The Effectiveness of a Training Program Based on Dodge's Social Information Processing Model on Improving Social Skills of Children with Autism Disorder

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Abstract

The purpose of the current study was to explore the effectiveness of a training program based on Dodge's social information processing model on improving social skills of children with autism disorder .10 children with autism disorder were chosen. The sample was divided into two groups; experimental (n= 5 boys) and control (n= 5 boys). A Social Skill Rating Scale (SSRS) was developed by the researcher. Results from this study indicated the effectiveness of the program employed in improving social skills of children with autism disorder in the experimental group.

*Keywords***:** *Dodge's social information processing model, social skills, children with autism disorder*

Introduction

Autism is a disability characterized by impaired social interactions, limited verbal and nonverbal communication, and restricted and repetitive patterns of behaviour. Children with autism may not make friends, spend more time alone than with others, and may not develop empathy or other forms of social reciprocity. They may exhibit stereotypical behaviours to the exclusion of all other activities, may engage in echolalia if any speech at all, and may also engage in dangerous behaviours such as aggression or self-injury (National Institutes of Child Health and Human Development, 2006).

Most of the research on these social cognitive difficulties has focused on theory of mind (ToM), joint attention, and executive functions (e.g., Adams et al. 2002; Baron-Cohen 1997; Baron-Cohen et al. 1985; Heavey et al. 2000; Hill and Russell 2002; Lerner et al. 2011) with findings suggesting that children with ASDs find it hard to (1) understand the notion that others may have different views and perspectives than their own, (2) engage with others through joint attention, and (3) make cognitive shifts based on changes in task demands.

However, the literature says little about their social information processing (SIP) patterns. This model aims to breaks down social information processing into empirically testable components that include six steps: encoding of cues, interpretation of cues, clarification of goals, response access, response decision, and behavioral enactment. The cyclical nature of the model enables the various components to influence each other, although the steps are thought to occur in sequence. Each step of the model is influenced by social schemas stored in the child's memory. These schemas comprise an organized knowledge set that is called upon to help the individual respond in a new situation (Mahfouz, 2014).

Crick and Dodge's Information Processing and children with autism disorder

In their model, Crick and Dodge (1994) hypothesize that there are six sequential processes which lie behind competent performance in any social situation. These six processing "steps" are hypothesized to occur in "real-time", or in other words, occur simultaneously within the context of different kinds of social situations.

The six processes or "steps" are 1) encoding of relevant stimulus cues 2) accurate interpretation of those cues 3) goal selection based on an interpretation of the situation as well as memory of past experiences 4) response generation 5) response evaluation and 6) behavioural enactment of a selected response. Consistent with tenets of schema theory and contextualism (though not necessarily drawing from these theories), children are seen as coming into social situations with different sets of past experiences, as well as different mental representations or memories of these experiences. These past experiences, along with prior knowledge, constitute latent mental structures that interact with and influence on-line or

"real-time" processing (Crick & Dodge, 1994). To illustrate Crick and Dodge's Social Information Processing model, consider the following scenario taken from Arsenio and Lemerise (2004):

"…Imagine a child trips on a classmate's foot when getting up to sharpen a pencil. The child must figure out what happened ("I tripped on his feet") and why it might have happened ("he tripped me" or "it was an accident"). In the next step of the model, guided by his or her understanding or misunderstanding of the situation and 'latent mental structures' [sic], the child must clarify and select goals for the situation ("I just want to get my work done" or " I'm going to show that kid he can't do this to me"). Then...the child generates possible responses to the situation and evaluates them in terms of his or her self-efficacy and the likely consequences of performing the response. Finally, the child enacts his or her selected response." (p.989).

Children with ASD experience loneliness, have a desire for social relationships with others and perceive themselves as having friends (Bauminger and Kasari, 2000), but naturalistic observation studies (Bauminger et al., 2003; Lord and Magill-Evans, 1995; Sigman and Ruskin, 1999) indicate that they are more socially isolated than their peers, using less complex social behaviours and are often rebuked in interactions with typically developing peers.

Some researchers examined the effectiveness Crick and Dodge's Information Processing. For example, Fraser et al. (2005) describes a school-based study designed to promote social competence and reduce aggressive behaviour by strengthening children's skills in processing social information and regulating emotions. Three successive cohorts of 3rd graders (N=548) from 2 schools participated. In 2000–2001, children received a routine health curriculum; in 2001–2002, students received the Making Choices: Social Problem Solving Skills for Children (MC) program; and in 2002–2003, children received MC supplemented with teacher and parent activities. Compared with children in the routine condition, children in both MC conditions were rated lower on post-test social and overt aggression and higher on social competence. Moreover, they scored significantly higher on an information-processing skills post-test. The findings suggest that prevention programs can strengthen social– emotional skills and produce changes in aggressive behaviour.

Sara King et al. (2009) Examined social information processing (SIP) in medicated and unmedicated children with ADHD and in controls. Participants were 75 children (56 boys, 19 girls) aged 6–12 years, including 41 children with ADHD and 34 controls. Children were randomized into medication conditions such that 20 children with ADHD participated after receiving placebo and 21 participated after receiving methylphenidate (MPH). Children were shown scenarios depicting peer interactions and asked to interpret each scenario and to generate possible responses to the scenario. Results showed that children with ADHD who received MPH generated more hostile responses to provocation than controls, but children with ADHD on placebo did not.

Results also showed that children with ADHD regardless of medication generated more hostile responses to provocation than to peer entry, whereas controls did not. Findings suggest that children with ADHD generate more aggressive responses to provocation than controls and that this may be exacerbated by administration of MPH.

Ogelman, Hulya Gulay; Seven, Serdal (2012) investigated the effect social information processing levels has on the social competence (entering a peer group, response towards provocation, response to failure, response to success, social expectations, teacher expectations, reactive aggression, proactive aggression) and peer relationship (prosocial behaviour, exclusion, victimisation) variables of six-year-old children. The Social Information

Processing Evaluation, The Preschool Taxonomy of Problem Situation, The Child Behaviour Scale, and Peer Victimization Scale were used in this study. According to the study results, it is obvious that skills within the social information processing model of six-year-old children have an effect on their social competence and peer relationship variables.

Although numerous of studies have examined the effectiveness social information processing in other children, little is known about the effect on social behaviour of children with with ASD. Crick and Dodge's well structured and defined model provides a strong theoretical framework for the study of the social cognitive mechanisms that guide social behaviors and thus utilizing this model could strengthen the theoretical foundations of research on children with ASDs.

The purpose of the present study was to examine the extent to which social information processing model can be used to improve the social skills of ten children with ASD. The primary research question was, what effects will social information processing model have on social skills of children with ASD?.

Methods

Participants

Participants were ten children between the ages of five and ten who attended a school for children with developmental disabilities (Tarbya Fekrya).All children attended the same classroom within the school. Parental informed consent forms were sent home by the school director and school 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 ASD.

Instruments

Social Skills Rating Scale (SSRS) was developed by the researcher for evaluating the social skills of children with intellectual disabilities. The Social Skills rating scale is a 3 point rating scale – Always (2), Sometimes (1) and Never (0). Cumulative model of scoring was used for the scale. There are four domains in the SSRS – they are: Interaction (12), Initiation (5), Cooperation (8) and Self-management (5). Reliability and Validity of the SSRS was established and the final checklist consisted of 30 items.

Procedure

Social skills of each child were measured on *Social Skills Rating Scale (SSRS)*. The assessment was done in an environment familiar to the children and during their usual intervention time. Treatment consisted of social skills training using social information processing model. The pre-test scores were analysed to ensure parity among 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 social information processing model, the control group continued with usual special classroom interventions. At the completion of the treatment session, children from both groups were tested again on *Social Skills Rating Scale (SSRS)*.

Results

Social information processing and development of social behaviour

The first objective of the study was to determine if use of social information processing model 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 results for the differences in post- test mean rank scores between experimental and control groups in Social Skills Rating Scale. The table shows that (Z) values were (-2.435) for interaction, (-2.631) for initiation, (-2.711) for cooperation,(-2.701) for Self-management and (-2.688)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 Social Skills Rating Scale*

Variables	Groups	N	Mean Ranks	Sum Ranks	Mann-Whitney	Z Value	Sig.
Interaction	Ex	5	8	40	Zero	-2.435	0.01
	Cont.	5	3	15			
Initiation	Ex	5	8	40	Zero	-2.631	0.01
	Cont.	5	3	15			
cooperation	Ex	5	8	40	Zero	-2.711	0.01
	Cont.	5	3	15			
Self-management	Ex	5	8	40	Zero	-2.701	0.01
	Cont.	5	3	15			
Composite	Ex	5	8	40	Zero	-2.688	0.01
	Cont.	5	3	15			

The second objective of the study was to determine the effect of social information processing model on improving social skills in children with ASD. The children's performance on social 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 *Social Skills Rating Scale*. The table shows that (Z) values were (-2.612)for interaction ,(-2.523) for initiation,(-2.632) for cooperation, (-2.604) for Self-management and (-2.655) for the composite score. These values are significant at the level (0.01) .This indicates that use of social information processing model had a positive effect on improving social 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 Social Skills Rating Scale*

Variables	Negative Ranks		Positive Ranks		Z Value	Sig.
	Mean	Sum	Mean	Sum		
Interaction	3	15	Zero	Zero	-2.612	0.01
Initiation	3	15	Zero	Zero	-2.523	0.01
Cooperation	3	15	Zero	Zero	-2.632	0.01
Self-management	3	15	Zero	Zero	-2.604	0.01
Composite	3	15	Zero	Zero	-2.655	0.01

Discussion

The present study evaluated the effects of social information processing model on improving social skills in children with ASD. The study results showed that the social information processing model was effective in improving interaction, initiation, cooperation and self-management of all children participated in this study.

My findings contribute to social information processing research in two major ways. First, they reinforce the utility of this approach in identifying the SIP patterns of specified groups such as children with ASD.

In that respect, the results speak to concerns that the SIP approach can describe the processing patterns of chronically aggressive children (Mahfouz, 2014) but is not as efficient in describing accurately the SIP patterns of other groups of children. Second, they demonstrate the utility of the multi-step approach to SIP, as concrete differences between the groups could be attributed to different SIP steps.

Furthermore, the children in this study did not receive any type of reinforcement or behaviour modification strategies while participating in the sessions. Removing strategies such as prompting techniques, token systems, and other reinforcement systems reduced the potential for confounds within the study. Therefore, one can conclude that the social information processing model was primarily responsible for the change in the social skills of children participated in the study.

In summary, social information processing model effectively improved the social skills of the children who participated in this study. Overall, results from this study contribute to the social information processing model literature for improving the social skills of children with ASD. The present study lends empirical support to the notion that children with ASD can be taught and can learn appropriate social behaviour.

Limitations and Further Study

Some limitations should be noted. First, the sample is relatively small. This is a typical limitation of studies with ASD populations, but it should be taken into account in future studies of the SIP patterns of children with ASDs. Second, our sample included only boys and given that previous studies examining the SIP patterns of typically developing children found gender differences, it is hard to draw conclusions about girls. This should also be addressed in future studies.

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