

A Case Study on the Integration Intervention for a Child with Autism in Kindergarten

CHUNYAN JIN, FANGFANG MIAO, BAILIANG WU

Abstract This study explores a comprehensive intervention model for a child with autism, referred to as Child A, within the framework of empowerment theory combined with integrated education in kindergarten. The three-year intervention involved self-empowerment (game support), peer-empowerment (peer interaction activities) and community empowerment (family education support). The study shows significant improvements in Child A's motor skills, language development, and social interaction, facilitating a smooth transition and adaptation to primary school. The results validate the effectiveness and feasibility of this model in the practice of integrated kindergarten education and provide theoretical and practical references for establishing a more comprehensive and sustainable educational support system for children with autism.

Keywords: • empowerment • children with autism • inclusive education • intervention

ADDRESS: Chunyan Jin, College of Education Sciences, Leshan Normal University, 614000, Leshan, China, email: 187024870@qq.com. Fangfang Miao, College of Education Sciences, Leshan Normal University, 614000, Leshan, China, email: 276044833@qq.com. Bailiang Wu (corresponding author), Institute of Social work and Community governance, Chengdu University of Information Technology, 610225, Chengdu, China, email: 272725081@qq.com.

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1 Introduction

Autism Spectrum Disorder (ASD) refers to a group of neurodevelopmental disorders that start early in life and are marked by difficulties with social communication and repetitive behaviors[1]. Early intervention is more than essential because the brain is most adaptable during this period, which helps form and reorganize neural connections in response to environmental stimuli[2]. Over the past ten years, many new interventions for children with autism have been developed [3]. While there has been progress with behavioral therapies and medications, these children continue to face immense challenges when trying to integrate into daily life [4,5].

As for now, studies have documented the positive outcomes of behavior-oriented early intervention programs across different functional domains, such as social skills, play, cognition, and emotion [6-9]. What should be noticed is that, in the majority of existing studies, most of these programs are run by researchers or therapists in one-on-one settings or by special teams, rather than by regular people like teachers in natural environments where children live and play with their peers [10]. That is to say, most studies have focused on how well these programs work in ideal conditions, not in real-world settings. To advance evidence-based practice, it is of importance to evaluate the effectiveness of early intervention programs under more natural, real-world conditions, such as in inclusive classroom settings where teachers act as the interventionists.

Preschool education stands as the foundation for early childhood development, which plays an integral role in growth and development of children with autism [11]. In addition, inclusive education during the preschool stage can remarkably enhance the life skills and social functions of children suffering from ASD and benefits their long-term education and social participation [12,13]. In the United States, laws have mandated the provision of high-quality inclusive early childhood education programs for children with disabilities for more than 40 years. Certain leading professional organizations also recommend this practice, and it is emphasized in federal public policy initiatives. [14]. In China, despite several policy support for inclusive education, many challenges remain in practical implementation of these initiatives. For instance, public and private kindergartens differ in how they accept children with autism, to a great extent [15]. There exists a noticeable gap between major cities and smaller cities or rural areas. While cities like Shanghai are making strides in inclusive education [16], children with autism are often turned away because preschool teachers are not proficient enough in providing proper care and education in smaller cities [17]. In this context, even when they are admitted, children with autism often struggle to adapt to the learning and living environment there [18].

Regarding the issue of inclusive education for children with autism in kindergartens, the empowerment theory's support framework has been widely

applied to enhance parental involvement and relevant capabilities, which witnesses desired results[19]. Specifically, this framework includes self-empowerment, peer empowerment, and community empowerment. More importantly, it has proven effective for the development and intervention of children with autism in early childhood education [20]. In China, this framework has already been applied in family empowerment practices for children with autism [21]. Nonetheless, more investigation is needed to take into account key factors in the kindergarten environment, including teachers, peers, and community resources, so as to combine them with family support through the empowerment theory' s support framework. Such integration attempts to create an intervention model that guides educational practices in kindergartens and better helps children with autism adapt to the kindergarten environment.

Building upon above insights, this study intends to leverage the principles of self-empowerment, peer empowerment, and community empowerment from empowerment theory. With investigation into long-term practical intervention cases, it strives to develop a model that effectively combines the resources of families, kindergartens, and communities to better support children with autism.

2 Research Methods

2.1 Research Subject

Child A, a boy, began kindergarten at 2 years and 10 months old. At the very beginning, teachers noticed that he was different from the other kids, so they had him assessed by special education and early childhood professionals. After the assessment, it's suggested that his teachers talk to his parents and take him to a hospital for further evaluation. At 3 years and 3 months old, he was diagnosed with ASD and developmental delay at a Tertiary A hospital. Going into details, his symptoms were as follows: trouble with focusing visually, lack of spontaneous speech (only using simple repetitive words), knowing fewer than 10 words, not following instructions, and struggling with daily activities (needing help with dressing, eating, and using diapers).

2.2 Assessment Tools

2.2.1 Child Development Assessment Scale

This study used the Child Development Assessment Scale [22], in order to check Child A's progress before, during, and after the intervention. This scale is meant for kids from 1 month to 7 years and 6 months old and assesses such areas as gross motor skills, fine motor skills, daily living skills, social skills, language expression, and language comprehension. It includes a list of common behaviors for each age that helps measure a child's development. In this study, the assessments were conducted by professionals who had been trained with the scale's manual and had extensive experience in child development evaluations.

2.2.2 Parent-Child Interaction Observation Scale

Parent-Child Interaction Observation Scale were used in this study [23], which intended to evaluate both the child's social skills and the parent's interaction abilities. With regards to the child's social skills, the assessment covers five areas: autonomy, responsiveness, empathy, control over movements, and emotional regulation. Each dimension includes five assessment items, and the child earns 1 point for each observed item, with a maximum score of 5 points. A higher score indicates better social skills in the child. For the parent's interaction abilities, the assessment also covers five areas: respect for the child's autonomy, sensitivity, responsiveness, social-emotional support, and cognitive development support. Each dimension includes eight assessment items, and the parent earns 1 point for each observed item, with a maximum score of 40 points. A higher score indicates better parenting interaction skills.

2.3 Case Intervention Process

In this study, a multi-level intervention system was created based on the principles of empowerment theory. The system includes: a) self-empowerment that are mainly based on one-on-one supportive play; b) peer empowerment that focuses on inclusive activities in the kindergarten setting; and c) community empowerment that revolves around family education support. Moreover, this system involves the child, their main caregivers, three teachers from the child's kindergarten, as well as experts in preschool education, special education, and social work from a partnering university. Experienced pediatricians and rehabilitation therapists from a Tertiary A hospital are also included in the system. A single-subject baseline experimental design were employed to provide the intervention for Child A and assessed the results with the help of quantitative and qualitative methods.

2.3.1 Baseline Period (Pre-Intervention, 5 Months)

When Child A was 2 years and 10 months old, he was assessed using the Child Development Assessment Scale for children aged 0 to 6. The outcome are as follows: a) Gross motor skills were at the level of a 1-year-9-month-old; b) Fine motor skills were at the level of a 1-year-6-month-old; c) Daily living skills were at the level of a 1-year-3-month-old; d) language expression skills were at the level of a 1-year-6-month-old; and e) Language comprehension skills were at the level of a 2-year-old. When Child A was reassessed at 3 years and 3 months, no changes were observed in these results.

2.3.2 Intervention Period (3 Years 3 Months to 5 Years 6 Months)

When no noticeable changes in Child A's development was observed, intervention started. When this process came to an end, data was collected and recorded accordingly.

(1) Self-Empowerment (Supportive One-on-One Play)

Supportive one-on-one play intends to create game goals in line with Child A's individual development and needs. This effort is to help Child A gradually reach these goals through self-empowerment, improve daily living skills, and support overall growth to adapt better to kindergarten. Each play session lasts 1 hour and occurs 4 times a week over a period of 3 years. The intervention is divided into 4 stages, and each stage focuses on different areas of Child A's development, such as gross motor skills, language, fine motor skills, and cognition. In this study, the one-on-one play is guided by the self-empowerment framework. Based on set development goals, Child A can choose play activities that they want. This whole process is under the guidance and support from the teacher. This approach helps Child A feel in control and accomplished from choosing and achieving his goals. They will be able to build confidence and tap into his potential. The overall self-empowerment lays the foundation for the child's progress and growth across different aspects.

Table 1: Goals for Supportive One-on-One Play

Stage	Gross Motor Skills	Language	Fine Motor Skills	Cognition
1	Kick a ball forward; Jump with both feet together; Climb stairs using alternating feet.	Improve mouth movements; Speak clearly; Name 3 or more things in a picture book.	Turn the screws; Hang from a bar; Copy straight lines.	Understand concepts of big and small, long and short; Recognize red, yellow, blue, and green.
2	Jump forward with both feet together; Hop on one foot several times.	Pronounce words more clearly; Say two-word phrases.	Cut along a straight line; Draw a cross and a circle.	Understand simple stories; Grasp numbers up to 2.
3	Hop on one foot several times; Ride a tricycle; Stand on a swing and use it.	Answer simple questions; Repeat simple sentences.	Make simple crafts like paper planes; Color without going outside the lines; Draw a person with 3 or more parts.	Understand numbers up to 5; Recognize left and right; Follow multi-step instructions.
4	Jump rope; Stand on one foot for more than 10 seconds.	Repeat longer sentences; Describe pictures in simple terms.	Draw a person with 6 or more parts.	Understand addition and subtraction up to 10; Play simple cooperative games and understand their rules.

(2) Peer Empowerment (Peer Interaction Activities)

In this study, kindergarten integration activities are based on the framework of peer empowerment. During daily activities at kindergarten, Child A receives support from peers. While teachers help Child A with skills such dressing, eating, toileting, and handwashing, they also encourage other children to interact with Child A, which is of immense significance. In this process, peers keep reminding and helping Child A with these skills. Besides, Child A is invited to enjoy building activities and role-playing. This approach creates an environment where Child A can actively interact with peers. Besides, he can also fulfill his social interaction needs and witness progress with regards to life and social skills, which help him adapt better to the kindergarten environment.

Table 2: Development Goals for Peer Interaction Activities

Goal Stage	Development Goal
1	Happily share toys with other children when asked.
2	Accept reminders from peers and work towards self-care.
3	Join in cooperative games when invited by peers; Achieve self-care.
4	Actively interact with peers and share daily experiences.

(3) Family Education Support

(4)

On the basis of community empowerment, family education support revolves around Child A and his family. A team was formed to guide and support Child A's family education, including Child A's parents, kindergarten teachers and principal, teachers from preschool education university, social workers, pediatricians, child rehabilitation therapists, and community volunteers. They're involved in the family activities and decision-making, making sure that the intervention is tailored to meet Child A's specific needs while gaining family approval and cooperation. In addition, the professionals provide timely guidance to family members, especially the primary caregivers, to handle daily educational and caregiving issues. This approach intends to boost the family's confidence and self-advocacy abilities, while creating an inclusive and supportive environment for Child A with the help of the expertise from this team.

Table 3: Family Guidance/Support Development Goals

Goal Stage	Goal
1	Boost parents' confidence in parenting
2	Parents work closely with teachers for home-school interaction
3	Parents share common issues in parenting proactively
4	Parents pay great heed to their child, appreciate them, and empower them.

2.3.3 Stable Period (6 years - 6 years and 1 month)

One month after the intervention ends, another assessment will be conducted for Child A and their parents. The result will be compared with those from before and during the intervention to see if the positive effects have lasted.

3 Research Results

3.1 Development Assessment Results for Child A

Child A was 3 years old and had delays in several areas of development before the intervention. After the first stage of intervention, at 3 years and 6 months old, Child A's gross motor skills were at the level of a 2-year-and-6-month-old child, and his social skills and language expression were at the level of a 2-year-and-3-

month-old. In the second stage, when Child A was 4 years and 6 months old, his gross motor skills had progressed to the level of a 4-year-old. Furthermore, his social skills and language expression were at the level of a 2-year-and-9-month-old. By the third stage, at 5 years and 6 months old, Child A’s gross motor, fine motor, and daily living skills had all reached the expected levels for his age. Importantly, his social skills and language abilities had also seen improvement. By the fourth stage, at 6 years old, Child A was developmentally on par with other children their age in most areas. Gross motor skills, fine motor skills, and daily living skills were fully on track, and social and language skills were close to the normal range (see Table 4).

Table 4: Development of Child A Before and After Intervention (3 Years)

			Developmental Age						
	Intervention Stage	Actual Age	Daily Living Skills				Language Expression	Language Comprehension	
			Gross Motor	Fine Motor		Social Skills			
Baseline Period	Before Intervention	3 Years	1 Year 9 Months	1 Year 6 Months	1 Year 3 Months	1 Year 3 Months	1 Year 6 Months	2 Years	
Intervention Period	First Stage	3 Years	2 Years	2 Years	2 Years	2 Years	2 Years	3 Years	
			6 Months	6 Months	3 Months	3 Months			
	Second Stage	4 Years	4 Years	4 Years	3 Years	2 Years	2 Years 9 Months	3 Years 6 Months	
					6 Months	3 Months			9 Months
	Third Stage	5 Years	5 Years	5 Years	4 Years	3 Years	3 Years 6 Months	5 Years	
					6 Months	9 Months			
	Fourth Stage	6 Years	6 Years	6 Years	5 Years	5 Years	4 Years	6 Years	

Stable Period	Stage	Years	Years	Years	Years	Years	6 Months	6 Years
		6						
	After	Years	6	6	5	5	4 Years	
	Interventi on	1 Mont h	Years	Years	Years	Years	6 Months	

4 Discussion

After three years of consistent intervention, Child A made great progress in gross motor skills, fine motor skills, daily living skills, social skills and language expression and comprehension. These improvements brought Child A's abilities close to or on par with regular children. He also attended a public primary school and adapted well. This outcome suggests that long-term intervention based on an empowerment framework within an inclusive kindergarten education exerts a positive impact on the development of children with autism.

4.1 The Positive Impact of Self-Empowerment on the Development of Children with Autism

Behavioral interventions are widely recognized as one of the most effective treatments for autism. Relevant studies show that repeated motor training helps children with autism make remarkable and lasting improvements in social skills and self-care abilities [24, 25]. On the other hand, verbal communication training also effectively boosts their language skills [26]. In this study, behavioral interventions were combined with self-empowerment strategies. Teachers provided one-on-one guidance through games focused on gross motor skills, fine motor skills, language, and cognition. The whole activity valued Child A's personal preferences and tapped into their internal motivation, so as to foster their autonomy and self-awareness. By achieving specific goals in these games, Child A's confidence seen profound growth, which helped him embrace challenges more proactively and generated lasting positive outcomes.

4.2 The Positive Impact of Peer Empowerment on the Development of Children with Autism

According to relevant research, working with children with autism in an inclusive setting and having them interact with typical peers can greatly improve their communication skills and help them participate in peer activities in a more proactive manner[27, 28]. Notably, in this study, Child A faced several problems when starting school. Specifically, he needed help with dining, could not communicate toileting needs, relying on diapers, and struggling with dressing and undressing. While teachers provided essential support and reminders in a timely manner, the most important aspect was creating a supportive group of peers to help Child A with daily living skills. Such setup could foster a welcoming environment where Child A could interact and engage with others properly. Over time, Child A would become more willing to participate in social activities. What's more, he could learn from these interactions and refined his social and communication skills, becoming aware of others' emotions, and developing empathy and teamwork spirit. Overall, it effectively addressed Child A's adaptation issues in the kindergarten setting while supporting his development.

4.3 The Positive Impact of Community Empowerment on Children with Autism and Their Families

The family environment is key to the development of children with autism. Extensive research has demonstrated that can improve the caregiving abilities of the parent of children with autism[29], strengthen family relationships [30], and boost the effectiveness of interventions for children with autism by improving caregiver cooperation on intervention [31, 32]. This study formulated a support framework within Child A 's family, which included family members and specialists in autism. They would share updates on one-on-one game sessions and daily activities at the kindergarten, while addressed parents' questions promptly. This measure ensured that Child A 's family had a say in and control over the intervention process. The community members also offered proper advice on the intervention, in order to achieve joint decision-making. With community resources, the support network provided comprehensive and fair professional assistance to Child A and their family. In this context, the family would manage autism more properly and effectively.

4.4 Developing an Inclusive Intervention Model for Children with Autism within a Multi-Level Empowerment Support Framework

Based on a support framework that includes self-empowerment, peer empowerment, and community empowerment, this study focuses on working together within an inclusive education setting, respecting both the child's and the family's independence while recognizing their ability to grow and develop[22]. In general, the long-term intervention has achieved positive outcomes. It can be conclude that, to build an inclusive intervention model for children with autism within this multi-level empowerment support framework, it is imperative to develop a well-functioned system. This system should combine strategies for self-empowerment, peer support, and community involvement and introduce personalized plans that respect the child 's individuality. Taking into account inclusive education, this system ought to optimize peer and community environment, so as to build a comprehensive support network with social and professional resources. In this way, the intervention effort can maintain its effectiveness and professionalism, while embracing participation of different parties. Moreover, timely adjustment will be made based on the feedback mechanism, which ensures fair involvement and protection of rights for both the child with autism and his family. All these measures aims to encourage support from the family, further supporting the child 's development in both the kindergarten and home settings.

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