The effect of teacher implemented Joint Attention intervention on improving teacher- child communication and social interaction among children with ASD

El efecto de la intervención de Atención Conjunta en la mejora de la comunicación maestro-niño y la interacción social entre los niños con TEA

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Abstract

This study aimed to investigate the effectiveness of teacher implemented JA intervention on improving teacher- child communication and social interaction among children with ASD. A pretest-posttest design, where the dependent variables are measured once before the treatment is implemented and once after it is implemented, was employed**.** MW Test was employed, run by SPSS V18.0. MW Test results indicated the effectiveness of teacher implemented Joint Attention intervention on improving teacher-child communication and social interaction among children with ASD. This study could contribute to the literature on teacher implemented Joint Attention intervention as there is dearth research in this area. The study is concerned with training young children with ASD in joint attention which may have substantial effect on their communication and social interaction.

Keywords. Teacher implemented Joint Attention intervention; teacher- child communication; social interaction; children with ASD.

Resumen

Este estudio tuvo como objetivo investigar la efectividad de la intervención JA implementada por el maestro para mejorar la comunicación maestro-niño y la interacción social entre los niños con TEA. Se empleó un diseño pretest-posttest, donde las variables dependientes se miden una vez antes de implementar el tratamiento y una vez después de su implementación. Se utilizó MW Test, ejecutado por SPSS V18.0. Los resultados de la prueba MW indicaron la efectividad de la intervención de Atención Conjunta implementada por el maestro para mejorar la comunicación maestro-niño y la interacción social entre niños con TEA. Este estudio podría contribuir a la literatura sobre la intervención de Atención Conjunta implementada por el maestro, ya que hay escasez de investigación en esta área. El estudio se refiere a la capacitación de niños pequeños con TEA en atención conjunta que puede tener un efecto sustancial en su comunicación e interacción social.

Palabras clave: El maestro implementó la intervención de Atención Conjunta; comunicación maestro-niño; interacción social; niños con TEA.

Introduction

Children with ASD develop JA skills atypically (Ebrahim, 2019; Mohammed, 2016; Mourad, 2015), due to their impaired social communication, social interaction, and restricted and repetitive behaviours (Abdullah, 2014; Ahmed, 2014; Mahmoud , 2015; Mahmoud , 2015; Mohammed , 2016; Mortada, 2017; Mostafa , 2018; Mourad,2016; Mourad,2017 a; Mourad,2017 b; Mourad, 2018 a, Mourad, 2018 b), regardless of their levels of development or intellectuality (Inge, Herbert, Petra &Ghent, 2014), compared to their typically developing

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peers(Meek, Robinson, & Jahromi, 2012), and even to children with intellectual disabilities who are matched with them on mental age (Baranek et al., 2013). Social interaction deficits are regarded as a core problem in autism spectrum disorders (ASDs) and is likely to be most powerful predictor for diagnosing ASDs (Jaswinder, Sarah, Luc & Rebecca, 2011)

Joint attention (JA) as a central skill, emerges early in children's developmental course and offers a crucial base for acquiring language as well as engaging in a collaborative social and communicative interactions with others (Mohammed& Mostafa, 2012). It can defined as the ability of a child with ASD to show their experiences and interests about objects and events and share them withothers (. e.g. siblings, peers, parents and teachers). Deficits in JA is specific in individuals with ASD, as they have more deficits in social attention than other people with other developmental disabilities (Ferraioli & Harris, 2011, Mourad, 2015). Interactions with children with ASD is a difficult task for teachers or trainers to concentrate on (White et al., 2013).

Children with ASD can use non-verbal behaviours as a shift in attention (Ebrahim, 2019), which can be regarded as an attempt to initiate SI with another individual (Mourad, 2015). Hence, JA can be found in two forms. These are Responding Joint Attention (RJA) and Initiating Joint Attention (IJA) (Cheryl& Joseph ,2015). In Responding Joint Attention, the child follow or respond actively to the active following or response to the social partner's attempt to certain object or event. That is to say that Responding Joint Attention predicts social development (Mundy, 2013).

Through Responding Joint Attention, the child is likely to be able to understand the other person's (initiator) intent. Whereas in Initiating Joint Attention, the child tries to attract the other partner's attention to an event, object or experience through the use of these behaviors (Cheryl& Joseph ,2015). It predicts language development (Mundy, 2013). It should be noted that impaired Initiating JA and Responding JA affects social behaviour of a child with ASD on the long run (Anderson et al., 2013).

Literature indicates that training in JA skills in children with ASD is related to gains in SI (Ebrahim, 2019), communication skills (Mourad, 2015), imitation, and expressive language (Whalen, Schreibman, & Ingersoll, 2006). Social agents such as parents (Kasari, Gulsrud, Wong, Kwon & Locke, 2010), siblings (Jennifer &

Emily, 2019), teachers (Lawton & Kasari, 2012) and peer (Ferraioli and Harris, 2011).

The current study seeks to address the gap in the literature, concerning utilizing teachers to deliver joint attention intervention children with ASD as there is less literature in this area. The current study's first goal was to evaluate the effect of an adult-mediated intervention, the teacher, on communication and social interaction of children with ASD. The second contribution of this study is to address a recent emphasis in the literature on the need for teacher implemented JA intervention with children with ASD (Lawton & Kasari, 2012).

JA skills are demonstrated to be very important in development (Mourad, 2015). Nevertheless, deficits in response to, and initiation of joint attention among children with ASD (Clifford & Dissanayake, 2008; Ebrahim, 2019; Mohammed, 2016). The findings that JA skills are helpful in developing language, cognition, social skills, led to more interventions focusing on these skills among children with ASD (Ebrahim, 2019; Kwisthout, Vogt, Haselager, & Dijkstra, 2008; Mohammed, 2016; Mourad, 2015; Murray et al., 2008). The following research questions were addressed in this study.

a) What effect does teacher implemented JA intervention have on communication among children with ASD?
b) What effect does teacher implemented JA intervention have on SI among children with ASD?
c) Are there significant differences between the treatment group and the control group on communication and SI in post-treatment testing?

Significance of the study: This study could contribute to the literature on teacher implemented JA intervention as there is dearth research in this area. The study is concerned with training young children with ASD in JA which may have substantial effect on their communication and social interaction.

Hypotheses: The recent study tries to test the following two hypotheses

H1.: There will be significant statistical differences on communication skills between the treatment and control groups in post-intervention in favor of the treatment group.

H1.: There will be significant statistical differences on SI between the treatment and

control groups in post-intervention in favor of the treatment group.

Method

Participants

24 children (20 boys) diagnosed with ASD were recruited through Al - Tawhid Center in Makkah and Al-Baraa Bin Malik School in Mecca. All children received a formal diagnosis of ASD made by a qualified professional psychologist in each school. Children mean age was mean = 3.04 months, SD= .78. It is a perquisite that the participant child is free of hearing impairment, severe/profound autism, mental disability or low vision. No child met these criteria. The researcher approached and contacted parents for consent for participation.

Instruments

Communication Skills Rating: teacher version. This scale was developed specifically for this study. It is a 20-item scale with a 3-point Likert scale from 1 (never) to 3(always). The scale scores range from 20 to 60 (from 1 to 3 for each item). The reliability of the scale in terms of internal consistency was assessed by α. The items demonstrated a satisfactory level of ICR (α = 0.79). A content validity index was calculated at the item level (I-CVI = 0.90).

Social Interaction Questionnaire: teacher version. This Questionnaire was developed specifically for this study. It is a 20-item checklist, used to gather data from teachers, regarding social interaction skills of the child with autism spectrum disorder. It is a yes/no questionnaire in which teacher demonstrates whether the child responses in the social situations. The positive response is given one point, while the negative one gains zero. The reliability of the scale in terms of internal consistency was assessed by α. The items demonstrated a satisfactory level of ICR (α = 0.76).

Design

A pretest-posttest design, where the dependent variables are measured once before the treatment is implemented and once after it is implemented, was employed(Figure 1.)

Figure 1. Study design
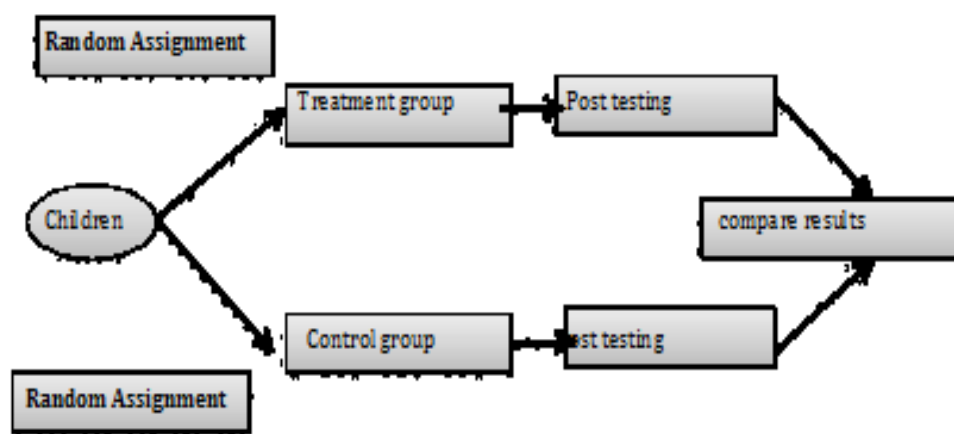
Data Analysis

Mann Whitney U Test was employed, run by SPSS V18.0.

Procedure

Pre-treatment. The 24 children with ASD were randomly assigned to the following two groups:

treatment where joint attention skills training sessions were conducted and delivered by the teacher and control, where no JA skills training sessions were delivered. A battery of assessments was administered before the start of the treatment, including The Childhood Autism Rating Scale (Mohammed, 2006); Child Intelligence Test (El Seri, 1988), Communication

Skill Scale (by the researcher) and Social Interaction (by the researcher).

General Instructional Procedure. Sessions took place three days a week. Each session was designed to last approximately 20 minutes. Teacher posted different types of pictures on the walls and made them available to children in the treatment group. Toys that are interesting to children were chosen and put on a table in the training room. Special stimuli were also added to the room such as posters and novel objects. They are made available to the teacher as well as to children to play with during each training session. The classroom teacher prompt JA from the children, using some words and different phrases. She may say "look at me" as a way of encouraging the child to shift his attention to, and focus on her faces. The child was allowed to choose which objects to play with to ensure his motivation to work for a particular object. The child and the teacher take turns in order for the teacher service as a model for the desired behavior on the child's side. Moreover the teacher reinforces each child's correct response. Two types of training are followed: Response Training and Initiation Training. The teacher, in Response Training, teaches the child to respond in an appropriate way to JA bids. Whereas the child, in Initiation Training, learns to initiate joint attention with his/her teacher. Positive reinforcement is given to the child in a form of accessing to desired toys if he responds correctly.

During Response Training, the teacher helps the child by putting his/her hand on a toy at the time he/ she plays with another one. The teacher gives the child one point if he is to be engaged with the new toy by looking at it or manipulating it, and if not he is given no point. While the child is engaged in a certain activity, the teacher show him/her a toy and is asked to tap and engage with it order to be given a point. Another important training technique is eye contact where the child is required to make eye contact with the teacher.

If he does, he will be rewarded, and gains a point. After this exercise is established, the teacher trains the child in something else. The teacher looks at the child, focusing on him/her. When the child in turn looks at the teacher, she turns to a certain item in the room. The child is asked to turn his/her head to this object. If he does correctly, he/she be rewarded by gaining this object to play with and is given a point as well. As soon as this is established, the teacher gazes to a certain this item without pointing to it. The child is required to follow this gaze only. If he does correctly, he/she be rewarded by gaining a point.

During Initiation Training, the child is supposed to initiate attention toward the teacher within at least10 sec. The child should be engaged. If not, he will not be given a point. Why 10 sec? Because normal child initiates joint attention once every ten sec (Whalen& Schreibman, 2003). The child is asked to point to a certain picture on the wall in order to share with his/her teacher. If failed within ten seconds, he will be promoted to do. The teacher may help with taking his/her finger and assists him/her point it toward the object. As soon as this is established, another exercise is introduces. The child is taught to shift his gaze coordinately from the toy in hand with the purpose of sharing the toy with the teacher. If he succeeded in this, he will gain one point.

Results

H1.: There will be significant statistical differences on communication skills between the treatment and control groups in post-intervention in favor of the treatment group. To test this hypothesis, MW Test was used. Table1. Shows that the mean rank for the control group is 6.50, while the mean rank for the experimental group is18.50. So it can be concluded that there is a difference between the two groups in communication skills.

Table1. Mean ranks for the two groups

Comm. Post testing	N	Mean Rank	Sum of Ranks
Cont. 1.00	12	7.50	90.00
Exp. 2.00	12	17.50	210.00
Total	24		

Table2 shows the actual significance value of the test. From this data, it can be concluded that the children in experimental group, that is, those who were exposed to the joint attention program outperformed the control group in communication skills ($U = 12.000$, $p = .05$).

Table 2. Test Statistics[b]

Comm. Post testing	
Mann-Whitney U	12.000
Wilcoxon W	90.000
Z	-3.506-
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000a

a. Not corrected for ties.
b. Grouping Variable: group

H1.: There will be significant statistical differences on social interaction between the treatment and control groups in post-intervention in favor of the treatment group. To test this hypothesis, Mann Whitney U Test was used. Table3. Shows that the mean rank for the control group is 7.17, while the mean rank for the experimental group is 17.83. So it can be concluded that there is a difference between the two groups in social interaction.

Table 3. Mean ranks for the two groups

Comm. Post testing	N	Mean Rank	Sum of Ranks
Cont. 1.00	12	7.17	86.00
Exp. 2.00	12	17.83	214.00
Total	24		

Table 4 shows the actual significance value of the test. From this data, it can be concluded that the children in experimental group, that is, those who were exposed to the joint attention program outperformed the control group in social interaction ($U = 8.000$, $p = .05$).

Table 4. Test Statistics[b]

Social Interaction	
Mann-Whitney U	8.000
Wilcoxon W	86.000
Z	-3.741-
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000a

a. Not corrected for ties.
b. Grouping Variable: group

Discussion

The aim was to investigate the effect of teacher implemented JA intervention on improving teacher- child communication and SI among children with ASD. Before the intervention started, teachers (the teacher and the aide) almost never used JA intervention in their classrooms with their children, and they were never familiar with it, yet they were interested with

administering it with their children as they were able to know something new to them. One can say they were skilled at implementing the intervention in their classroom. Results indicated that JA could be taught to children with ASD. Data obtained from this study demonstrated that children with ASD were able to respond in a correct way to the JA bids of their teachers before and during intervention. This finding is in the same line with the literature on responding to JA (e.g. Ebrahim, 2019; Mohammed, 2016; Mourad, 2015).

It is worth knowing that training children with autism spectrum disorder in joint attention may be important for increasing their social interaction and social communication (Whalen & Schreibman,2003). That is to say that by teaching the child to respond in a correct way to what the partner is doing in the context of social interaction and communication, the child knows that this social agent exists other and has social intentions, hence, a response is expected. Although delays in both response to, and initiation of JA are found in children with ASD (Ebrahim,2019; Mohammed, 2016; Mundy, 2013; Whalen & Schreibman,2003), training in joint attention skills are demonstrated to be developed, which in turn will maximize communication and social interaction among children with ASD (Inge et al.,2014).

Interestingly, during Initiation Training, children in the treatment group understood the intention of their teacher when she gazed at an object and they followed her, and this was a mark of their social interaction with their teacher, though it is, in general was a deficit in this type of children. This finding is consistent with Inge et al. (2014). The social motivation to share attention with the social agent, which is lacked in children with ASD (Schilbach et al., 2009) was interestingly increased as child could point to a picture on the wall hoping to share it with the teacher.

Conclusion

The current study illustrated the effect of teacher implemented JA intervention. There is little available research on teacher implemented joint attention intervention. Results indicated that target children assimilated JA behaviors from their teachers and they also showed improvements in communication and social interaction. This study contributes to the field in several unique ways. First, when trained in joint attention, children with ASD can engage in social interaction with both their teachers and their peers as well. Second, the existence of a social

agent (e.g. teacher) can give children the opportunities to practice the required skills. So one can conclude that social support from other social partners (e.g. peers, siblings, mother, father) can facilitate child's interaction with the task in hand, and make play and training interesting. Future research needs to examine different social agents in greater detail, such as peer-mediated, parent- mediated, sibling-mediated or a school wide intervention with this type of children.

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