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Comprehension and Story Retelling Abilities among Children with ASD Compared to Children with Typical Development

Liat Kadosh

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ABSTRACT

Background. Reading comprehension is the ability to understand written language (Stothard & Hulme, 1992). In order to achieve comprehension of written language, the reader must decipher the writing and understand the meaning of the words he has read. Understanding the meaning reflects the ability to understand language, and therefore among children with normal development, children with linguistic knowledge and better ability to understand spoken language will be more successful as well with reading comprehension (Stothard & Hulme, 1992). This field of study has not yet been researched among children on the autistic spectrum, and therefore the goal of this research is to compare between comprehension abilities on an auditory level (listening comprehension) and comprehension abilities on a visual level (reading comprehension).

There are different types of texts (genre), including the story text. The story text invites the reader's interpretation of what he has read – regarding the causality in the story and its contribution to the development of the plot, regarding the character's perspective in the story (intentions, wishes, beliefs of the character in the story (Happe, 1994). Children on the autistic spectrum find it hard to take into account positions and thoughts of another person (Baron-Cohen, Leslie, & Frith, 1985). This difficulty hinders their ability to understand the actions of the character in the story and understand the chain of causality of the plot in the story (Carnahan & Williamson, 2010; Colle, Baron-Cohen, Wheelwright, & Jacobs, 2008). A common tool used to examine narrative abilities is retelling of a story. Upon retelling the story, the examinee is required to tell the story he had read or heard in his own words. The connection between the Theory of Mind and comprehension and retelling abilities of a story was examined in many studies, and it was discovered that it is strongly linked to these skills (Carnahan & Williamson, 2010; Colle et al., 2008).

Research objectives. Therefore, this research had three main objectives – examining comprehension ability after the story was read by the child (reading comprehension) and after listening to a story that the adult told (listening comprehension) among children on the autistic spectrum compared to children with

normal development, examining the ability to retell a story after reading or hearing it among children on the autistic spectrum compared to children with typical development, and examining the links between the comprehension and retelling abilities' and between each of them and Theory of Mind abilities

Research hypotheses. We hypothesized that children on the autistic spectrum would have difficulties with comprehension compared to children with typical development – mainly with reference to the comprehension of the implicit message, which includes comprehension of information not explicitly mentioned in the story, which requires reaching conclusions or utilizing previous knowledge, and that due to the relative strength of children on the spectrum on the visual level it will be easier for them to comprehend information on the visual level, and therefore they will achieve better results with reading comprehension. We further hypothesized that children on the autistic spectrum would have difficulties with the ability to retell a story compared to children with typical development, mainly with retelling the necessary components, which include building a cohesive and coherent story and refer to the global structure of the story. Finally, we hypothesized that there would be positive correlations between the comprehension and retelling abilities' and between Theory of Mind abilities and comprehension and retelling measurements.

Method. The sample included 20 children on the autistic spectrum who are high-functioning (IQ above 75), grades 2nd – 4th (statistics measurements) and 20 children with normal development who coincided with the verbal age scores (VIQ), and gender (all boys). We first gave preliminary tests to examine the short-term memory ability, memory with auditory processing (work memory) and ability to read pseudowords, in order to ensure that these variables would not influence the research findings. In order to evaluate reading comprehension and listening comprehension, two texts were used – one text was read to the child, and one text was read out loud by the child. The texts were drafted based on texts from tests currently in use (Dr. Tov Lee, 2000; the CELF3 test: Clinical Evaluation of Language Fundamentals, 1995). The compatibility of the texts was determined by analyzing their syntax, content, and linguistics, and it withstood the

judges' test. At the end of each test the subject received two tasks – a retelling task and comprehension task. In the retelling task, the subject was requested to retell the text. The comprehension task included questions regarding the implicit message – information found explicitly in the text, and questions regarding the implicit message – which require integration between the parts of the texts and/or reaching conclusions regarding information found in the text. During the retelling and questions tasks, the child was not permitted to review the written text.

Findings. The research findings have refuted our first hypothesis, since, to our surprise, and contrary to previous studies in the field (Castles et al. 2010; Huemer & Mann 2010;), we did not find significant comprehension difficulties in children on the autistic spectrum compared to their peers who had normal development, not even with regard to the comprehension of the covert message. The second research hypothesis was mostly confirmed, since we found that the children on the autistic spectrum had difficulties telling a cohesive and coherent story (global structure of the story), compared to their peers with normal development. As for the rest of the retelling components, which required comprehension and more local processing of the story (such as content-related and linguistic components and the length of the story), the children on the autistic spectrum succeeded similarly to their peers with normal development. Our third hypothesis, according to which links will be found between the Theory of Mind for comprehending the covert message and the Theory of Mind for necessary retelling components (global structure), was mostly confirmed, since we have found positive correlations among the research group in two of the three measurements of Theory of Mind. These correlations supposedly contradict the lack of difference which we saw in the ability to comprehend the implicit message. Our explanation for this finding is that in the lower grades of primary school the requirement to comprehend the implicit message is still basic, and therefore it is possible that the children who had difficulties with the Theory of Mind but did not have difficulties in this study with comprehending the implicit message, will experience difficulties later on as the level of the requirement increases. An additional explanation is that it is possible that our research group, which

includes high-functioning children who are educationally fully integrated in regular classes, might constitute a sub-group, characterized by lack of language and comprehension difficulties, who are as able to compensate for their difficulties in the Theory of Mind area if the task does not require this ability specifically, and as a result no difficulties are found in their regard relating to reading comprehension as well. It is our assessment that following the positive correlations which we have found between the Theory of Mind ability and the ability to comprehend the covert message, it is possible that we would have found in a wider sample differences between the research groups in relation to the comprehension of the covert message.

Conclusions. The contribution of the research is expressed both on a clinical level and a practical – educational level. On the clinical level our research joins a series of studies from recent years which show that despite the difficulties attributed to children on the autistic spectrum, widely reported in the literature, and which include significant difficulties in comprehension and linguistic abilities, there is a sub-group of high-functioning children with relatively normal language and comprehension abilities, and without significant differences compared to their peers with regard to comprehension. On the practical – educational level ,This finding is important in order to know how deal with this group of children and create for them suitable intervention programs that take into account the good comprehension abilities alongside the Theory of Mind and retelling ability difficulties – in the connection between events component (global structure), where they have demonstrated a difficulty in telling a cohesive and coherent story which refers to all of the events in the story as a single unit.
Furthermore, our research joins studies where it was discovered that linguistic knowledge predicts listening comprehension and reading comprehension ability (Babaygit & Stainthorp, 2011; Stothard & Hulme,1992 Davidson & Weismer, 2014), and therefore it is important to emphasize the importance of working on language and thinking for preschoolers, among educators, with the understanding that they are the key to academic abilities later on. In addition, the success of the children on the autistic spectrum with anything that required local understanding of the story compared to

their difficulty to produce a coherent and cohesive story, indicates that the intervention programs and work with children on the spectrum should focus more on the global structure – integrating between details and seeing the whole picture, and less on working with the local components – such as linguistic structures, content and length of the story, where children on the autistic spectrum display greater success.