



Investigating the Effect of Multisensory Approach on Improving Emergent Literacy Skills in Children with Autism Disorder

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Abstract

Multisensory instructional approach leads to increased engagement, improved attitudes towards learning, improved information processing, and improved retrieval of learned information. The purpose of the present study was to examine the extent to which multisensory approach can be used to improve emergent literacy skills in children with autism disorder. 10 children between the aged seven ,who attended a centre in Nasr City for children with autism participated in this study . To collect and analyse data a Code-related Skills Test which had two parts ; Book concepts (recognition of book cover, title, author, number of pages: 4 marks , one for each) , and Letter knowledge(which had 14 letter to be recognized by the child)was developed. Findings from this study indicated the effect of multisensory approach on improving emergent literacy skills in children with autism disorder.

Keywords. Multisensory Approach , Emergent Literacy Skills, Autism Disorder

Introduction

Autism spectrum disorder is marked deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures: to a total lack of facial expressions and nonverbal communication (Adel Abdulla, M.&Mourad, A. Eissa ,2014). It affects approximately 1 in 68 children (Centers for Disease Control and Prevention, 2014). Children with Autism Spectrum Disorder (ASD) are regarded as being to be at risk of reading difficulties (Nation, Clarke, Wright, & Williams, 2006).The majority of them show difficulties with oral language skills (Williams, Botting, & Boucher, 2008).

Studies (Davidson & Ellis Weismer, 2014; Dynia, Lawton, Logan, & Justice, 2014) show that children with ASD had significantly higher alphabet knowledge and significantly lower print-concept knowledge when controlling for language ability compared with their peers. Westerveld, Trembath, Shellshear, et al., (2015) found that the majority of children with Autism Spectrum Disorder (ASD) showed relative strengths in code-related skills (e.g., letter identification tasks, independent page turning) and relative weaknesses in the more holistic meaning-related skills (e.g., comprehension measures such as print functions or pretend reading).

Preston (1998) states that multisensory methods to teaching reading are definitely based on one main idea that many children learn best when their teachers present their lessons through different modalities. Thorpe and Borden (1985),in support to this notion, emphasize that some of the main benefits of multisensory instructional approach for children to learn reading are as follow: increased engagement, improved attitudes towards learning, improved information processing, and improved retrieval of learned information.

The results of the benefits of using multisensory instruction were contradicting. For example , in an attempt to investigate whether multisensory instruction would affect a kindergarten student's ability to identify letters, Susan Ose(2016) used audio-visual instruction on upper and lower-case letter identification for one group , while group two received multisensory instruction. Pretest/posttest design to compare data was employed. The null hypothesis was supported because there was no statistically significant difference in letter identification between the audio-visual group and the multisensory group.

Amr Moustafa and Mohd Zuri Ghani(2016) examined the effectiveness of multi sensory approach in improving the knowledge on English Letter sound correspondence among mild disabled students in the state of Kuwait. 20 respondents were involved. A pretest-posttest method was employed. The findings showed the effect of the multi sensory approach in the teaching process of identifying the English letters and its sounds, which at the same time pave a way for the students to apply the mentioned skills in their learning process to read.

The purpose of the present study was to examine the extent to which multisensory approach can be used to improve emergent literacy skills in children with autism disorder. The primary research question was, what effects will multisensory approach have on emergent literacy skills in children with autism disorder?

Method

Participants

10 children between the aged seven ,who attended a centre in Nasr City for children with autism participated in this study .All children attended the same classroom within the centre. Parental informed consent forms were sent home by the centre psychologist 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.

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) able to read and comprehend words, and (c) ability to follow directions.

Instrument

As there are no well-validated norm-referenced tests for measuring emergent literacy skills in young children with autism, the researchers developed a *Code-related Skills Test* which had two parts ; Book concepts (recognition of book cover, title, author, number of pages: 4 marks , one for each) , and Letter knowledge(which had 14 letter to be recognized by the child). The Cronbach alpha value was high (0.85) indicating excellent internal consistency.

Procedure

Screening . 10 children between the aged seven ,who attended a centre for children with autism participated in this study. 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) able to read and comprehend words, and (c) ability to follow directions.

General Instructional Procedures: Instruction was delivered to children through a multi sensory approach activities which consists of visual, tactile, kinaesthetic and auditory drills . In Visual activities, the researcher show the card with the letter to the children and will say the letter for example : the sound of this letter is /aaaaaaa/ teacher will ask and the children repeat when he shown the card of letter A. In Auditory activities, the child say the sound of the letter when the researcher show him a flashcard with the letter / or a book . In Kinaesthetic activities, children draw the letter in the air when the researcher

says the sound, using their fingers to paint the letter. In Tactile activities, in sand , children draw the letters and say their sounds.

Design and Analysis

The effects of implementing multisensory approach on emergent literacy skills in children with autism disorder were assessed using pre- post testing.

Results

Multisensory approach and emergent literacy skills

The first objective of the study was to determine if use of Multisensory approach 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 analysed . Table 1. shows Z Value result for the differences in post- test mean rank scores between experimental and control groups in emergent literacy skills. The table shows that (Z) value was(-2.334). $\alpha = 0.01$ 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 emergent literacy skills*

Variables	Groups	N	Mean Ranks	Sum Ranks	Mann-whitney	Z Value	Sig
emergent literacy skills	Ex	5	8	40	Zero	-2.334	0.01
	Cont.	5	3	15			

The second objective of the study was to determine the effect of Multisensory approach on emergent literacy skills in children with autism. The treatment consisted of emergent literacy skills training through use of Multisensory approach . The children’s performance on emergent literacy skills was measured pre and post intervention. Table 2. shows Z Value result for the differences in pre and post test mean rank scores for the experimental group in emergent literacy skills Test. The table shows that (Z) value was(-2.253). $\alpha = 0.01$. This indicates that use of Multisensory approach had a positive effect on emergent literacy skills in children with autism.

Table 2. *Z Values results for the comparison of mean rank scores of experimental group at pre- and post intervention in emergent literacy skills*

Variables	Negative Ranks		Positive Ranks		Z Value	Sig.
	Mean	Sum	Mean	Sum		
emergent literacy skills	3	15	Zero	Zero	-2.253	0.01

Discussion

The present study aimed to examine the extent to which multisensory approach can be used to improve emergent literacy skills in children with autism disorder. The primary

research question was, what effects will multisensory approach have on emergent literacy skills in children with autism disorder?

The findings from this study provide important preliminary insights into the emergent literacy skills of children with ASD, and these can be improved using multisensory approach. Though Davidson & Ellis Weismer (2014) reported that print-concept knowledge (e.g., reading from left to right, knowing about the title and the author of the book etc.) was an area of particular difficulty for children with ASD, children in this study showed improvement after being delivered the instruction through multisensory approach which depended on Visual activities, Auditory activities, Kinaesthetic activities and Tactile activities.

Limitations and Suggestions for Future Research

There are some limitations for this study ,One of them was the limited number of children . Hence, further research with larger and more demographically diverse populations with random selection would strengthen the findings of the study.

Further research is needed given that multisensory processing are foundational to the higher-level cognitive, communicative, and social functioning that treatments aim to address, knowledge of an individual's ability to process sensory information is a critical and necessary first step to benefit maximally from intensive intervention.

Despite these limitations, the present study contributes useful knowledge about the influence of multisensory approach on ASD children's emergent literacy skills.

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