cognitive development and learning styles. While previous studies have already explored the preparation of children for school, they have ignored the involvement of parents in school readiness and its impact on children's cognitive development and learning styles.

Chapter 3 Methodology

A qualitative approach was used to explore the influence of parents' attitudes and behaviors toward school readiness on the cognitive development and learning style of children from different socioeconomic backgrounds and preschools after entering first grade of primary school. Parents of children with excellent and poor academic performance in different types of schools were invited to participate in in-depth interviews.

Information on the socioeconomic background of families was collected before the interviews. All parent participants, who had first-grade children studying in public, private, and international schools, were selected according to their children's performance in class, homework, test scores, and time management (Tian, 2022). Since 2020, China has implemented a "double reduction" policy in its education. As a result of this policy, many schools no longer offered tests for students in first and second grades. Accordingly, this study used the four aforementioned dimensions to measure the academic performance of children.

To help the participating teachers select a diverse sample of students with high and low academic performance, a comprehensive scale was developed based on the results of the literature review and in-depth discussions with the senior administrators of primary schools. These teachers also singled out those high- and low-achieving students whose parents are working full time. To further understand the family economic status factors, an online family economic status questionnaire was distributed to the parents of the selected children. Parental involvement, which is also translated as "parent involvement" and "parental input," is an important form of parent–child interaction. In the process of family economic capital affecting children's development, a good parent–child interaction acts as a "bridge." In other words, parental involvement may play a mediating role in the relationship between family economic capital and students' socio-emotional ability. The level of family economic capital may also affect the level of parental involvement. Compared with parents with higher family economic capital, parents from poor families encounter more obstacles in involving themselves in their children's education. For example, the "mandates" of school administrators and teachers for home–school cooperation often ignore the limited time and abilities of these parents, thus effectively excluding low-income parents. Implicit measures of discrimination and exclusion

in educational institutions also reduce the participation of parents from poor families in schooling.

All interviews were conducted between July and August 2022. Different methods were employed to measure the reliability and validity of the interviews from many perspectives (Li, 2009). Before the in-depth interviews, teachers and experts with preschool and primary school experience were invited to explain the research design and process. Principals of the three types of schools were briefed with the research objectives, the interview questions, and the SES questionnaire.

As much data as possible were collected to provide a sufficient basis for this study to explore how parents involve themselves in their children's school readiness and the factors that affect such involvement. All interviews were fully recorded, and details of the scenes, words, and characters' actions were carefully analyzed.

After establishing an initial understanding of the topic and collecting data from the relevant literature, an interview guide was shared with the class teachers for their comments. These comments were then used to validate the research on different levels. Apart from conducting interviews with parents, additional information was collected through authoritative bodies, such as various websites and industry sectors.

The participating teachers were asked to select students based on their assessment scores for the in-depth interviews. During the interview period, the teachers were asked to provide additional information about the school performance of these students. The interview contents were then synchronized with the research contents, and the research direction was closely related to the interview data to draw critical interpretations. Data quality management was considered throughout the study.

Before conducting the in-depth interviews, online questionnaires on family economic status (e.g., family income and education level) were distributed among the parents of the participating students (see Appendices IIa - IIb) to understand their perceptions and behaviors toward their involvement in their children's school readiness and to determine how these family SES factors influence such understanding and behaviors.

A semi-structured interview guide was created based on a learning development guide for children aged 3–6 years. The research questions were then tested to ensure that they can be answered flexibly, which helps ensure credibility. The interview outline revolved around the following core questions: (1) the parents' understanding and behaviors toward their involvement in their children's school readiness; (2) the factors influencing such involvement; and (3) parental involvement in children's school cognitive development and learning styles. Each parent was interviewed for approximately 60–90 minutes.

3.1 Research aims and objectives

This study aims to promote cognitive development and learning styles in children's school readiness and propose effective school readiness policies to reduce educational inequities. To achieve such aim, this study analyzes the impact of parents' participation in their children's school readiness on their cognitive development and learning styles upon entering primary school. School readiness is not only an issue in preschool education but is also related to educational equity (Zhu & Zhang, 2006). Parents scientifically support their children's school readiness to effectively reduce the educational inequality caused by their SES level. Children from families with low SES can access public resources to support their cognitive development and learning style instead of creating a massive gap upon entering primary school (Liu, 2006).

This study also aims to provide insights into how parents can effectively support their children's cognitive development and learning, which may carry important implications in the context of the COVID-19 pandemic. Many kindergartens closed down after the COVID-19 outbreak in late 2019. Children's age and cognitive style factors focus on experiential and game teaching (Learning and Development Guide for 3–6 Years Old, 2012), and preschool students are not suitable for online courses. Thus, parents have no choice but to take over the responsibility of supporting their children's school readiness.

Given its critical position, Shenzhen was selected as the research area to yield findings that may influence the implementation of school readiness policies (Wei, 2022). Shenzhen is one of the four central cities of the Guangdong–Hong Kong–Macao Greater Bay Area in South China. Shenzhen has gradually become a mega international city since its establishment in

1978. The city also serves as China's special economic zone, scientific and technological innovation center, financial and commercial center, and typical diverse city with residents from all over the country. Shenzhen ranks first among China's first-tier cities in terms of new resident population. Most preschool and primary school teachers in Shenzhen arrange school readiness through a localized perspective (Brown & Lan, 2015). School readiness is regional and needs to be studied in the context of local realities. Given that the population of Shenzhen comes from different cultural backgrounds, interview cases were selected from public, private, and international primary schools all over the city.

The specific objectives of this study are as follows:

(1) To analyze the understanding and behavior of parents toward their involvement in their children's school readiness and how such involvement impacts their children's cognition and learning styles upon entering the first grade of primary school.

(2) To analyze those factors that affect parental involvement in children's learning style and cognitive development and to examine the diverse parental involvement modes affected by these factors.

(3) To explore scientific and practical strategies that parents can use to positively impact their children's cognitive development and learning styles and are applied across diverse school settings and to propose intervention strategies that can reduce the inequities in children's school readiness.

3.2 Key research questions

The following research questions were formulated based on ecological theory and the results of the literature review:

1. How do parents involve themselves in their children's learning styles and cognitive development, and what is the impact of such involvement on these children upon entering first grade of primary school?

2. What are the factors that shape the perspectives and behaviors of parents toward their involvement in their children's school readiness, learning style, and cognitive development?

3. How do parents' beliefs and behaviors toward their involvement affect their children's learning styles and cognitive development?

4. What intervention strategy can parents or preschools adopt to reduce the gaps in children's learning styles and cognitive development upon entering primary school?

3.3 Research design

A qualitative approach was adopted to further explain the impact of parental involvement in school readiness on children's cognitive development and learning styles upon entering primary school (Lin, 2015). The maximum difference sampling method are applied to this research, which maximize the coverage of the two most significant differences in excellent and poor academic students' performance(Lin, 2015). A total of 24 parents of first-grade students from Longgang International School in Shenzhen and 8 students from the same class of third-class schools were selected. Four of these students ranked at the top of their classes, and the other four were at the bottom of their classes. Each semi-structured interview lasted for 60–90 minutes and were recorded with the consent of the participants. All recordings were then transcribed. Informed consent forms were carefully read and signed by all interviewers, and the research process followed strict ethical principles.

To obtain the most valuable and representative data for understanding the research topic (Andrea, 2017), the participants were selected via purposeful sampling (Merriam, 2002). The participating teachers were asked to evaluate the inhibition and control, cognitive development, learning styles, and concentration of their students by observing their awareness of rules, the questions they raise during class, and their attentiveness in class. These students were also assessed for their working memory, learning ability, and inhibition control. The sensorimotor ability and mathematical logic ability of these students were assessed based on their physical education and math test scores. A 10-minute break was scheduled between classes to ensure that the children would return to their seats on time. Afterward, the teachers assessed how well these students controlled their emotions. A Likert-type 4-point subscale (where 1 indicates "strongly agree" and 4 indicates "strongly disagree") was used in the assessment (Table 3.1). Following the student academic performance evaluation criteria, the four students in the class

with the highest scores were defined as academic excellence, and the four students with the lowest scores were defined as academic excellence.

3.4. Ethical considerations

An ethics review was conducted prior to the commencement of the fieldwork, and the interviews began after the research supervisor reviewed and approved the research project in June 2022. Each participant was informed of his/her rights in the study. They were also ensured that they would not be coerced or punished should they decide to leave the study. They were asked to review and sign an informed consent form to confirm their agreement to participate in the study (Rubin & Rubin, 2005). They were informed that the interview questions are not IQ tests but tools designed to understand parents' involvement in school readiness. They were also informed that the interview contents would not affect their academic performance or future choices of schools or classes (Yan, 2018). With parental consent, an electronic notebook was used to record the interviews, and the interview recordings were transcribed to examine the parents' perceptions and behavior toward their involvement in their children's school readiness and how they supported such readiness (Yin, 2011).

3.5. Data analysis

The data were analyzed based on the participants' SES and experiences to extract information on parental involvement that would benefit children's cognitive development and learning styles (Dudovskiy, 2016). The interviews and questionnaires in this study have adopted two methods of analysis: inductive analysis and deductive analysis. This research conducted an inductive analysis of 24 typical samples in the interviews. Based on the research objectives and research question, the results of interviews and questionnaires was refined and summarized the common rules of excellent and poor academic performance students' and the impacts of their parental involvement in their children's school readiness. At the same time, the interviews and questionnaires of this study also adopted the deductive method, which support to deduce of the influence of parents' participation in children's school readiness on cognitive development and learning style.

TABLE 3.1 STUDENTS' ACADEMIC PERFORMANCE SELECTION CRITERIA EVALUATION FORM

SELECTION CRITERIA	**Item**	**Cognitive development and learning style**	**Specific performance** (rated from 4='strongly agree' to 1='strongly disagree')	**Poor selection criteria**
CLASSROOM PERFORMANCE	Rule awareness	Control inhibition	Has a strong awareness of class rules, maintains a correct sitting posture	Move, talk
(TIAN, 2022)	Raising questions	Learning style	Loves to ask questions, shows curiosity, thinks positively, and participates in classroom activities	Unwilling to think
	Concentration	Concentration	Stays focused in class	Desertion
HOMEWORK	Recite task	Working memory	Fast and error free	Cannot complete and has many errors
	Homework quality	Learning ability	High quality and low error rate	Low quality and high error rate
	Homework submission	Self-control	Complete and submitted quickly	Cannot complete and has many errors
TEST SCORE (SHAN & WANG, 2021; WANG, 2009; ZHANG, 2011)	Sports score	Sensorimotor ability	Ranks among the top 4 in class	Ranks among the bottom 4
	Math score	Mathematical logic ability	Ranks among the top 4 in class	Ranks among the bottom 4
TIME MANAGEMENT	10 minutes between classes	Control inhibition	Returns to seat on time after class break (before class)	

Chapter 4 Findings

This study further explores the understanding and behavior of parents' toward their involvement in their children's school readiness in public schools, private schools, and international schools, the factors that influence their involvement, and the influence of their involvement on their children's cognitive development and learning style. Results show that parents acknowledge the importance of their involvement in the cognitive development and learning style of their children. However, the way and degree of such involvement vary across different types of schools. Parents' active involvement helps enhance their children's cognitive development and learning style as they enter first grade. Meanwhile, parents' limited understanding of such cognitive development and learning styles harms their scientific involvement in their children's school readiness (Liu & Wu, 2018). SES is the main factor influencing parents' participation in school readiness. Stability of family income, education level, parents' occupation, stability and quality of family caregivers, and adequacy of human resources all impact such involvement (McLoyd, 1998).

Table 4.2 presents the socioeconomic background of the 24 interviewed parents, including their occupation, educational background, family income, and their children's academic performance at school. This table gives insights into how family socioeconomic background influences parents' involvement in their children's school readiness. These factors influence children's school readiness through their parents' understanding and behavior toward their involvement in school readiness, which in turn influence these children's academic performance after entering first grade.

This 24 interviewed parents come from different SES. Parents in public schools involve themselves in their children's school readiness to the greatest extent regardless of the latter's academic performance. Meanwhile, parents in private schools show low involvement in their children's readiness due to their lack of SES resources, and parents in international schools rely on their purchased educational resources because they are already rich in SES resources and must be highly conscious in participating in their children's comprehensive quality improvement.

TABLE 4.1 SUMMARY OF PARENT PARTICIPANTS' PROFILES

ITEM	Parents of students with excellent academic performance			Parents of students with poor academic performance		
TYPES OF SCHOOL	public school	private school	international School	public school	private school	international school
NUMBER OF INTERVIEWS	4	4	4	4	4	4
EDUCATION ATTAINMENT: BACHELOR'S DEGREE OR ABOVE	4	1	3	1	1	2
FULL-TIME MOTHERS	3	0	3	1	1	2

Table 4.2 presents an overview of family SES status and children's academic performance across different types of schools. Parents in international schools have the best economic conditions, followed by parents in public and private schools. Parents in public and international schools have higher educational level than those in private schools. All parents are taking care of their children full time. Parents of children with excellent academic performance spend significantly more time with their children than parents of children with poor academic performance. Almost all parents of children with poor academic performance have no idea how to scientifically engage themselves in their children's school readiness.

Table 4.2 and Appendices IIa to IIb present information on the participation of parents in their children's school readiness. The SES information of the interviewed parents is collected through an online questionnaire survey to understand those factors in the family that affect their involvement in their children's school readiness. This survey covers family SES, family investment in education, and parental involvement in children's school readiness. The participating teachers were asked to distribute the questionnaire links directly among the

interviewed parents, and all survey data were collected before conducting the semi-structured interviews.

TABLE 4.2. BACKGROUND INFORMATION OF THE PARENT PARTICIPANTS

CODE	**School type**	**Parental occupation**	**Parental education level**	**Household income/Extracurricular costs**	**Time spent with children**	**Parental involvement challenge**	**Gender**
EXCELLENT ACADEMIC PERFORMANCE							
1	Public school	The mother is a full-time wife, and the father is self-employed/business owner	Undergraduate	30,000 or above/1,000–1,499	3–4 hours	Lack of scientific parental method	Girl
2	Public school	The grandmother worked as a junior high school mathematics teacher before her retirement and now takes cares of her grandchildren's learning.	Undergraduate	10,000–14,999/1,000–1,499	3–4 hours	No time	Girl
3	Public school	The mother is an HR officer, and the father is an executive	Undergraduate	30,000 or above/3,000 or above	3–4 hours	Others	Boy
4	Public school	The mother is responsible for taking care of her children and works as a part-time organizer, and the father is an	Undergraduate	5000–9,999/3,000 or above	3–4 hours	Others	Girl

		individual/business owner					
5	Private school	The mother is a senior English teacher in primary school (more than 10 years of teaching experience), and the father is a corporate employee	Undergraduate	15,000–19,000/2,000–2,999	1–2 hours	Other	Boy
6	Private school	The mother runs a swimming pool for infants and young children, the father is a corporate employee	High school	10,000–14,999/1,000–1,499	1–2 hours	/	Girl
7	Private school	The mother runs a printing shop, the father works in a car sales 4S shop	High school	20,000–24,999/1,000	3–4 hours	Lack of scientific parental method	Girl
8	Private school	The father owns a private company specializing in technology for 10 years, and the mother is a clerk	High school	10,000–14,999/Below 1,000	3–4 hours	Other	Boy
9	International school	The mother takes care of her child full time	Undergraduate	30,000 or above/Below 3,000	5–6 hours	Other	Boy

10	International school	The father works in real estate, the mother takes care of her child full time	Undergraduate	30,000 or above/Below 1,000	7 hours and longer	Parental conflict concept	Girl
11	International school	Both parents are self-employed/business owners	Middle school	20,000–24,999/3,000 or above	5–6 hours	Lack of scientific parental method	Boy
12	International school	The mother takes care of her child full time, the father is a business owner	Masters	25,000–29,999/below 1,000	1–2 hours	Lack of scientific parental method	Boy
POOR ACADEMIC PERFORMANCE							
13	Public school	The mother takes care of her child full time, the father is a real estate company executive	High school	20,000–24,999/1,500–1,999	1–2 hours	Lack of scientific parental method	Girl
14	Public school	Both parents are self-employed/business owners	High school	10,000–14,999/2,000–2,999	1–2 hours	Lack of scientific parental method	Girl
15	Public school	Both parents are self-employed/business owners	High school	30,000/Above 3,000	Less than 1 hour	Parental disagreement	Girl
16	Public school	The mother is a social worker and is divorced	Undergraduate	0–4,999/Below 1,000	Less than 1 hour	Lack of scientific parental method	Girl
17	Private school	The father is a calligraphy teacher, the mother works part time	Undergraduate	10,000–14,999/1,000	3–4 hours	Poor health leads to weak learning ability	Boy

18	Private school	The mother takes care of her child full time, the father is a business owner	Middle school or below	5000–9,999/1,000	More than 7 hours	Lack of scientific parental method	Girl
19	Private school	The mother is a corporate clerk, the father is a restaurant manager (quickly unemployed)	High school	0–4,999/Below 1000	3–4 hours	Lack of scientific parental method	Boy
20	Private school	Both parents work in private enterprises	High school	15,000–19,000/1000	1–2 hours	Lack of scientific parental method	Girl
21	International school	The father is an executive of a private enterprise, the mother is a business owner	Masters	30,000 or above/2,000–2,999	3–4 hours	Lack of scientific parental method	Boy
22	International school	The mother takes care of her child full time, and the father is a real estate executive	High school	30,000 or above/2,000–2,999	7 hours and longer	Lack of scientific parental method	Boy
23	International school	Both parents are self-employed/business owners	Undergraduate	20,000–24,999/1,000–1,499	1–2 hours	Parental conflict concept	Girl
24	International school	The mother takes care of her child full time (leave without pay), the father is a state-owned enterprise executive	High school	30,000 or above/3,000 or above	5–6 hours	Lack of scientific parental method	Girl

Parents of children with excellent academic performance not only focused on developing their children's learning styles and study habits but also aimed for a planned and purposeful development of their children's cognitive development. By contrast, parents of children with poor academic performance were less involved in their children's school readiness. Family SES also influences the parents' purchase of resources (such as extracurricular courses) to support their children's school readiness. Parents' scientific involvement in their children's school readiness is directly proportional to their children's academic performance before entering first grade. These parents also need a fundamental understanding of their children's cognitive development and learning styles in school readiness and an accurate interpretation of some national policies to support their children's school readiness. For example, most parents, even the teachers' families, do not understand their children's cognitive development abilities. These beliefs can directly influence whether parents can participate scientifically in their children's school readiness.

4.1 Parental involvement in children's school readiness is important for children's cognitive development and learning styles after entering first grade

All the parent participants understood the importance of involving themselves in their children's school readiness after entering first grade. Parents of children with excellent academic performance were convinced that their active involvement benefits their children's academic performance, while those of children with poor academic performance realized that their children's academic problems in first grade were due to their lack of involvement in their children's school readiness. The parent participants also observed that their further participation in school readiness resulted in their children's different levels of academic adaptation, thus making them realize the importance of their involvement. However, they claimed that they had different perceptions toward school readiness when their children were still in kindergarten, which led to the differences in their behaviors and outcomes.

Parents with different attributes also showed various degrees of involvement in their children's school readiness. Parents of children with excellent academic performance in public schools strongly believed in the importance of such involvement. One of these parents shared,

> Parents should involve themselves in their children's school readiness. Otherwise, their children will face discomfort in primary school. Kindergartens nowadays do not advocate teaching pinyin; instead, parents can tutor their children in pinyin and mathematics at home. The primary school knowledge of these children needs to be paved in advance to alleviate their anxiety (Parent of #2 student with excellent academic performance in public school).

Parents in international schools attached great importance to academics and cultivating children's comprehensive abilities directly related to their SES. In other words, apart from academic performance, these parents also focused on the development of their children's comprehensive quality. One of these parents shared,

> Children must learn knowledge categories in advance before primary school. Parents can help their children develop learning habits. We have enrolled our child in some extracurricular activities to broaden her abilities. Now that our child is in the first grade, she can write some short poems by herself (Parent of #10 student with excellent academic performance in an international school).

Unlike those in public schools, students in international schools have various channels through which they can promote the development of their comprehensive abilities. Due to their limited social and economic resources, parents in private schools could only dedicate small amounts of time and energy to their children's school readiness. One of these parents shared,

> We are employees in a factory. We go to work early in the morning and return home at 9 p.m. While my children were in kindergarten, I rarely took care of them. Instead, my grandmother looked after them. Usually, my children play

> with their mobile phones by themselves (Parent of #20 student with poor academic performance in a private school).

Some international school students entered the first grade without their parents involving themselves in their school readiness. As a result, these children faced difficulties in adapting to first-grade academic requirements. One international school student with poor academic performance (Student #24) previously studied in a high-quality public school during the first semester of her first grade. As she was lagging behind her classmates due to a fierce academic competition, she had to transfer to an international school during her second semester. Among the eight international school students participating in this study, three (Students #21, #22, and #24) were transferred from public schools because they could not adapt to the fierce competition in these institutions. First-grade students do not understand formal learning. Therefore, if their parents do not involve themselves in their children's school readiness, then these children would feel inferior to their classmates because of their slow progress (Parent of #24 student with poor academic performance in an international school).

Some parents of children with excellent academic performance in private schools shared that parental involvement in school readiness was not necessary. However, these parents did not realize that they involved themselves in their children's development of cognitive skills, study, reading, and living habits, time management, and learning styles. Two parents claimed that they were reluctant to place too much pressure on their children, but they actively supported their children in completing the primary-school-related content tasks assigned by their private kindergarten. One parent mentioned that her child smoothly transitioned to the first grade. However, she claimed that her involvement in her children's school readiness was unnecessary.

> He has learned 26 English alphabets, math equations, Chinese pinyin, and reading and writing skills in kindergarten (Parent of #8 student with excellent academic performance in a private school).

Nearly all parents of students with poor academic performance believed in the importance of school readiness because without such involvement, their children would not be able to meet their academic requirements. These parents made up for their children's poor performance in various ways. However, some parents claimed than participating in their children's school readiness in advance is less efficient than compensating for their children's poor academic performance. The effects and mentality behind parental involvement vastly differ before and after a child enters primary school. However, two parent participants shared that parents can involve themselves in their children's school readiness depending on their children's learning ability. If their children study in advance, then they may not be attentive in class due to their impaired concentration. These parents previously sent their child to a public nursery in Shanghai because they were both busy with work. Due to their lack of parental involvement, their child lagged behind others in a public primary school. The teachers also looked down on these parents, who they blamed for their child's learning weariness and other series of problems.

> Our child's prior study of primary school knowledge in kindergarten probably resulted in her inattention in the classroom, so we chose not to participate in her school readiness (Parent of #21 student with poor academic performance in an international school).

Some parents did not participate in their children's school readiness simply because they did not know how. They believed that school readiness merely involves teaching children with primary school knowledge and were unaware that cognitive development and learning styles are at the core of school readiness (Liu, 2006). Due to his poor academic performance, #21 student lagged far behind his classmates in a public primary school during his first grade. In his second term, he was transferred by his parents to an international school that emphasizes individualized education.

Due to their excellent socioeconomic conditions, some families chose to leave public schools with fierce academic competition in favor of international schools that focus on

developing students' comprehensive literacy. These schools employ various assessment systems to evaluate children's cognitive development and learning styles, and their academic requirements and teaching modes also relieve the anxiety of the students' parents.

4.2 Parents' active participation, understanding, and behaviors toward school readiness help boost their children's cognitive development and learning styles after entering first grade

Parents need to understand the significance of cognitive development and learning styles, which affect their scientific involvement in their children's school readiness. Most parent participants misunderstood school readiness as instilling primary school knowledge in their children. However, school readiness involves not only improving knowledge level but also supporting children's profound logic, cognitive development abilities, learning styles, and quality of learning (Gredler, 2000). Some parents shared,

> Suppose that we understood the meaning and core values of cognitive development and learning styles earlier. In that case, we will purposefully engage in our children's academic readiness (Parents of #3 and #4 students with excellent academic performance in a public school).

Although parents do not understand cognitive development theories and learning styles, academically successful parents are already developing their children's cognitive skills and learning styles before sending them to primary school. Therefore, these parents need to learn how to scientifically participate in their children's school readiness. Most parents gain new perceptions, parenting philosophies, and knowledge during parent–teacher meetings at school. However, some school-readiness-related information from these meetings may be systematic and prejudiced. Other parents receive such information from their friends but also acknowledged that such information was either fragmented or inappropriate for their children.

> Some of my friends' experiences are unscientific and inappropriate for my child's situation. There are also parents who drew their school readiness knowledge from their own experiences in raising their children. The parents of students with excellent academic performance in public schools (e.g., student #4) attended parent trainings on how to raise their children. Apart from families with two teachers, no other parents systematically learn how to participate in their children's school readiness (Parent of #6 student with excellent academic performance in a private school).

Parents from different types of schools participate in school readiness in various ways. Public schools have intense academic competition and large class sizes (usually up to 50–55 students per class). Given that teachers cannot easily handle such a large number of students, some parents had to step in by involving themselves in their children's school readiness. Therefore, children in public primary schools are mainly affected by their parents' understanding and behavior toward school readiness. Meanwhile, parents in private schools focus on learning primary school knowledge in advance without spending additional resources on their children's quality education. Parents with high SES tend to send their children to international schools, which usually have small class sizes (less than 20 students per class) and only focus on students' academic performance. International children's connection slows the gradient compared to public and private schools. Therefore, even if these parents do not participate in their children's school readiness, these children can still quickly adapt to primary school requirements.

4.3 Differences in parental participation in school readiness lead to variations in children's learning outcomes after entering first grade

Parents refraining from participating in their children's school readiness leads to the poor academic performance, unconscious learning, and resistance to learning of their children. Parents of students with excellent academic performance are actively involved in their children's school readiness and have a positive impact on their cognitive development and learning styles. By actively participating in children's school readiness from the different

dimensions of cognitive development, parents can create a positive learning environment in the family. Parental involvement in school readiness, their involvement method, and their understanding and behaviors all significantly impact their children's school readiness. Parents are effectively involved in their children's preparation for learning and in promoting their cognitive development and learning styles. With such involvement, children can be productive in their studies, show great interested in learning, be able to balance their learning with their interests, and learn quickly during first grade.

> It is significant and critical for parents to build a solid academic foundation for their children in the stage of school readiness. Once this foundation is laid, students learn easier. Parents should involve themselves in their children's school readiness to help them during first grade. It is easy to learn in the classroom. She can consciously complete the homework assigned by the teacher, and she likes to study (Parent of #7 student with excellent academic performance in a private school).

However, when children are not ready for school, they cannot easily adopt to the requirements of first grade.

> The teacher teaches her class too fast, and my daughter needs to catch up. She cannot concentrate and has poor learning outcomes as a result (Parent of #18 student with poor academic performance in a private school).

The methods adopted by parents in their school readiness involvement can profoundly impact their children's cognitive development and learning styles and lead to significant differences in their learning attitudes, skills, and knowledge.

4.3.1 Impact of parental involvement in school readiness on children's learning style

Parents of students with excellent academic performance feel that their involvement makes their children enter primary school with confidence and easily complete the tasks assigned by their teachers. These students can use their spare time to develop various interests and hobbies, which significantly impact the development of their learning styles. Meanwhile, children with poor academic performance behave anxiously when doing their homework, receive poor test scores, and show poor concentration in class. Both children and their parents face enormous pressures. As a result of these pressures, children lose their confidence and enthusiasm for learning.

> We regret not enrolling our children in transitional extra-curricular activities before entering primary school. The policy does not allow teaching in public kindergartens, which is a very contradictory to real situations (Parent of #19 student with poor academic performance in an international school).

Unlike other families, I did not involve myself in my child's school readiness. Some families spend a year preparing their kids for primary school. However, involving ourselves in our children's school readiness and sacrificing their playing time are unnecessary (Parent of #24 student with poor academic performance in an international school).

Students #21, #22, and #24 with poor academic performance in international schools entered a public school during their first semester and later transferred to an international school because they were left far behind their classes.

Regardless of their children's academic performance, parents actively look for solutions to their children's academic problems and try to promote their learning interests. For example, the parents of the #6 student with excellent academic performance in a private school observed their child's poor logical thinking. They immediately looked for solutions to this problem, such as playing table logic games, to exercise their child's logical thinking skills. However, some parents of students with poor academic performance need help in identifying their

children's problems and need to apply scientific methods to actively support their children's academic improvement.

> I want to remedy my child's weak learning ability and lack of interest in learning. Every day my child goes out to play with friends with a watch; she does not know to learn the method and loses learning interest. I want to help her improve, but I do not need to figure out how I should help her (Parent of #20 student with poor academic performance in a private school).

The parents of students with poor academic performance agreed that they should intervene in their children's learning early. However, the parents of students with poor academic performance in private schools did not actively intervene in their children's ineligibility for primary school because of their low SES, poor understanding of scientific involvement, and other factors. Parents need to participate in their children's school readiness actively. Children need help to keep up with their studies after entering the first grade, leading to worries for them and their parents.

4.4 Different factors affecting parents' participation in school readiness

4.4.1 Parents' lack of correct interpretation of the school readiness policy affects their in their children's school readiness

The interpretation of school readiness and "de-primary" policies also affects parents' involvement in their children's school readiness. The parent participants generally misinterpreted these policies and even thought that the "de-primary" policy devalued their role in their children's school readiness.

> Many private kindergarten students were transferred to public kindergartens. These kindergartens let the children play all day and do not teach them anything. They all say that these children do not need to study primary school knowledge in advance. Now after entering first grade, she does not like studying, cannot do her homework independently,

and performs poorly in her exams (Parent of #18 student with poor academic performance in a public school).

These parents need help in interpreting the new school readiness policy scientifically. They must resort to passive inaction to handle their children's school readiness. How to ensure these parents' access to systematic and practical experiences and their scientific and effective participation in their children's school readiness are urgent problems that need to be addressed by the current policies. In order to educate their children well, parents should have a solid understanding of systematic school readiness and should be provided with a school readiness support system.

4.3.2 Influence of SES on parents' participation in their children's school readiness

Family SES affects parents' educational ideas and behaviors and their involvement in their children's school readiness. An excellent economic situation means that families have rich educational resources for building their children's school readiness or human resources to be directly or indirectly involved in their children's school readiness. For parents of academically successful students, money is a crucial factor in their children's school readiness. Without money, these parents are unable to participate in their children's school readiness.

Parents' educational qualifications also influence their participation in their children's school readiness. Parents with a high level of education also have high expectations for their children, thereby directly affecting their participation in their children's school readiness. Similarly, parents with higher educational attainment are more scientifically and systematically involved in their children's school readiness. Among the children with excellent academic performance in all types of schools, eight had parents holding bachelor's degrees or above. By contrast, among those children with poor academic performance, only four had parents with bachelor's degrees or above (Table 4.2). Parents with high academic degrees consciously use information from books, parent–teacher conferences, and the Internet to select school-readiness-related information according to their children's situation, to learn the required knowledge, and to actively participate in their children's school readiness. However,

some parents with low education levels need help to obtain information about school readiness selectively, so they passively participate in their children's school readiness. An exception to this case are the parents of #6 student with excellent performance in a private school, who, despite their low educational level, had high expectations for their child:

> We regret not going to university ourselves, but we expect our daughter will attend university. Therefore, we are actively involved in her school readiness (Parents of #6 student with excellent academic performance in a private school).

Parents' working hours and availability to spend time with children from high SES backgrounds influence parents' involvement in school readiness and their children's academic performance in first grade. Economic conditions limit parents' involvement in their children's school readiness. Some students with poor academic performance come from low-income families, and their parents have little time to participate in their school readiness.

> Our family cannot afford extracurricular activities. She has to stay home, play with her phone, and watch TV all the time after she returns from kindergarten (Parent of #16 student with poor academic performance in a private school).

> Because my son was too active and out of control, I had to send him to a transition class during the summer (Parent of #19 student with poor academic performance in a private school).

> Other kids are in transition classes, so we have to do what the other parents do and send our kids to interest classes (Parent of #20 student with poor academic performance in an international school).

> I often entertain my clients until midnight and make enough money to support my children's studies. Otherwise, my child will fall behind in the class (Parent of #15 student with poor academic performance in a public school).

Some parents see extra classes as custodial classes for their children. If parents can manage their children, then teachers can easily manage their students in the classroom. Student #15 could not complete her homework independently due to her poor academic performance. As a result, her teachers often asked her parents to supervise her studies. However, due to their busy schedule, these parents had to hire a tutor to help with their child's homework every night. Parents of students with excellent academic performance actively participate in their children's school readiness and even send their children to transitional after-school classes. By contrast, parents of students with poor academic performance are shortsighted when it comes to their children's education and do not participate in their school readiness.

4.3.3 Parents' occupation influences their involvement in their children's school readiness

The different occupations of parents have varying influences on their children. Parents of children with excellent academic performance believe that their major and career can contribute to their children's cognitive development and learning style. The parent of student #2 with excellent academic performance in a public school and the parent of student #5 with an excellent academic performance in a private school have been working as teachers for many years (over 30 and 13 years, respectively). Given that teachers' families can learn more about their children's successful and unsuccessful learning experiences from practice, they can apply such knowledge in boosting their children's school readiness. The interviewed stay-at-home mothers also showed different levels of involvement in their children's school readiness, while full-time parents faced different situations and were confused during their involvement in their children's school readiness.

> As a stay-at-home mom, I have much time, but I want my kids to be perfect, so I control my kids too much, which increases the conflict between us (Parent of #1 student with excellent academic performance in a public school).

> Because I am a stay-at-home mother, I do not have the external knowledge on how to participate in my child's school readiness. I usually do not set rules for my kid, so she needs to be more rule oriented. So it was too challenging for her to attend the first grade of a public primary school. She had to transfer from a public primary school to an international school in the second term (Parent of #24 student with poor academic performance in an international school).

> Because there are so many children in my family, I cannot take an active and influential part in their school readiness. We did not cultivate her reading habits in kindergarten, and now she is procrastinating and getting bad grades on her homework in first grade (Parent of #18 student with poor academic performance in a private school).

Although they stay at home and have more time than those with full-time jobs, various factors influence stay-at-home mothers' involvement in their children's school readiness. These stay-at-home mothers must also acquire relevant knowledge and skills to participate in their child's school readiness because of their limited contact with the outside world. The parent of student #18 with poor academic performance in a private school is a stay-at-home mother with four children, one of which is only two years old. Given that she has too many children to look out for and had no extra help, she lacked the energy or time to get her children ready for school. She instead bought her children a smartphone to play with.

Being overworked can also prevent parents from effectively participating in their children's school readiness. Those parents with stressful jobs had children with poor academic performance. While some of these parents are willing to participate in their children's school readiness despite working overtime, they instead relax with their phones upon returning home.

> My job is too busy. I need to socialize six days a week, and I am impatient. I need financial support to hire a tutor to teach my children. Otherwise, my daughter will be left far behind in her class (Parent of #15 student with poor academic performance in a public school).

The above excerpts indicate that parents' occupation and income directly promote or hinder their participation in their children's school readiness. Those parents who are too busy or have stressful jobs may also be discouraged from participating in their children's school readiness.

4.4 Parents can apply intervention strategies to reduce the gaps in their children's learning styles and cognitive development after first grade

4.4.1 Parents' participation in children's sensory integration activities in school readiness can effectively promote children's self-control, concentration, and cognitive development

Sensory integration is an essential dimension of cognitive development, and sports can effectively develop sensory integration abilities. Sensory integration includes improving children's attention, persistence, and self-control. The parents of public school students #2 and #4 arranged various sports activities for their children in kindergarten, such as table tennis, skipping rope, and swimming, to improve their attention, persistence, and self-control. The parents of #1 also arranged sports activities that indirectly promoted their children's sensory integration.

> Because of my daughter's feeble health, we made her skip rope every day and climb a mountain once a week to strengthen her body (Parent of #1 student with excellent academic performance in a public school).

The parents of student #2 with excellent academic performance in a public school thought that their child was too active to concentrate, so they started training her attention by playing

table tennis when she was four years old. Parents of students with excellent academic performance pay attention to playing sports than those of students with poor academic performance. Sports can also effectively promote children's sensory perception. Some parents even arrange physical exercises to improve their children's concentration.

> She was too active to concentrate, so we trained her concentration by playing table tennis when she was four years old (Parent of #4 student with excellent academic performance in a public school).

Parents of students with excellent academic performance emphasized the importance of developing their children's attention and self-control. With these qualities, children will have better concentration and self-discipline in the classroom. Sensory integration also significantly promotes the academic performance of the children entering the first grade.

> We started training her in pulley, swimming, and tennis during kindergarten, and she entered the first grade with excellent grades (Parent of #4 student with excellent academic performance in a public school).

These parents promote their children's school readiness and developmental cognition through systematic and purposeful sensory integration training. However, parents of children with poor academic performance generally do not pay attention to the sensory integration of their children.

> She is willing to stay home, watch TV, or play with her smartphone because we have four children. It is hazardous to go out and take care of them, so her father said that it is safer for our children to watch TV at home (Parent of #14 student with poor academic performance in a private school).

The different behaviors of parents toward the sensory integration ability of their children can also cause differences in their children's cognitive development during first grade.

4.4.2 Parents cultivate reading habits for children to improve their academic performance after entering first grade

Parents of students with excellent academic performance use various methods to train their children's concentration, such as building Lego bricks and reading with their children at home.

> She is too active and does what she likes, so I trained her to focus by reading picture books and writing short sentences with her (Parent of #2 student with excellent academic performance in a public school).

Reading can effectively improve concentration (Dong, 2021). Almost all students with excellent academic performance have developed their reading habits in kindergarten. Their parents read with them for 30 minutes 3 to 5 times a week. However, none of the students with poor academic performance have developed reading behaviors and habits, except for students #22 and #24. The parents of these students rarely read to their children and do not help them establish reading habits.

> We seldom read to our children. The kindergarten once assigned the parents to read to their children for 21 days. During this period, we could keep reading to our children. My kids love listening to stories. Nevertheless, after the activity, we stopped reading to our children (Parent of #20 student with poor academic performance in a private school).

Kindergartens can invite parents to continuously read stories to their children at home to cultivate their children's reading habits. These parents can also actively help their children develop their reading habits by using public library resources.

4.4.3 Parents develop children's logical and mathematical thinking skills after entering first grade

One dimension of cognitive development is children's mathematical and logical thinking abilities (Shan & Wang, 2021). Some parents of students with excellent academic performance play board games with their children at home before their mathematical classes. These parents make great efforts in improving their children's logical and mathematical thinking skills through various thinking activities and logic games, such as Schulte square, sudoku, and zebra math classes.

> We started by practicing 100 calculations and playing thinking games. Now my child feels that math is a straightforward and exciting subject in primary school. She even won the excellent student award in primary school (Parent of #2 student with excellent academic performance in a public school).

However, the parents of underachieving students seldom arranged related thinking activities for their children. Although some parents purchased math textbooks, their children were reluctant to practice their math skills, and their parents needed to follow up on their progress.

> Even though we signed up my daughter for this course, she decided to give it up because she found it difficult (Parent of #24 student with poor academic performance in an international school).

Parents' attitudes and engagement behaviors toward their children's logical math training are also reflected in the latter's performance in mathematics and logic-related subjects after entering first grade.

4.4.4 Parents' participation in children's cognitive development in working memory can help improve their learning efficiency after entering first grade

Some parents of students with excellent academic performance apply various methods to exercise their children's working memory.

> We ask our child to recite one to two ancient poems every day and occasionally ask her to repeat the story. While reading, we ask her to read aloud, which will train her memory and language expression and activate her brain (Parent of #2 student with excellent academic performance in a public school).

These parents often arrange memory activities for their children to boost their school readiness. Therefore, those students who have received memory training activities in kindergarten can quickly complete their assignments upon entering primary school. Parents of students with poor academic performance often do not schedule memory activities for their children. However, children who have yet to receive memory training face difficulties in completing their assignments in primary school and improving their learning efficiency. An exception to this case is student #24. Despite her poor academic performance in an international school, she has a good memory ability because she studies vocal music after class and often needs to memorize song lyrics. This process developed her memory ability. The above interventions can reduce the gap in children's learning styles and cognitive development upon entering first grade.

Chapter 5 Discussion and conclusion

Even though the pandemic control policy has been entirely lifted at the end of 2022, parents still need to know how to scientifically participate in their children's school readiness in case of future emergencies requiring short- or long-term class suspensions. In addition, kindergarten education in China is not compulsory. Parents can choose to educate their children at home. From this perspective, parents can also understand how to scientifically participate in their children's school readiness to promote their cognitive development and learning style.

The findings generally show that parents unconsciously participate in their children's school readiness. For example, while many parents arrange sports activities for their children to improve their physical wellness, little do they know that these activities also improve their children's sensory integration ability and school readiness.

Although knowledge preparation is not central to school readiness, the habits and learning methods developed by children during the school readiness stage can shape their learning styles. Parents of students with excellent academic performance often purposefully, proactively, and systematically involve themselves in their children's school readiness, while parents of children with poor academic performance only show passive participation. In addition to their SES factors, parents' attitudes and management behavior toward their children's use of mobile phones during the school readiness stage can seriously affect their children's learning style. Some differences can also be observed between parents of students with poor and excellent academic performance in terms of their attitudes and behavior toward their children watching TV and playing with their mobile phones. When parents do not limit their children's mobile phone use, these children may lose interest in their learning, refuse to learn, and be unable to concentrate. Electronic games and videos negatively impact children's learning styles and significantly damage their interest in learning and concentration in cognitive development (Chen, 2009). In addition, parents' failure to regulate their children's use of mobile phones is detrimental to their cognitive development, ability to focus, and learning style.

The influence of “joint connection” and “double reduction” policies on parents’ participation in school readiness

With the introduction of the “linkage” and “double reduction” policies between pre-school and primary school in 2021, the primary school teaching tasks and syllabi have not been adjusted. These two policies aim to reduce the school readiness pressure imposed on kindergarten students and the academic pressure imposed on primary school students. However, with no corresponding changes to the curriculum, the gap between primary schools and kindergartens has not been narrowed by these two policies. The findings of this study reveal that competition is a core component of public primary schools. If parents do not participate in their children’s school readiness, then their children will face challenges in adapting to primary school. Meanwhile, if parents of students in private schools do not involve themselves in their children’s school readiness, then their children will face the same competition pressures faced by public primary school students. International schools promote a well-rounded upbringing of children who come from families with relatively high SES. These children also attend smaller class sizes compared with those attending public or private schools (13 students per class in international schools vs. more than 50 students per class in public/private schools). Teachers in international schools can also offer a great degree of support to their students.

Preschool connection has always been an important task in kindergarten education, but nearly two decades after the basic education curriculum reform was implemented, preschool connection remains a challenge in mainland China (Shan, 2020). This result is due to the fact that the academic competition faced by primary and secondary school students has always impacted the curriculum reform of kindergartens through the various channels of schools, families, and societies, and the learning pressure has long been transferred to the early childhood stage. Although kindergartens adhere to the scientific education concept based on the physical and mental health of children, the learning pressures resulting from primary school competitions are still inevitably transmitted to children. Parents have also learned that they will also suffer if they do not prepare their children’s primary school knowledge in

advance. As a result, a vicious circle begins to emerge where new primary school students are divided into classes. Children in the first class have learned primary school knowledge in advance. For instance, they can read and write Chinese characters and pinyin, add and subtract hundreds of numbers, and memorize the multiplication table. Meanwhile, children in the second class have zero primary school knowledge. Children in the first class can also easily adapt to their teacher's teaching pace, while those in the second class feel an immense amount of pressure in keeping up with their classmates. In fact, during the first and second grade of primary school, apart from the contents of textbooks, the number of students who learn ahead is also increasing. Therefore, parents of primary school students are warning one another about the importance for their children to learn primary school knowledge in advance, such as pinyin. As a result, many preschool children are being enrolled in social training institutions to learn primary school knowledge in advance. Even in some kindergartens, parents transfer their children to out-of-school institutions for advance learning. However, some scholars continue to argue that early learning and early competition are against the law of children's development, harmful to their physical and mental health, and detrimental to their long-term development. The education administration also insists on banning entrance examinations in primary schools and preventing kindergartens from becoming primary schools. However, due to the huge gap between kindergarten and the first grade of primary school, the downward shift of learning burden should be addressed at the beginning of enrollment. The above policies suggest that in order to slow down the slope between primary and secondary schools, we must strengthen the continuity of education between these two school levels and change the thinking logic of whether kindergarten is close to a primary school or whether a primary school is close to a kindergarten. Considering the age characteristics of children, kindergartens adhere to the spirit of "going to primary school" in their curriculum reform, which require primary schools to link down, while primary and secondary schools, given their aim for subsequent learning, adhere to the practical logic of preparing children for higher education, thus requiring each learning section to link up step by step; this one-way logic of who is close to whom is difficult to compromise (Li, 2014). The proposed "two-way connection" not only lets us see the determination and strength of the state to solve the problem of "primary schools" in

kindergartens, which violates the laws governing children's physical and mental development and damages the physical and mental health of children, but also lets us see the root cause of the problem of "primary schools" in kindergartens (Wei, 2022).

The different parental arrangements for children's after-school activities during the school readiness period determine the differences in these children's academic performance

Parents' participation in their children's school readiness both positively and negatively impact children's cognitive development and learning style upon entering first grade. Parents have different spare time arrangements for children with excellent and poor academic performance. Parents of students with excellent academic performance effectively schedule their children's spare time and even enroll them in extracurricular classes (e.g., dancing, Lego, and drawing). Some parents even arrange extracurricular classes for their children daily (e.g., parent of #3 student with excellent academic performance in a public school). The parent of #7 student with excellent academic performance in a private school does not allow her child to play, read, and watch TV without completing her homework.

Parents cultivate their children's learning styles and study habits by arranging their after-school activities and time use. For instance, those parents who observe concentration problems among their children would ask their children to play table tennis, which benefits their self-control and concentration. Meanwhile, those parents who observe that their children enjoy playing smartphone games would step in to control their children's smartphone use before it evolves into an addiction. The parent of #7 student with excellent academic performance in a private school arranged extracurricular dance lessons for her child. Another parent required her child to complete her homework before having dinner. Kindergartens arrange homework for math, phonics, literacy, and reading.

Some parents arranged learning tasks (e.g., literacy, pinyin, and numeracy) for their children. While some children take short-term transition training courses, they still experience difficulties adjusting to primary school. The parents of #14 student with poor academic

performance in a public school did not have a school readiness plan for their child. They instead enrolled their child in English and mathematics summer classes for a month, but their child continued to struggle catching up with his classmates in primary school. In addition, these parents were usually at work, leaving their child under the care of his grandparents. However, even his grandparents did not actively participate in his school readiness; the child merely watched TV and played mobile games after school.

Meanwhile, parents of students with poor academic performance have lax, undemanding, or even laissez-faire attitudes toward their children's school readiness. The parents of #15 student with poor academic performance in a public school did not set any academic requirements for their child as they thought that their child was still young. Both parents and children face tremendous pressure when the child enters first grade. At this stage, teachers often criticize parents because their children failed to complete their homework. Some families had to hire a tutor to help their children complete their homework.

While knowledge preparation is not core to school readiness, the studying habits and learning methods developed by children during their learning process shape their learning styles. Parents of students with excellent academic performance are purposeful and proactive in planning their children's school readiness, while parents of students with poor academic performance are usually passive in arranging academic tasks for their children.

Factors affecting parents' involvement in their children's school readiness

Different factors influence parents' views and behaviors toward participating in their children's learning preparation, learning style, and cognitive development. Parents' attitudes and behaviors toward their children's mobile phone usage during the school readiness process significantly affect their children's learning styles. The parents of students with excellent and poor academic performance show stark differences in their attitudes and behaviors toward their children watching TV and playing mobile games. For examples, parents of students with excellent academic performance would allow their children to watch educational TV programs while controlling their smartphone use. The parents of #7 student with excellent academic

performance in a private school gave up their use of mobile phones to prevent their child from developing a gaming addiction. Meanwhile, the parents of #10 student with excellent academic performance in an international school would prohibit their child from using smartphones when doing homework to leave him with a quiet learning environment.

Meanwhile, parents of students with poor academic performance would freely allow their children to play mobile games. Some of these parents, including the parent of #16 student, mentioned that their children enjoyed watching short videos on Douyin and playing games on smartphones. One mother (parent of #18 student) mentioned that while she is preparing food, her children would watch TV, use WeChat, and watch short videos freely as she could not control their smartphone use and TV watching behaviors. Some families have four children yet do not go out often. Children from these families would watch TV 24/7 or play with smartphones without being controlled by their parents. One mother (parent of #14 student) explained that she was often tired at work, so upon returning home, she would just watch soap operas on TV. Meanwhile, her husband would only play mobile games as their daughter watched.

Parents of students with poor academic performance chose not to interfere with their children's smartphone use because of their work, family economic factors, or lack of awareness. When these children grow addicted to playing mobile games, their learning will inevitably be negatively affected. One mother (parent of #20 student) admitted that she could not stop her child from watching TV and Douyin or playing with smartphones. Other parents who did not restrict their children's use of mobile phones said that their children lost interest in learning and refused to study. Playing video games and watching videos have significantly negative effects on children's learning styles and are incredibly destructive to their learning interests (Chen, 2009). If parents do not control their children's smartphone use, then their children will face immense challenges in adapting to first-grade academic requirements.

The differences in the beliefs and behaviors of parents toward their participation in their children's school readiness can positively and negatively affect their children's learning styles and cognitive development. Parents with children studying in different types of schools adopt

various ways of participating in their children's school readiness. Some excellent students had to transfer from public to international schools because they faced difficulties in adapting to the teaching system and competition in the former. Some parents showed a certain degree of blindness during their participation in their children's school readiness. Parents of public school students need to understand school readiness from the perspective of cognitive development and learning style to support their children's adaptation to the competitive system in public schools. Meanwhile, parents of private school students should focus on teaching their children primary school content in advance.

Parental involvement in school readiness can also influence children's academic performance differently depending on the attributes of their schools. The factors influencing children's academic performance in public schools include the quality of parental involvement, their parents' understanding of scientific school readiness, their families' involvement in learning, and their parents' educational background. Meanwhile, children's academic success in private schools is defined by their parents' initiative in teaching them primary school knowledge. The difference between public and private schools is that parents of students in public schools need to participate in their children's school readiness from multiple dimensions of cognitive development and learning style, while parents of students in private schools need to equip their children with prior knowledge to adapt to the first grade. International school students have a favorable household economic situation, and their families respect their natural growth. Due to the unique understanding of the parents and the social economy of the families of their students, international schools advocate the personalized development of children. As a result, parents of students in international schools are less involved in their children's readiness compared with parents of public school students. When children enter first grade in international schools, parental involvement only has a small impact on their school readiness.

Parents also need to be equipped with a scientific awareness of school readiness. Parents can participate in their children's school readiness differently. For instance, they can enroll their children in extracurricular activities. Some parents may be unable to participate in their children's school readiness from a behavioral perspective due to their SES and time constraints.

However, a scientific understanding of school readiness serves as the basis of parents' educational practice. The interview data revealed that many families lacked such understanding.

Most of the parent participants let their children naturally go to primary school without learning primary school knowledge in advance. Some of these parents do not think about the circumstances in which their children fail to adapt and do not realize that cognitive development and learning styles are core issues in school readiness. Therefore, kindergartens and primary schools should regularly provide these parents with scientific guidance on school readiness to improve their awareness of such concept.

Parents must participate in their children's school readiness

Early identification and intervention can effectively improve the school adaptability of children and reduce the risks to their academic development (Gai, 2005). In this study, parents of students from different types of schools in Longgang District, Shenzhen were interviewed to understand the influence of parental involvement in school readiness after children enter the first grade. Parents should be encouraged to take an active part in their children's school readiness for several reasons. First, the systems and mechanisms of kindergartens and primary schools are inherently different, including their curriculum and teaching management, faculty management, and teaching and research management. These differences pose an inevitable problem in promoting the connection of early childhood science. School readiness includes physical and mental preparation, life, society, and learning readiness (A Guideline on Promoting the Scientific Connection Between Kindergartens and Primary Schools, 2021). However, the learning readiness part focuses on cognitive development and learning styles. The interviews with parents highlighted the fierce competition in schools in the district. Public schools use academic study as their only standard when judging the academic performance of their students. In such an environment, if a child only relies on school study and if his/her family does not participate in his/her school readiness, then s/he will encounter significant learning challenges upon entering first grade and continue showing poor academic

performance.

Children's cognitive development and learning style are positively correlated, with a higher learning ability corresponding to a better learning style. Children can easily enjoy learning when they have a solid cognitive development and learning style. Conversely, a lower learning ability corresponds to a poorer learning style. Children with such low learning ability tend to feel frustrated and do not enjoy learning. Children's cognitive development and learning styles affect each other.

The government should strengthen support for disadvantaged families to participate in preparing their children for school

The government should support parents who are unable to participate in their children's school readiness due to various limitations. Multiple-children and single-parent families are forced to make a living. Parents cannot provide their children with quality companionship or appropriate extracurricular resources for school readiness. Government agencies should actively encourage the heads of multiple-children and single-parent families to participate in their children's educational activities with an accepting and open attitude. Social institutions should go to these families to learn about the specific conditions of their children and provide support in order for vulnerable groups of children to meet the basic requirements for school readiness and adapt to their future formal school life. The Chinese government is also vigorously promoting the three-child policy, which may create problems for parents in their participation in their children's school readiness and eventually lead to intergenerational poverty.

Contributions and limitations of the study

This study uses a diverse sample to understand how parents involve themselves in their children's school readiness. The sample covers different types of schools, family SES, educational backgrounds and includes parents of students with excellent and poor academic performance, stay-at-home parents, parents from high- and low-income groups, and parents from high- and low-education groups. Given the differences among international, public, and private schools, including participants from diverse backgrounds is essential. This study

adopts purposive sampling, and the sample should be typical. The sample selection not only aims to maximize diversity but also to let parents know which behaviors and factors affect their scientific involvement in their children's school readiness. In this way, these parents can identify which behaviors and factors can positively or negatively influence their children's cognitive development and learning style.

However, this study did not involve the parents of students with average academic performance. Including these parents in the sample may enhance the comprehensiveness of the findings and provide additional reference value for policy makers and parents with different SES. The researchers also want to study the impact of these parents' involvement in school readiness on their children's cognitive development and learning styles.

This study adopted to purposive sampling, and the sample selection criterion are based on the purpose and requirements of the research objectives and research questions, rather than random sampling. However, purposive sampling also has some limitations. First, since the sample selection is not random, the representation of the sample cannot be guaranteed, and thus cannot be inferred to the population. Second, there may be selection bias in target sampling, because the samples that meet the research purpose and requirements are often not representative of all samples in the population.

In addition, some participants reported that they had faced difficulties in participating in their children's school readiness partly due to their lack of financial support, work hour constraints, and cultural backgrounds. Therefore, this group of people requires further support. Research on coping strategies and parents' time allocation can clarify this group's social service support problems.

The education department should promote the implementation of the parental school readiness involvement policy. Formulating a scientific policy blueprint is only the starting point for the complex and arduous systematic school readiness project. Education departments at all levels should not only use administrative coercive force to promote the scientific connection plan for local kindergartens.

The findings also highlight inherent differences in the system and mechanism between kindergartens and primary schools. In order to prevent children from lagging behind upon entering the first grade, parents need to participate in their school readiness. However, those factors affecting such participation are diverse, including family SES. However, these parents need to understand scientific school readiness, which is the foundation of their parenting practice. Lack of support for multi-children or single-parent families can also affect parents' involvement in their children's school readiness. Therefore, administrative departments should support these families to increase their confidence in their children's education. Effective parental involvement in preparing children for school is a practical means to avoid intergenerational poverty.

While each family faces a different SES situation, parents should actively take additional responsibility in nurturing their children's behaviors and habits. For example, they can set rules for the use of electronic devices and provide their children with high-quality companionship, such as by reading, doing homework, and completing chores together. These parents should develop their children's sense of responsibility and perform exercises together instead of playing mobile games or watching TV at home. They can make effective use of free public resources, such as libraries, museums, bookstores, and college campuses, which can promote children's cognitive development and learning styles.

Parents can also look at their children's school readiness from a scientific perspective rather than just emphasizing their intellectual readiness for primary school. In terms of cognitive development, parents should arrange activities that benefit their children's attention, perception, memory, imagination, thinking, learning ability, and learning habits to expand their cognitive development. Parents should also pay attention to their child's learning style, including their development of non-intellectual factors, such as by stimulating their child's learning interest, curiosity, imagination, creativity, willingness to explore, and perseverance. In this way, these parents scientifically and systematically involve themselves in their child's school readiness.

Parents from disadvantaged families are less likely to participate in their children's school readiness mainly because they are busy with their paid work. Kindergartens should give these

parents additional support in the different dimensions of science readiness or develop the corresponding curricula. Kindergartens should also organize parent meetings and open days to promote their scientific participation in school readiness. These institutions may also develop a continuous school readiness curriculum that guides parents' scientific participation in their children's school readiness and helps children smoothly transition to primary school. For example, kindergartens can guide parents to read at home with a small group of children to help these children develop good reading habits.

Appendix I a: 学生学业成绩标准评价表

班级： **孩子姓名：**

挑选标准类别	**项目**	**认知能力及学习风格**	**具体表现**	**非常同意（4分）**	**同意（3分）**	**不同意（2分）**	**非常不同意（1 分）**	**入学准备弱的学生参考标准**
课堂表现(Yu & Wang,1996) (Ling, 2001)	规则意识	控制抑制能力	规则意识强、保持端正坐姿					走动，爱说话
	好提问	学习风格	爱提问、好奇心强、积极思考参与课堂活动					不爱思考
	上课的专注度	专注能力	上课保持专注					开小差
作业情况	背书的情况	工作记忆能力	快速无误完成					不能完成错误多
	完成质量	学习能力	质量高错误率低					质量低错误率高
	准时提交	控制抑制能力	快速完成并提交					不能完成错误多

测试成绩(Wang, 2009) (Dong & Zhou, 1994)(Zhang, 2011)	体育成绩	感觉运动能力	班级前4名					排名倒数4名
	数学成绩	数学逻辑知识	班级前4名					排名倒数4名
时间观念	课间10分钟	控制抑制能力	课间休息后(上课前)准时回座位					课间休息后（上课前）不能准时回座位

备注

1.从深圳龙岗区的民办、公办以及国际学校（各一）选择学生的家长。
2.每个学校选择一个一年级的班级，每个班级挑选 8 个孩子，4 个为入学准备情况最好的孩子的家长以及 4 个入学准备最弱的孩子的家长，一共选择 24 个孩子的家长。
3.每个班级入学准备好的孩子家长中应该包含两个全职妈妈（爸爸）的样本；入学准备弱的孩子家长中选择两个全职妈妈（爸爸）的样本。
4.教师将评分采纳李克特量表(Likert scale)，每一个项目都有"非常同意"、"同意"、"不同意"、"非常不同意"四种回答，分别记为 4、3、2、1，班级分数最高的为入学准备好的学生，最低为最弱的学生。

Appendix I b: Students' Academic Performance Selection Criteria Evaluation Form

Selection criteria	**Item**	**Cognitive development and learning style**	**Specific performance**	**Strongly agree (4 points)**	**Agree (3 points)**	**Disagree (2 points)**	**Strongly disagree (1 point)**	**Poor selection criteria**
Classroom performance (Shan & Wang, 2021) (Ling, 2001)	Rule awareness	Control inhibition	Strong awareness of class rules, maintain a correct sitting posture					Move, talk
	Raising questions	Learning style	Loves asking questions, curious, thinks positively, and participates in classroom activities					Unwilling to think
	Concentration	Concentration	Stays focused in class					Desertion
Homework	Recitation task	Working memory	Fast and error free					Cannot correct many errors

	Home work quality	Learning ability	High quality and low error rate					Low quality with error rate
	Home work submission	Self-control	Completes and submits homework quickly					Cannot complete with many errors
Test score (Wang, 2009) (Dong & Zhou, 1994; Zhang, 2011)	Sports score	Sensorimotor ability	Top 4 in class					Bottom 4 in class
	Math score	Mathematical logic ability	Top 4 in class					Bottom 4 in class
Time management	10 minutes between classes	Control inhibition	Returns to seat on time after class break (before class)					

Notes:

1. Parents of students from private, public, and international schools (one each) in Longgang District, Shenzhen are selected.

2. Each school chooses a first-grade class and eight children for each class, four parents of children with the best preparation for school, and four parents of children with the weakest preparation for school. A total of 24 children are selected.

3. Parents of children ready for school in each class should include two full-time mothers (fathers), and parents of children with weak school readiness should include two full-time mothers (fathers).

4. The teacher uses the Likert scale for scoring, and each item is rated on a four-point scale, “4 = strongly agree,” “3 = agree,” “2 = disagree,” and “1 = strongly disagree.” The students with the highest scores are ready for admission, while those with the lowest scores are not ready for admission.

Appendix II a: 家长参与儿童入学准备的情况问卷

尊敬的家长，您好：我是香港岭南大学政策研究博士班的学生，此问卷调查的目的在于了解家长参与孩子的入学准备教育的情况。答案没有对错之分，如实填写可以帮助我进行真实的学术研究，并提出有效帮助家长们的方案。您的所有资料均为匿名，并仅由研究人员保管，也仅是用于本研究分析，一概不会向外人公开。感谢您的参与。

孩子姓名： _____ (以作访谈跟进之用)

孩子的出生年月: _____

I. 家庭社会经济地位

Q1. 您是孩子的:

①爸爸/妈妈②爷爷奶奶（外公外婆）③监护人

Q2. 您的教育程度是:

①初中及以下 ②高中（职业学校） ③大学（未获学士学位的）大学生，大学肄业生 ④硕士及以上

Q3. 您的职业是:

①国家机关、党群组织、事业单位 ②企业人员(包括国企、民营企业和外企)
③个体/经商 ④普通工人⑤兼职工作（比如代购或者网店）⑥全职爸/妈

⑦其他:（请填写）_____

Q4. 您每天工作的时长？

①不多于 8 小时(含 8 个多小时) ②9-10 小时（含 10 个多小时）
③11-12 小时（含 12 个多小时） ④13 小时以上

Q5. 您的家庭结构为:

①核心家庭（孩子的父母与孩子）②单亲家庭（只有父亲或母亲和孩子）
③隔代家庭（孩子父母常年不在家，老人在家带孩子）④三代同堂其他

Q6. 家庭平均月收入为（元）:

①0-4,999 ②5000-9,999 ③10,000-14,999 ④15,000-19,000
⑤20,000-24,999 ⑥25,000-29,999 ⑦ 30,000 或以上

II. 教育投入

Q7. 您家里目前订了报刊杂志没有：①订了 ②以前订过 ③没有

Q8. 您家里目前藏有多少儿童图书：① 多于 30 本以上 ② 10-30 本左右 ③10 以下 ④无

Q9. 您家里每个月给孩子在培训班上的花费（元）：

①1,000 元以下 ②1,000-1,499 千 ③1,500-1,999 千

④2,000-2,999 千 ⑤3,000 元以上

III. 家长参与儿童入学准备情况

Q10. 孩子看电视、上网的时间家里有明确的规定吗？

①有的，孩子可以遵循上网的规定 ②有的，孩子不能遵循上网的规定 ③没有规定

Q11. 你认为你的孩子的教育需要父母的参与吗？

①学校的事情，家长不需要管 ②学校管学习，家长管生活 ③家校需要合作

Q12. 您每天能陪伴孩子的时间为 (除去睡眠时间）

①少于 1 小时 ②1-2 小时 ③3-4 小时 ④5-6 小时 ⑤7 小时以上

Q13. 在参与孩子的入学准备中，你已经做了以下哪些工作?（可多选）

①家庭日常教育 ②辅导作业 ③参加家长会

④与老师沟通与孩子一起参加学校的有关活动 ⑤其他（请填写）_____

Q14. 孩子在家里做作业时，您一般都在：

①只是待在家里，不打扰孩子学习 ②在旁边看电视 ③有时在家里玩手机 ④不常在家里

Q15. 在过去的一个月里，你带你的孩子去以下激发好奇心的地方？

a. 书店？ ①经常 ②偶尔 ③从来不

b. 科技馆？ ①经常 ②偶尔 ③从来不

c. 名胜古迹？①经常 ②偶尔 ③从来不

d. 大学校园？①经常 ②偶尔 ③从来不

IV. 家长所需要的支持

Q16. 在入学准备方面，您最大的烦恼是：

①没时间 ②不知道如何教育孩子 ③父母教育建议不同 ④其他（请填写）___

Q17. 您获得入学准备知识的<u>主要</u>途径是：

①家长会 ②书本、杂志、媒体 ③长辈影响 ④自己摸索

⑤经验积累 ⑥其他（请填写）____

Appendix II b: Questionnaire on parent participation in children's school readiness

Dear parents, I am a student in the Doctoral Program in Policy Studies at Lingnan University in Hong Kong. This questionnaire aims to understand your participation in your children's school readiness. There are no right or wrong answers. Answering these questions truthfully will help me conduct my academic research and develop plans to help you effectively. All the information you share will remain anonymous, will only be used for the purpose of this research, and will never be disclosed to outsiders. Thank you for your participation.

Child Name: _____ (for follow-up interview)

Child's Date of Birth: _____

I. Family SES

Q1. You are a child of:

① Mother/father ② Grandparents ③Guardians

Q2. Your educational level is:

① Junior high school and below ② High school (Secondary vocational or college and higher vocational) ③ Undergraduate ④ Masters' degree or above

Q3. Your occupation is:

① State organs, parties, and mass organizations and institutions ② Enterprise personnel (including state-owned enterprises, private enterprises, and foreign enterprises)

③ Self-employed/business ④ Ordinary workers

⑦ Others: (please fill in) _____

Q4. How long do you work every day?

① Up to but no more than 8 hours② 9–10 hours

③ 11–12 hours④13 hours or more

Q5. Your family structure is as follows:

① Nuclear family (the child's parents and children) ② single-parent family (only the father or mother and the child)

③ Families with different generations (the parents of the children are not at home all year round, and the grandparents take care of the children at home) ④ Three generations living in the same house Others

Q6. The average monthly household income is (yuan):

① 0–4,999 ② 5,000–9,999 ③ 10,000–14,999 ④ 15,000–19,000

⑤ 20,000–24,999 ⑥ 25,000–29,999 ⑦ 30,000 or more

II. Educational investment

Q7. Does your family currently subscribe to newspapers and magazines: ① Have subscribed ② Have subscribed before ③ No

Q8. How many children's books do you have at home: ① More than 30 books ② About 10–30 books ③ Below 10 ④ None

Q9. Your family's monthly expenses for children in training classes (yuan):

① 1,000 or less ② 1,000–1,499③ 1,500–1,999

④ 2,000–2,999⑤ 3,000 or more

III. Parent involvement in children's school readiness

Q10. Are there clear rules at home when children watch TV and surf the Internet?

① Yes, the child can perform ② Yes, but the child cannot perform ③ Not clearly specified

Q11. Do you think your child's education needs parental involvement?

① Parents do not need to be concerned about school affairs ② Schools control learning, while parents control life ③ Home–school collaboration

Q12. How long can you spend with your child every day (excluding sleep time):

① Less than 1 hour ② 1–2 hours ③ 3–4 hours ④ 5–6 hours ⑤ 7 hours or more

Q13. When participating in education, which of the following have you done? (multiple choices possible):

① Family daily education ② Tutorial homework ③ Participate in parent meetings

④ Communicate with teachers and participate in school activities with children ⑤ Others (please fill in): _____

Q14. When your child is doing homework at home, you are usually:

① Staying at home without disturbing ② Watching TV nearby ③ Playing mahjong at home ④ Not usually at home

Q15. How often have you taken your child to the following places that stimulate their intellectual curiosity in the past month?

a. Bookstores? ① Often ② Occasionally ③ Never

b. Science and technology museums? ① Often ② Occasionally ③ Never

c. Places of interest? ① Often ② Occasionally ③ Never

d. College campuses? ① Often ② Occasionally ③ Never

IV. Support needed by parents

Q16. In terms of admission preparation, your biggest trouble is:

① Having no time ② Not knowing how to teach ③ Disagreement with partner ④ Others (please fill in): _____

Q17. Your main way of gaining knowledge of school readiness is:

① Parent meetings ② Books, magazines, and media ③ Influence of elders ④ Own exploration

⑤ Accumulation of experience ⑥ Others (please fill in): _____

Appendix III a: 深圳家长参与入学准备对一年级儿童学习方式和认知发展的影响访谈指南

访谈简介

尊敬的家长，您好，我是香港岭南大学的政策研究的博士生，为了撰写博士论文《家长参与入学准备对于孩子进入一年级后认知发展和学习风格的影响》对您进行访谈。访谈旨在了解家长参与儿童的入学准备对其进入小学后认知发展和学习风格的影响。是次访谈提出三个具体核心问题: (1) 家长参与入学准备的观念和行为; (2) 影响家长参与孩子入学准备的因素; 以及(3) 家长参与孩子入学准备对认知发展和学习风格的影响？本访谈将对家长所提供的信息严格保密。

I.家长自我介绍

1.请先做一个自我介绍吗?

2.孩子上小学了，适应小学的情况怎么样？孩子目前在小学的学习成绩如何?

II.家长参与入学准备的观念和行为

1.您认为有必要参与孩子入学准备的学业部分吗？哪部分是必要的和最重要的？为什么？（专有名词：入学准备）

2.您怎么理解认知发展和学习风格（观念和行为）?

a.若家长不理解相关专有名词，才给予提示

认知发展: 如注意力、知觉、记忆、想象、思维发展和学习能力(Li, 2014)

学习风格：包括学习态度、学习技能、学习兴趣、好奇心、想象力和创造力、探索意愿、坚持性和专注力(Yu, 2010)

b.你认为你对认知发展和学习风格的理解，会否影响你对参与孩子入学准备有影响吗?

3.在幼儿园期间，您怎么参与孩子的入学准备工作来促进孩子的认知发展和学习风格的？这些活动如何促进孩子的认知发展和学习风格?

a.感觉统合：体育运动

b.专注力：亲子阅读，LEGO;

c.逻辑思维：数学思维训练

d.工作记忆：让孩子复述故事，背诵古诗词等；

e.抑制控制：有节制的看电视，玩 3C 产品等(Chen, 2009)

4.在孩子的幼儿园期间，孩子的课余时间是怎么安排的？

a.是否有参加与幼小衔接班相关的课程？

b.为什么会这样安排？

c.它如何影响孩子的认知发展和学习方式？

III.影响家长参与孩子入学准备的因素

1.哪些因素影响了您参与孩子的入学准备，并对他们学习方式和认知发展产生影响？这些因素会产生什么样的影响（后续问题：正面、负面、无影响）？

a.父母对入学准备、父母教养方式、家庭社会劣势、家庭学习环境(McLoyd，1998)；

b.家庭收入、父母的教育水平和父母的职业 (Liu & Wu，2018)；

c.父母的养育认知、养育方式、家庭的经济和文化资源和家庭教育投资 (Wang & Wang, 2017)

2.您认为您的专业和职业有助于（阻碍）孩子的认知发展和学习方式的入学准备吗？

IV.家长参与孩子入学准备对认知发展和学习风格的影响

1.您参与孩子的入学准备对孩子进入小学后的认知发展和学习方式有哪些影响？

2.您的孩子进入小学后在学习中遇到的最大挑战是什么？你本可以在幼儿园做什么样的行为来防止这种情况发生？

V.其他

1.除了家庭资源外，您还有什么资源可以帮助孩子入学准备的认知发展和学习风格？

2.您认为在教育孩子学习准备方面有哪些好的做法？

3.在孩子小学学习方面，您最需要哪方面的支持？

4.您对孩子的学习有何困扰或帮助？

Appendix III b: The impact of parental involvement in school readiness on first-grade children's learning style and cognitive development in Shenzhen, China interview guide

This interview outline was built using ecological theory as a theoretical framework and by referring to the literature on parental involvement in school readiness to understand the impact of such involvement on children's cognitive development and learning styles after entering primary school. This outline also raises specific questions about the core issues raised in this study, namely, the understanding and behavior of parents toward their involvement in their children's school readiness and the influence of such involvement on their children's cognitive development and learning styles. The collected information will be kept strictly confidential.

1. How do you understand and participate in your children's school readiness (understanding and behaviors)?

2. Do you think you must be involved in your children's school readiness? Why? Which part is the most important?

Behavior

3. How are you involved in your child's cognitive development and learning style during kindergarten? Why?

4. What was the biggest challenge you faced during your participation in your children's school readiness? How were these challenges resolved?

5. How do you arrange your children's after-school time?

Follow-up questions:

Are there any courses related to the kindergarten bridging class for children? Why were these courses arranged? How do they affect your children's cognitive development and learning styles? In preschool, what did your children need the most in terms of learning? What was the reality after entering primary school?

Impact factors

6. What factors affect your involvement in your children's school readiness? How do these factors shape your understanding and behavior toward such involvement?

Follow-up question:

What is your home learning atmosphere like?

Who in the family is mainly involved in your children's school readiness? How much time do you allot to your children's school readiness every week?

What factors affect your involvement in your children's school readiness, and why do these factors affect you? How do they influence you: positively, negatively, or no influence? Which factors have a positive, harmful, or invalid effect?

What educational materials (e.g., books, toys, or videos) did you have to support your children's school readiness? How often do you make new purchases?

7. How did your specialties and vocation help your children's school readiness?

8. What is your children's current academic performance in primary school, and how did their teachers evaluate their academic performance?

Follow-up questions:

l. Which behaviors did you participate in that contributed to the cognitive development and learning styles of your children? Which ones are optional to do in advance? Which ones are hindering?

l. What learning aspects are you satisfied with regarding your children's cognition development and learning style after entering primary school? How were involved in these aspects during your children's school readiness stage?

9. What are the biggest learning challenges that your children faced after entering primary school? What behaviors could you apply during kindergarten to prevent these challenges?

Follow-up questions:

l0. What intervention strategy can you use to effectively reduce the gaps in children's learning styles and cognitive development due to differences in parental involvement during the preschool stage?

11. What should preschool parents do to cultivate their children's school readiness?

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