



The Effect of Graphic Organizers on Improving Reading Comprehension of Children with Autism Disorder

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Abstract

The purpose of the current study was to explore the effectiveness of graphic organizers on reading comprehension skills of children with ASD. 10 students in grades five who had been identified as having ASD were chosen. The sample was randomly divided into two groups; experimental (n= 5 boys) and control (n= 5 boys). Reading Comprehension Test was used. Mann Whitney and Wilcoxon tests were employed for data analysis. Results from this study indicated the effectiveness of graphic organizers on reading comprehension skills of the students in the experimental group.

Keywords: Graphic organizers, reading comprehension skills, children with ASD,

Introduction

Students with disabilities often have stronger decoding skills than reading comprehension skills. The reason for this is partly due to the developmental delays that many students with disabilities have. Students with very high needs are often taught life skills over academic skills.

Comprehension occurs when the reader actively obtains meaning from written text (Bursuck & Damer, 2011). Saalasti and colleagues (2008) showed that students with Asperger syndrome had significantly lower scores on a comprehension of instructions subtest compared to scores of their typically developing peers. Walberg and Magliano (2004) identified possible reasons for the discrepancy between word reading and comprehension skills for students with ASD: (a) inability to use background knowledge to interpret information and ambiguities presented in text, (b) fundamental deficits in language abilities, (c) difficulties with linguistic processing at the sentence level, and (d) inability to resolve ambiguity in text.

Reynhout and Carter (2008) studied the effects of a social story intervention on appropriate group reading behavior and specific attention on reading comprehension difficulties. They used a single-subject, ABC design to evaluate the impact of the social story review prior to group read aloud on the behavior of looking at the book. The participant was an 8-year-old diagnosed with ASD, intellectual disability, and limited language skills. The results failed to demonstrate a functional relation between the social story and appropriate group reading behavior. The targeted behavior also failed to improve after adding a verbal prompt to read the story. The authors suggest that one possible explanation for the lack of a functional relation could be that the participant was unable to comprehend the social story text and/or the text being read to the class. The authors stated that future research is needed to examine comprehension skills that act as prerequisites to social stories and to implement rigorous designs including multiple baseline across behaviors, settings, or participants.

One method suggested for increasing reading comprehension skills for struggling readers (e.g., students with learning disabilities) is graphic organizers. Keri and Wood(2013) used a delayed multiple baseline across participants design to evaluate the effects of graphic organizers on the accuracy of wh-questions answered following short passage reading. Participants were three elementary-age students with autism spectrum disorder. Results indicated improved accuracy of responses to wh-questions, generalization, and maintenance of gains following intervention.

Graphic organizers are currently in wide use by reading experts and classroom teachers, and studies have shown a positive effect on reading comprehension (Jiang & Grabe, 2007; Keri and Wood,2013).

The purpose of the present study was to examine the extent to which graphic organizers can be used to improve reading comprehension skills of ten students with ASD. The primary research question was, what effects will graphic organizers have on improving reading comprehension skills of students with autism disorder?.

Method

Participants

Participants were ten children between the ages of seven and nine who attended a center for autism. Parental informed consent forms were sent home by the center director to parents of potential participants telling them about the study and requesting them to give permission for their children to participate. Through a previous comprehensive psychological evaluation each targeted child had received a primary diagnosis of Autistic Disorder. All children were also capable of communication using speech assessed through a combination of teacher report and observation. They were so-called high functioning.

Each child also had the following characteristics: (a) meet the full criteria for autism according to The Scale for Screening Autism Disorder(Mohammed, 2003) (b) functional verbal communication, (c) able to read and comprehend words, and (d) ability to follow directions.

Instrument

Reading Comprehension Test: The test was developed to assess reading comprehension of children with autism disorder. It was based on the features of comprehension skills recognized by Mourad Ali (2015). The test consists of (30) items assessing word recognition , and comprehension ,15 items each , with score ranging from 0-1 on each item and a total score of 30. The test has demonstrated high internal consistency with Cronbach's α ranging from 0.82 to 0.85.

Procedures

Screening: Participants were ten children between the ages of five and seven who attended a school for children with developmental disabilities (Tarbya Fekrya). Each child also had the following characteristics: : (1) A diagnosis of ASD from child psychologist based on The Scale for Screening Autism Disorder(Mohammed, 2003); (2) Deficits in Joint attention, as the aim of this study was to improve these deficits through the training program. (3) ability to read and comprehend words, and (4) ability to follow directions.

Pre-intervention testing: All the students were assessed using the reading comprehension test.

General Instructional Procedures: Prior to the start of the study, parental consent were obtained for all the children. Each child in the treatment group received 14 teaching sessions. The duration of each session would be from 15 minutes to 20 minutes, depending on child's capacity. While treatment group children received social skills training using graphic organizers ,the control group continued with usual special classroom interventions. .

Post-intervention testing: Having practiced twenty-one sessions of reading, the participants in both groups took the Reading Comprehension Test as post-test.

Design and Analysis

The effects of implementing graphic organizers on students' reading comprehension were assessed using pre- post testing.

Results

Graphic Organizers and reading comprehension

The first objective of the study was to determine if use of graphic organizers would be more effective for the treatment group compared to the control group. For this purpose, the post intervention scores of both treatment and control groups were analyzed. Table 1 shows Z Value results for the differences in post- test mean rank scores between experimental and control groups in Reading Comprehension Test. The table shows that (Z) values were (-2.133) for comprehension, (-2.166) for word recognition, and (-2.218) for the composite score. These values are significant at the level (0.01) in the favor of experimental group.

Table 1. Z Values results for the differences in post- test mean rank scores between experimental and control groups in Reading Comprehension Test

Variables	Groups	N	Mean Ranks	Sum Ranks	Mann-Whitney	Z Value	Sig.
Comprehension	Ex	5	8	40	Zero	-2.133	0.01
	Cont.	5	3	15			
Word Recognition	Ex	5	8	40	Zero	-2.166	0.01
	Cont.	5	3	15			
Composite	Ex	5	8	40	Zero	-2.218	0.01
	Cont.	5	3	15			

The second objective of the study was to determine the effect of graphic organizers on improving reading comprehension skills of children with ASD. The children's reading comprehension was measured pre and post intervention. Table 2 shows Z Value result for the differences in pre and posttest mean rank scores for the experimental group in Reading Comprehension Test. The table shows that (Z) values were (-2.162) for Comprehension, (-2.123) for Word Recognition, (-2.232) for the composite score. These values are significant at the level (0.01). This indicates that use of graphic organizers had a positive effect on improving reading comprehension skills in children with ASD.

Table 2. Z Values results for the comparison of mean rank scores of experimental group at pre-and post-intervention in Reading Comprehension Test

Variables	Negative Ranks		Positive Ranks		Z Value	Sig.
	Mean	Sum	Mean	Sum		
Comprehension	3	15	Zero	Zero	-2.162	0.01
Word Recognition	3	15	Zero	Zero	-2.123	0.01
Composite	3	15	Zero	Zero	-2.232	0.01

Discussion

This study investigated the effects of graphic organizers on reading comprehension skills of elementary students with ASD. It was hypothesized that graphic organizers will increase reading comprehension of students with ASD.

Graphic organizers are confirmed by Gately (2008) to be beneficial for students to organize information or generate connections within a story. O'Connor and Klein (2004) state, "students with autism appear to have difficulty integrating information...they might be also expected to have difficulty integrating information

from previous text to understand the gist of the passage” (p. 116). Kluth and Darmody-Lantham (2003), add that “pictures and drawings are not the only ways to clarify speech and communicate with students with autism; the written word can also be used as a visual support” (p. 534). This study demonstrates that use of graphic organizers can help students with ASD improve their reading comprehension skills.

Limitations and Further Study

One limitation of the current study stems from the fact that the scope of the study is limited to the data collected from children with ASD. Hence, further research with larger and more demographically diverse populations with random selection would strengthen the findings of the study.

Secondly, it may be that the length of the intervention was not sufficient to see change large enough to be measured. Sheridan et al. (1996) suggested that the training used in that study (10 weeks long) possibly was too short to produce long-range effects. The present study also used brief training (6 weeks), as is often the case with interventions in the school setting.

Despite these limitations, the present study contributes useful knowledge about the influence of graphic organizers on ASD children’s reading comprehension skills.

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