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Procedia - Social and Behavioral Sciences 46 (2012) 3017 – 3020

Procedia
Social and Behavioral Sciences

WCES 2012

The theory of mind story books test validity and reabilty for Turkish preschool children

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Abstract

The goal of the research was to compare proficiencies of the Theory of Mind of the pre-school period children (4-6 ages) displaying normal development and mentally disabled and autistic children at the interval of 4-8 ages. Mentally disabled (n=30) and autistic (n=39) children, who display normal development (n=426), were compared in terms of the Theory of Mind in line with the second goal of research. When examining differences among the averages of the Test of Theory of Mind Stories in research, it was seen that the average score of the group displaying normal development was higher than of the autistic and mentally disabled group to a significant degree and the averages of the mentally disabled group were higher than of the autistic group to a significant extent ($p < 0.05$).

Keywords: The Theory of Mind, autistic, intellectual disabled, normal development.

1. Introduction

In the last thirty years, studies conducted related to theory of mind have become an important guide. Theory of mind consists of child's ability to understand that his/her own thought and another one's thought are separate and, social understanding, which has more extensive components (Premack & Woodruff, 1978). Understanding and remembering thoughts, beliefs, desire and feelings, metaphors, implications of others are really crucial in social development of children (Frith, Happe & Siddons, 1994). Results pertaining to cases, which hinder or support the development of theory of mind, were arrived at in studies carried out lately. Some of them, which are intra-family communication, social life and dialogs carried out with child, present information to significant degree regarding theory of mind development of children.

Theory of mind is a theory developed for a person's ability of being able to recognize that people other than him/her have a different mind than his/hers, being able to comprehend conditions such as his/her or others' intention, belief, desire and knowledge and to mentally represent them. It consists of observation of facial expressions, body language

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1877-0428 © 2012 Published by Elsevier Ltd. Selection and/or peer review under responsibility of Prof. Dr. Hüseyin Uzunboylu
doi:10.1016/j.sbspro.2012.06.001

and conscious actions (the effect of one's actions on behaviors of others, players' determination of game moves in a chess game by making inferences from behaviors of their opponents), strategies that ensure adults to predict deceitful behaviors of other people (Smith, 2009; Sayin and Candansayar 2008; Wellman, Cross & Watson, 2001).

Understanding thoughts of other individuals and development of voluntary communication can be regarded as early precursors of theory of mind development (Cadinu & Kiesner, 2000; Wellman, 2002). Additionally, it is stated in the literature that representative behaviors and faking (Wellman, 1990) begin in infancy period. A great improvement is seen in "pretending" with age two after birth. Child's knowledge related to actual state contradicts with his/her dream (Leslie, 1987). It is stated in many studies that years when theory of mind gain begins to be observed are between ages three and four (Moore & et al., 1995; Wellman, Cross & Watson, 2001; Fossum, 2003).

Social and communication difficulties in individuals are explained by theory of mind. Most of individuals, who experience communication difficulty, experience hardships regarding putting themselves in others' shoes, understanding what another person thinks and feels. Autism is defined as some sort of a communication difficulty as well. It was put forth that such theory does not develop in individuals with autism; even if it does, it develops in later years and in an incomplete manner (Korkmaz, 2005). This situation explains why in general they find establishing communication in normal ways difficult, why they may neglect to tell their parents and teachers an important information that they do not know, why they cannot perceive when a joke is made, why mutual friendship is hard and why they cover subjects to the letter. Understanding why a secret is kept or lie is a mystery for autistic individuals (Frith, 1995). Research was also conducted on different developmental retardation to understand whether the state that theory of mind is insufficient is only associated with autism or similar differences and to be able to find solution suggestions supportive of its development.

Baron-Cohen (1989) claims that when they implement test setups to normal, autistic children and the ones with Down syndrome, although normal children and the ones with Down syndrome may possess accurate thinking strategy, autistic children are not able to notice thought of another person, thereby they cannot arrive at right conclusion. In this study, it was intended to compare theory of mind levels of autistic and mentally disabled children.

Method

"The theory-of-Mind Storybooks" scale developed by Blijd-Hoogewys and Van Geert (1998) was used in our research. The ToM Storybooks is a Dutch psychological test made for getting information on the quality of a child's ToM skills and assessing whether these skills are developing with the child's age or not (Hoogewys, Loth, Serra & Van Geert 1998; for a preliminary version see Serra, Loth, van Geert, Hurkens & Minderaa, 2002; Vesterinen,2008). The test consists of six storybooks in which a main protagonist, named Sam, experiences all kinds of feelings, desires and thoughts. The child is asked a variety of questions about the protagonist's experiences. The questions are clustered in tasks. The tasks focus on ToM and associated aspects that children develop between the ages of three to six years old. They cover five components: 1) Recognition of emotion, 2) Distinction between physical and mental entities, 3) Understanding that seeing leads to knowing, 4) Prediction of behaviors and emotions from desires, and 5) Prediction of behaviors and emotions from beliefs (Hoogewys, van Geert, Serra & Minderaa; Hoogewys,2008). In each story the child is presented with an illustrated book that makes it easier to follow the stories read by the researcher. During the stories the researcher stops to ask the child some questions such as "Where will Sam look for grandpa?" and "Why is Sam looking under the table?" Giving the correct answer requires the child to take the perspective of the protagonist. Occasionally the child is also asked to connect the story character's mood to some pictures that represent different emotions like happy, angry, sad and normal.
Raven's Standard Progressive Matrices test, ADSI (Ankara Developmental Screening Inventory) and WISC-R were used as part of validity study in adaptation of this research. As a result of correlation analysis conducted for

determining the correlation between the Scale for the Test of Theory of Mind Stories and total scores of the specified tests, a statistically significant positive relationship was discovered ($p < 0.05$).

For reliability study of the research, a significant relationship in positive direction to 73.1% degree was found among scores of test-retest correlation throughout the test as a result of applying the test to the same student group twice in a particular duration, as a result of correlation analysis carried out to determine the correlation between the last grand total and the first grand total (r=0,731; p=0,000<0,05). As a result of reliability study performed in the original test as well, test-retest correlation was found as (r=.74; p=<,001). Result of the original scale and that of adaptation backs up the outcome of test-retest results being high. Cronbach's Alpha number is employed in case of that test items are three or more in order to investigate internal consistency among test scores obtained as well (Buyukozturk, 2000). Cronbach's Alpha was found 0,81 in the study of Hoogewys. Scores obtained as a result of the test being applied to groups are displayed in Table 1.

Table 1

	Normal Development		Autistic		Mentally Disabled			
	Avg.	**Ss.**	**Avg.**	**Ss.**	**Avg.**	**Ss.**	**F**	**p**
Whole Quantitative Total Book Scores	52,323	9,974	42,282	11,168	42,931	9,453	27,853	**0,000**
Whole Qualitative Total Book Scores	6,654	4,236	1,538	2,178	3,000	3,598	36,707	**0,000**
Grand Total	58,892	13,255	43,821	12,553	46,276	11,539	33,948	**0,000**

As a result of one way analysis of variance (ANOVA) carried out to determine whether the averages of the whole quantitative total book scores of children, who participated in the research, exhibit a significant difference in respect to group variable, inter-group average difference was found statistically significant (F=27,853; p=0,000 < 0,05). As a result of complementary post-hoc analysis performed to determine sources of differences, the whole quantitative total book scores of children displaying normal development were found higher than the whole quantitative total book scores of autistic children. The whole quantitative total book scores of children displaying normal development were found higher than the whole quantitative total book scores of mentally disabled children. The whole quantitative total book scores of mentally disabled children were found higher than the whole quantitative total book scores of autistic children.

As a result of one way analysis of variance (ANOVA) carried out to determine whether the averages of the whole qualitative total book scores of children, who participated in the research, exhibit a significant difference with regard to group variable, inter-group average difference was discovered statistically significant (F=36,707; p=0,000 < 0,05). As a result of complementary post-hoc analysis performed to determine sources of differences, the whole qualitative total book scores of children displaying normal development were found higher than the whole qualitative total book scores of autistic children. The whole qualitative total book scores of children displaying normal development were detected higher than the whole qualitative total book scores of mentally disabled children. The whole qualitative total book scores of mentally disabled children were found higher than the whole qualitative total book scores of autistic children.

As a result of one way analysis of variance (ANOVA) conducted to determine whether the averages of the grand total scores of children, who attended the research, exhibit a significant difference with respect to group variable, inter-group average difference was found statistically significant (F=33,948; p=0,000 < 0,05). As a result of complementary post-hoc analysis performed to determine sources of differences, the grand total scores of children displaying normal development were detected higher than the grand total scores of autistic children. The grand total scores of children displaying normal development were detected higher than the grand total scores of mentally disabled children. The grand total scores of mentally disabled children were found higher than the grand total scores of autistic children.

Discussion

Scores that children, who display normal development, got off of the Test of Theory of Mind Stories are higher than that of mentally disabled and autistic children as a result of the research. Scores of mentally disabled children are higher than scores of autistic children as a result of our research. These results coincide with studies performed in the literature as well (Cobos & Castro, 2010; Sundqvist & Rönnberg, 2010; Golan, Baron- Cohen, Golan, 2008; Begeer, Rieffe, Terwogt, 1985 & Stockmann 2003; Flusberg- Tager & Sullivan; 1994; Frith, Happe &Siddons, 1994; Happe, 1994; Baron-Cohen, Leslie., & Frith, 1985). The reason why scores of mentally disabled children are higher can be explained by that mentally disabled ones are more open to communication and they are in a natural, voluntary relationship with their surroundings. Besides, mentally disabled children noticed and received education earlier than autistic children can also be effective on this outcome.

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