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Examination of script and non-script based narrative retellings in children with autism spectrum disorders



Elizabeth Hilvert*, Denise Davidson, Perla B. Gámez

Loyola University Chicago, Department of Psychology, 1032 W. Sheridan Road, Chicago, IL 60660, United States

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ABSTRACT

Background: Narrative production is challenging for children with Autism Spectrum Disorders (ASD), particularly in terms of creating coherent and cohesive stories. However, differences between the narratives of children with and without ASD may be attenuated when cognitive and linguistic demands are reduced. Therefore, the present study examined whether incorporating a script-framework, that structures the story around common events, reduced children's difficulties with narratives.

Method: This study compared the narrative abilities of children with ASD ($N=19$) and neurotypical (NT; $N=26$) children on a script-based and a non-script based retelling task. Narratives were coded for microstructure, macrostructure, and type of script-based story events (script, non-script). The relation between narrative and theory of mind (ToM) was also assessed.

Results: In comparison to their NT peers, children with ASD exhibited lower narrative production in terms of microstructure and macrostructure on both script and non-script based stories. In general, the narratives by children with ASD were less cohesive and coherent than the NT group. ToM ability and FSIQ predicted narrative coherence and cohesion in children with ASD. Moreover, examination of the script-based story revealed that children with ASD included the same number of script details as the NT children, but were less likely to include non-script details.

Conclusions: These findings provide evidence that narrative impairments may be present across narrative type, and that ToM ability in particular, predicts these difficulties in children with ASD. These findings have implications for common event understanding and highlight the need for early narrative intervention for children with ASD.

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1. Introduction

Narrative thought is considered a fundamental task of cognitive development that is essential to a range of psychological and social processes, allowing children to make sense of their social environments, understand human actions and intentions, and organize everyday experiences (Bruner, 1990). Moreover, the ability to construct a good narrative (e.g., Mandler & Johnson, 1977; Stein & Glenn, 1979) has positive effects on a wide array of language and social skills, including the comprehension of classroom language, selective listening skills, peer relations, and literacy (e.g., see Johnston, 2008, for a

* Corresponding author.

E-mail address: ehilvert@luc.edu (E. Hilvert).

review). In fact, children who have difficulty with narration are at risk for poorer reading development (Boudreau & Hedberg, 1999), academic achievement (Feagans & Appelbaum, 1986), and lower social functioning (Spencer & Slocum, 2010).

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in the areas of social communication, and restrictive or repetitive behaviors (American Psychiatric Association, 2013). As narrative production is an essential component of social communication, it is not surprising that past research has found that children with ASD are at particular risk for difficulties with narrative discourse (see Stirling, Douglas, Leekham, & Carey, 2014, for review). However, in contrast to our extensive knowledge regarding narrative development in neurotypical (NT) children, narrative production in children with ASD remains a relatively understudied area of research, especially as it relates to the extent to which these impairments are pervasive across narrative measures or genres, and the mechanisms contributing to these problems. Thus, the current study was designed to 1) gain a more comprehensive understanding of narrative development in children with ASD by examining whether providing more structure, in the form of a script-framework, within a narrative task facilitates well-formed narratives by children with ASD, and 2) examine how differences in socio-cognitive functioning (i.e., ToM) relate to narrative production in children with ASD.

1.1. Narrative impairments in children with ASD

Past research has demonstrated that narrative production is challenging for children with ASD, although a conflicting picture of narrative ability in children with ASD has been found. For example, when children with ASD are carefully matched with their peers on linguistic as well as cognitive measures, some studies have found that children with ASD produce narratives that are comparable to their peers in terms of productivity, lexical diversity, semantic quality, and syntactic complexity (Diehl, Bennetto, & Young, 2006; Losh & Capps, 2003; Norbury & Bishop, 2003). Others studies have found that even when groups are matched using standardized language assessments, children with ASD tell narratives that are shorter, less syntactically complex and semantically rich (King, Dockrell, & Stuart, 2014; Norbury, Gemmell, & Paul, 2014). One reason for these inconsistent findings may be differences in methodology. Narrative tasks differ in the degree of spontaneity and generation required to produce a story, ranging from constructing a story from a story stem (King et al., 2014), generating a story from a wordless picture book (Losh & Capps, 2003), to retelling a story (Diehl et al., 2006). There is trend across these studies that when the demands of the task are also reduced, fewer group differences in narrative ability are found (Stirling et al., 2014).

Despite these disparate results, there are a number of common features found in studies on narrative ability in individuals with ASD (Stirling et al., 2014). Children and adults with ASD have a difficult time organizing plot structure, as well as causally linking story events in order to relay the overall ‘gist’ of the story. Thus, the resulting narratives are less coherent than the narratives of their NT peers (e.g., Barnes & Baron-Cohen, 2012; Diehl et al., 2006; King et al., 2014). Additionally, research has shown that individuals with ASD face challenges in appropriately utilizing linguistic devices that create a more cohesive, or locally connected story. In particular, individuals with ASD often use less complex conjunctions (McCabe, Hillier, & Shapiro, 2013), and often use more ambiguous or inappropriate references compared to their NT peers, making it unclear who the referent is at a given point in the story (Colle, Baron-Cohen, Wheelwright, & van der Lely, 2008; Norbury & Bishop, 2003). However, the degree to which task demands attenuate these differences and whether reducing task demands may improve performance across a variety of narrative skills for children with ASD is still unclear.

1.2. Script knowledge in children with and without ASD

According to script-framework models, children form cognitive representations of events that they repeatedly experience (Davidson & Jergovic, 1996). Once an event is experienced multiple times and becomes routine, an event schema is established, thus allowing the child to know what to expect. This may allocate cognitive resources to focus on other tasks, such as social interactions (Davidson, Larson, Luo, & Burden, 2000). Furthermore, children’s comprehension and recall of stories can be guided by the underlying script (Davidson, 2006). Consequently, an understanding of event knowledge may help children predict what is likely to happen in a story, and may free up the cognitive resources needed to attend to other linguistic and/or story features.

Indeed, past research has shown that in typical development, having prior knowledge of an event sequence allows children to produce more coherent and cohesive stories (Shapiro & Hudson, 1991). According to Hayward, Gilliam, and Lien (2007), script-based stories “retain the internal structure of script-frameworks and include structural aspects of a narrative” (p. 237), and may be less challenging than a typical narrative task due to the pre-existing framework. However, in order to benefit from the additional structure provided by the script-framework, children must first have sufficient knowledge of script events.

Across the spectrum, social deficits tend to be the most pronounced in unstructured real-life situations (e.g., Muller, Schuler, & Yates, 2008). Despite evidence that NT children rely on event-schemas to provide structure for social experiences (Nelson, 1986), it is less clear the extent to which children with ASD rely on event schemas to help them make sense of their social world, and engage in socio-communicative experiences such as narrative discourse. Previous research has shown that children and adolescents with ASD have impairments in event schema knowledge (Loveland & Tunali, 1993; Trillingsgaard, 1999); however, the quality and severity of these impairments appear to differ in relation to age, verbal ability, and cognitive functioning. Individuals with more severe impairments in these domains have shown marked abnormalities in generating

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