

Editorial

Special Issue: Sustainable Early Childhood Education for the Sustainable Development of Aging China

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1. The Origin and Core Concerns of This Special Issue

Since the beginning of the 21st century, China has entered a period of extremely low fertility and rapid aging, which poses a serious threat to its sustainable development. To address this crisis, China has radically revised its fertility policy through the state's guidance for regulating couples' reproductive choices, abandoning the one-child policy and adopting the two-child (2016), and then the three-child (2021) policies. Currently, married couples are permitted and urged to have three children, viewed as the antidote to the aging population issue. However, this policy shift has transformed China's fertility culture from 'limitation' to 'stimulation' [1], which will have significant implications for politics, economics, health, and other fields in aging China. For example, the growing number of young children will require more early childhood education services, which means more educators and trainers, and more preschools and colleges. To meet this demand, various policies and measures have been initiated by the educational authorities at different levels to foster the sustainable development of early childhood education.

2. The Goal and Topics of This Special Issue

This Special Issue, titled "*Sustainable Early Childhood Education for the Sustainable Development of Aging China*" [2], aimed to comprehensively examine the effects of the three-child policy on the sustainable development of children, parents, teachers, and the society using economic, demographic, psychological, pedagogical, and other scientific methods, with contributions such as national surveys, group interviews, case studies, and program evaluation studies from scholars who share similar concerns. We proposed the following foci for this Special Issue:

- The development and implementation of sustainable early childhood education policies;
- The implementation of quality assessment, assurance, and improvement programs at national, regional, and local levels;
- The sustainable development and supply of professional teachers;
- The sustainable development of young children in the digital era;
- Chinese parents and family functioning for sustainable development;
- The sustainable development of early childhood institutions in aging China.

3. Results and Discussion

This Special Issue has successfully collected 13 cutting-edge studies to examine the impact of China's new three-child policy through various perspectives and methods (See Table 1); five themes have emerged. The implementation of the three-child policy can be



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considered a macrosystem-level change. Sections 3.1 and 3.2 explore how this macrosystem-level change impacts on the two innermost microsystems: early childhood education programs and families with young children, respectively. Section 3.3 focuses specifically on fertility intentions for a second child and infant–toddler childcare services in the context of aging China. The papers featured in Section 3.4 provide a snapshot of children’s participation in after-school tutoring, and its relation to child development. Section 3.5 presents an innovative approach to measuring young children’s analogical reasoning using digital technologies. In the paragraphs that follow, we highlight some of the key findings that each thematic section illuminates.

Table 1. The list of contributions to this Special Issue.

No.	Title and Authors
1	The Sustainability of Early Childhood Education in Chinese Teachers’ Perspective: Evidence from a National Validation Study by Xinxin Liu, Yong Jiang and Hui Li
2	Emotional Labor and Professional Identity in Chinese Early Childhood Teachers: The Gendered Moderation Models by Sha Xie, Luyao Liang and Hui Li
3	Early Childhood Teachers’ Fertility Willingness under China’s ‘Third-Child’ Policy by Wei Wang, Luyao Liang, Jing Luo, Hui Li and Jing Tang
4	Can After-School Tutoring Sustainably Empower Preschoolers’ Development? —A Longitudinal Study by Jin Shi, Haiping Xue, Chenchen Fang and Li Luo
5	Can Preschool Teachers’ Accurate Analysis of the Development Trajectories of Children’s Preconceptions Ensure Their Effective Response? Evidence from Situational Judgement Tests by Li Li, Xue Lv, Yaqin Xi and Liping Guo
6	Game-Based Formative Assessment of Analogical Reasoning in Preschool Children: Support from the Internet of Things Technology by Xue Lv, Li Li, Liping Guo, Ting He and Sirui Liu
7	Parenting Stress, Parent–Child Literacy Activities, and Pre-Schoolers’ Reading Interest: The Moderation Role of Child Number in Chinese Families by Jia Yang, Wanlin Xie, Xunyi Lin and Hui Li
8	Developmental Trajectories of Symptom-Specific Anxiety in Chinese Preschoolers: The Role of Maternal Anxious Rearing Behaviors by Siyu Zhou and Xiaowei Li
9	The Relationship between Childcare Services Participation and Parental Subjective Well-Being under China’s Three-Child Policy—Based on the Mediation Effect of Parenting Stress by Xiumin Hong, Jingyuan Wang and Wenting Zhu
10	Can Preschool Out-of-Kindergarten Tutoring Improve Approaches to Learning for Children? Evidence from China Family Panel Studies (CFPS) 2012 to 2020 by Haiping Xue, Chenchen Fang, Jin Shi, Xiaoqing Hu and Fang Qian
11	Development and Validation of Chinese Kindergarten Teachers’ Learning and Development Scale by Qingru Duan, Yong Jiang, Yifang Wang, Chuchu Zheng, Jing Liu and Xin Liu
12	The Challenge of Chinese Children’s Emotion Regulation: Child Number, Parental Emotion Regulation, and Its Relationship with Reactions to Children’s Negative Emotions by Xiumin Hong and Mei Wang
13	Effects of Social Support on Professional Identity of Secondary Vocational Students Major in Preschool Nursery Teacher Program: A Chain Mediating Model of Psychological Adjustment and School Belonging by Yingxin Chen, Huihua He and Yan Yang

3.1. Sustainable Development of Early Childhood Education Programs and Teachers

Understanding the sustainability of early childhood education programs in the era of the three-child policy was one of the central calls for this Special Issue. Contribution 1 opens this Special Issue with a national survey study aiming to explore the views of sustainable early childhood education in a group of 3636 Chinese teachers [3]. This study showed that the perceived sustainability of early childhood education has reached an acceptable level in China, and teacher ratings of sustainability in ecology were the highest, followed by sustainability of management and policy. The authors used a person-centered approach to identify four profiles that reflected the different degrees of sustainability of early childhood

education. They also found that the quality of a kindergarten was a significant factor influencing the teachers' evaluation of early childhood education sustainability. They suggest enhancing policy support to foster the deeper and lasting development of early childhood education.

The sustainable development of teachers is at the core of the sustainability of early childhood education programs. Both Contribution 2 and Contribution 13 attended to the professional identity of early childhood teachers. The authors of Contribution 2 examined how professional identity mediates the relationships between teachers' education level, teaching experience, and their use of strategies to manage their emotions [4]. They also found that these relationships differed for male and female teachers, using a multigroup structural equation model. This study highlights the need for professional development programs and support that are tailored to teachers' gender and practical needs. Contribution 13 extends the literature by investigating how social support influences teachers' professional identity [5]. This study showed that social support was directly related to teachers' professional identity and that this relationship was mediated by two factors: psychological adjustment and school belonging. The study used a sample of 377 pre-service early childhood teachers. The findings suggest ways to enhance teachers' professional identity at an early stage.

Contribution 11 focused on the professional development of early childhood teachers and created a valid tool to measure their learning and growth, called the Chinese Kindergarten Teacher Learning and Development Scale (CKTLDS) [6]. The CKTLDS showed good psychometric properties for Chinese kindergarten teachers with different backgrounds based on the results of item analysis, exploratory and confirmatory factor analyses, and internal consistency analysis. The CKTLDS can help enhance the sustainable professional development of kindergarten teachers by giving empirical evidence of their learning and growth levels, and pointing out the areas that need more training and support.

To foster children's scientific thinking, it is important that teachers can identify and address the developmental paths of children's prior knowledge (DPK). Contribution 5 used situational judgement tests to assess the professional abilities of 1084 early childhood teachers in recognizing and responding to the DPK [7]. The authors also differentiated between teachers' recognition and response abilities and argued that teachers' accurate recognition did not ensure a high-quality response based on the DPK. The authors recommended that teacher education and professional development programs should focus on enhancing teachers' recognition and response abilities.

3.2. Sustainable Development of Young Children and Their Families

Contribution 12 explored how the three-child policy affected the emotional well-being of parents and children in China [8]. The study surveyed 7807 Chinese parents with young children and compared the emotion regulation of children from one-child, two-child, and three-child families. It also examined how parental emotion regulation and parental responses to their children's negative emotions were related to children's emotion regulation. The study revealed an alarming trend of families with more children having higher levels of emotion regulation among both the parents and children, and the parents were less responsive to their children's negative emotions. The authors suggest that the emotional health of parents and children in three-child families requires more attention.

Contribution 8 followed the development of four specific anxiety symptoms in young children over time and found that these symptoms changed according to the typical challenges in different stages of child development [9]. The authors also looked at how maternal anxious rearing behaviors were related to children's anxiety symptoms from a developmental point of view. They found that these behaviors had different associations with four specific anxiety symptoms and the associations may alter over the initial years of schooling. This study has implications for research and practice relating early childhood mental health and parenting support services.

Contribution 7 examined the possible impact of the three-child policy on young children and their families [10]. Based on the ecological systems theory and family systems theory, the aim of this study was to explore how child number, parenting stress, parent-child literacy activities, and children's reading interests were related. The results of this study showed that parent-child literacy activities mediated the relationship between parenting stress and children's reading interest, and the child number moderated this relationship. This study provides empirical evidence on how the three-child policy affects parenting stress and the home learning environment.

3.3. Fertility Willingness and Childcare Services in Aging China

Contribution 3 investigated Chinese early childhood teachers' willingness to have more children under the three-child policy [11]. Compared to other professionals, this study showed that kindergarten teachers had a lower willingness to have an extra child. Based on a five-component model, this study explored the factors that influenced kindergarten teachers' willingness to have more children at both the macro and micro level, such as the public fertility system and service, economic status and health, family relationships, career development, and emotional needs. Their findings suggested a holistic approach to increase kindergarten teachers' willingness to have more children without compromising their career opportunities to support their sustainable professional development.

Contribution 9 examined the relationship between children's participation in childcare service for children under the age of 3, and their parents' subjective well-being in China [12]. The authors compared parental subjective well-being among parents whose children participated and did not participate in childcare service, and among the parents with children participating in different types of childcare service. The results of this study showed a small mediating effect of parenting stress on the relationship between childcare service participation and parental subjective well-being. The authors advocated for the provision of affordable and high-quality childcare service for infants and toddlers to improve parents' subjective well-being and reduce their parenting stress.

3.4. After-School Tutoring and Child Development

Contribution 10 reflected on data from the China Family Panel Studies from 2012 to 2020 to investigate the effect of after-school tutoring on 4–6-year-old children's approaches to learning [13]. This study observed a growing number of children who participated in either subject-based or non-subject-based after-school tutoring. Child gender, family socioeconomic background, and program location were found to be significantly associated with children's participation in after-school tutoring. The propensity score matching results indicated that after-school tutoring was not very effective in enhancing children's approaches to learning, especially for subject-based after-school tutoring. The authors suggest a need to increase the systematic supervision and strict regulation of after-school tutoring programs.

Contribution 4 explored the important question of whether after-school tutoring could help young children achieve sustainable and empowered development [14]. Using stratified sampling, 664 children enrolled in 17 kindergartens were assessed by using the East Asia Pacific Early Child Development Scales in year one, and 367 of them in year two. The results from this longitudinal design study showed that participation in after-school tutoring had no significant immediate effect, but a limited lasting impact on children's learning and development. The authors stress the importance of developmentally appropriate practices and point out that any advanced or incorrect tutoring will only increase the pressure on children and the economic burden on their families.

3.5. Child Assessment in the Digital Era

Contribution 6 analyzed a new game-based assessment that used the Internet of Things Technology (IoT) to measure young children's analogical reasoning [15]. The IoT can automate the recording and transmission of data and provide immediate feedback for

children, which has many benefits. The decision tree model, one of the educational data-mining techniques, was used to classify children's performance in analogical reasoning games. The results of this study supported the feasibility and accuracy of using the IoT-assisted game-based assessment, and as the authors discuss, the assessment itself could be seen as a process of children's learning. This study introduces a novel model in analogical reasoning assessment and offers evidence-based guidance on the use of emerging information technologies in early childhood assessment.

4. Conclusions

Taken together, this Special Issue of *Sustainability* presents 13 papers that significantly enhance theory, measurement, and empirical knowledge on the sustainability of early childhood education in contemporary and aging China. These studies collectively provide deeper insights into the effects of the three-child policy on early education and development in different developmental contexts and from diverse theoretical perspectives. These studies also set the stage for future research to advance this field in new directions and offer new information about supportive strategies for promoting the sustainability of early childhood education. We hope that this Special Issue will spark a wider global discussion about the sustainable development of early childhood education in aging societies.

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