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# Language and Literacy Development among Children with Autism Spectrum Disorder

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## Abstract

Autism, which involves deficits in language development and social interaction, has received an increasing amount of attention in recent years. Research has identified that children with Autism Spectrum Disorders (ASD) often exhibit difficulties in language acquisition, literacy development, and social interaction. Although extensive studies have been conducted to characterize deficits in language and social skills among children with ASD, research on the literacy development of this group is still sparse. In this editorial, we provide a brief overview about the language and literacy impairments that are common amongst children with ASD. We also argue for two under-researched areas: emergent literacy skills and the home literacy environment, both of which play essential roles in the language and literacy development of children with ASD.

brief overview of the types of language and literacy skills that are impacted by ASD, and then we will argue for more research in two areas: emergent literacy skills and the home literacy environment, both of which are critical areas that remain under-researched. Finally, we will conclude this article with discussions and suggestions for future research.

## Language Development among Children with ASD

Deficits in language development have been widely studied, as they are often considered a defining characteristic of autism. Extant evidence has identified three common deficits in the language development of children with ASD: early language delays [3,7,8], atypical language production [9,10], and discourse/pragmatic difficulties [11-13]. More specifically, while typically-developing children usually generate their first words at the age of 8-14 months, children with ASD generally don't produce their first words until around 38 months [3]. In addition, delays in both receptive and expressive languages have been identified, with receptive language found to be the most severely impacted [7,8].

**Keywords:** Language and Literacy Development; Autism

## Introduction

Autism, characterized by deficits in social interaction and language such as impaired conversational patterns, and abnormal and limited spoken language, is becoming one of the most prevalent disorders in children today. Recent statistics by the Center of Disease Control and Prevention revealed that, on average, 1 in 68 children in the United States were diagnosed as having ASD [1]. With increasing attention being paid to the prevalence of autism, a smorgasbord of research has been conducted over the past few years to investigate these impaired behaviors [2-4] and to explore effective interventions and therapies [5,6].

Evidence from clinical diagnoses and empirical studies has demonstrated that delays in language skills are common in children with ASD. However, to what extent these delays affect literacy development remains largely uninvestigated. In this editorial, we will focus on the development of language and literacy skills among children with ASD. First, we will provide a

The language development of children with ASD is also characterized by several atypical language features, such as echolalia, excessive use of jargon, and varying intonation/prosody [2,9]. Echolalia refers to the imitation and repetition of speech from others and can be classified into three types: a) Exact echolalia/imitation, b) Mitigated/modified echolalia, and c) Delayed echolalia [10]. Research has shown that echolalia can serve as a communicative strategy for children with ASD to reduce their cognitive load, to help them initiate or maintain conversations, and as a language acquisition technique. Research regarding echolalia behaviors as a specific feature of autism has indicated that they are a sign of language progression among children with ASD [10]. Specifically, the employment of echolalia strategies develops as children with ASD gain linguistic competence. Most commonly, these children utilize the third type of echolalia, mitigated, to communicate by editing the words or sentences of others.

Jargon, which refers to nonsense words, is also one of the atypical language features common in children with ASD.

Compared with typically-developing children, those with autism tend to produce more idiosyncratic labels, nonsense terms, and phrases with atypical meanings [9,14]. Much like the use of echolalia, jargon serves a specific role in the language acquisition and development of children on the spectrum [9]. Many use jargon as a means of maintaining conversations or expressing ideas, but its use can also signify difficulties in referring to and updating information [9].

In addition to the unusual language patterns described above, atypical production of suprasegmental features such as accent, rhythm, stress and intonation, have also been reported in individuals with autism [11,12,15]. Evidence from existing research has consistently demonstrated that children with ASD exhibit difficulties in both processing and completing prosody-related tasks and measures [11,12]. Typically, those who are diagnosed with autism embody at least one of following atypical suprasegmental features: inappropriate speech volume, flat or singsong intonation, hoarseness, hypernasality, inaccurate lexical stress, slowed phrasing, and a typical speech rates [13].

## Emergent Literacy Skills and Children with ASD

While extensive research has been conducted on the language development of children with ASD, precious few studies have examined their literacy development. Studies related to the emergent, or early, literacy skills of these children are the rarest [16]. Emergent literacy refers to the basic understanding of reading and print concepts, and typically includes skills such as print knowledge, letter knowledge, phonological awareness, oral narratives, and early writing. Emergent literacy skills are critical for young learners as they have been found to predict future success in word recognition, vocabulary acquisition, reading fluency, and comprehension [17-19].

Despite the importance of emergent literacy skills, only a handful of recent studies have focused on how they develop in children with ASD [16,19,20]. Emergent literacy skills can be categorized into two areas: code-related skills (e.g., alphabet knowledge, phonological awareness, print concept, and emergent name writing) and meaning-related knowledge (e.g., receptive vocabulary and oral narrative competence) [19]. Westerveld et al. compared typically-developing children to those with autism and found that the latter demonstrated significantly more difficulty with meaning-related knowledge; differences in code-related skills were not statistically significant [19]. These findings are consistent with earlier research, such as Lanter et al. who reported that children with ASD have more significant delays in oral language, emergent writing, and print functions than their typically-developing peers [16]. Dynia et al. identified delays within the areas of print-concept knowledge and definitional vocabulary, both of which are considered meaning-related knowledge [20]. Somewhat contrarily, they also noted delays in phonological awareness, which is code-related [20]. Despite this slight inconsistency, findings from the limited extant research

highlights the challenges that children with ASD face in developing meaning-related literacy skills and suggests that many of the literacy-related struggles these children face are in developing and processing skills for analyzing and acquiring meanings.

## Home Literacy Environment

While the contribution of the home literacy environment on the literacy acquisition of typically-developing children has been widely investigated and acknowledged as significant [21-23], this area remains under-researched in children with ASD. The home literacy environment encompasses many components, such as opportunities for parent-child and/or individual reading, formal and informal literacy practices, reading resources, parental education background, and attitudes towards literacy development. It has been well-documented in research with typically-developing children that a supportive home literacy environment is critical for promoting and accelerating both the language and literacy skills of struggling readers [21,24-26]; the home literacy environment may even more crucial for children with ASD. First of all, these children typically show deficits across multiple areas of language and literacy development, and thus would benefit from a print-rich home environment. Secondly, they may be more likely to engage in challenging or unfamiliar literacy activities in an environment that is familiar and comfortable (e.g., reading environment and reading with their parents), making at-home practice particularly essential.

One of the few studies that examined the impact of the home literacy environment on the literacy development of children with ASD was conducted by Lanter et al. They reported that the home environment played a significant role in motivating the literacy practices of children with ASD [16]. Dynia et al. also studied the home environment and found that strong parental interest in literacy coupled with frequent opportunities for shared and individual reading were strongly associated with the development of alphabetic knowledge [20] in children with ASD. Westerveld et al. revealed a significant association between home reading frequency and oral narrative competence [19]. Even though the amount of studies on this topic is limited, they all confirm the importance of a strong home literacy environment to foster literacy skills in children with ASD. However, more research is needed to specifically identify the relationship between the myriad types of home literacy practices and the subsequent development of literacy skills in children on the autism spectrum.

## Conclusion

In this editorial, we emphasize the critical need for research on the literacy development of children with ASD. These children have been consistently identified as at high risk for language and communication deficits, such as atypical language production and interaction patterns, as well as delays in developing meaning-related literacy skills. Despite the extensive existing research on the language development of

children with ASD, there is still a limited amount of research on their literacy development. In this article, we have highlighted two critical areas that need further investigation, emergent literacy development and the home literacy environment. The development of emergent literacy skills is vital for long-term literacy development, and a supportive home literacy environment has the potential to have a tremendous impact on children with ASD, who tend to have extremely close parent-child relationships.

Three caveats need to be made regarding our call for more research on the literacy development of children with ASD. First, given that ASD includes a wide spectrum of symptoms, skills, and levels of disability, it is important for researchers to first clarify the type and severity of the participants' ASD. Second, the observed relationships between relevant variables may differ with the use of different measures. Since the sample size for research on individuals with ASD tends to be small, standardized or norm-referenced measures should be used or included whenever possible. Finally, it should be noted that the majority of research on autism has been conducted with European or European-American children and their families. With an increasing awareness of ASD worldwide and a growing immigrant population in both Europe and the U.S., research with children with ASD from diverse cultural and linguistic backgrounds should be undertaken in order for us to obtain a more comprehensive understanding of how literacy develops in children on the spectrum [27,28].

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