Cognitive Modifiability in Figurative Language of Children in the Autistic Spectrum

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Ph.D. Thesis

Submitted to the Senate of Bar-Ilan University

Ramat-Gan, Israel April, 2013

Abstract

The main purpose of the current study was (a) to find whether there are differences in figurative language as well as cognitive modifiability of figurative language between high functioning autistic (HFA) children and typically developing (TD) children. Another purpose was (b) to find out the relations between executive memory, local coherence perception, understanding of false believe in others, and proverbial understanding's abilities. Finally, we asked to find out (c) to what extent do verbal ability, analogical reasoning, metaphorical thinking, executive memory, local coherence perception and understanding of false believe in others predict proverbial understanding's abilities in both populations. Another significant purpose was to build a research tool in which the local coherence of children aged 5-11 years is measured.

High Functioning Autism (HFA) and Asperger Syndrome (AS) are functional deficiencies under Pervasive Developmental Disorders (PDD). According to the Weak Central Coherence Theory (WCCT) individuals in the autistic spectrum have a tendency to local information processing. This tendency might create a delay in the use of higher level contexts and figurative language (Frith, 1989). "Figurative language is a directed, automated and natural reflection of the way people think, conclude and imagine" (Gibbs, 1994; p.20). The current study is based on the assumption that proverbial understanding is a unique cognitive ability related to cognitive abilities such as metaphorical thinking (Nippold, 1998), analogical reasoning (Gibbs, 1994) and verbal ability (Honeck, 1997). Analogy is the transference of the relationship between two objects to a different area (Kaniel 2001). Metaphor is defined as a basic scheme in which people describe their experiences in the world (Gibbs, 2008). Metaphor has a substantial significant contribution in human's cognition, communication, and culture fields.

Cognitive modifiability in figurative language has been examined in the current study using Mediated Learning Experience (MLE) strategies. MLE is an interactive process which occurs between the person who receives mediation and the mediator. During this process the mediator interprets the meaning of stimuli, arranges it in a specific order and fits it in a suitable way, providing the appropriate tools for coping with new situations in the future (Tzuriel, 2001).

The sample included a group of HFA children (n =32) compared with a group of TD children (n = 32); age of children ranged from 5 to 11 years. Each group includes 24 boys and 8 girls, respectively. The groups were pair matched on age, gender and verbal ability. The participants were selected from schools in medium-high socio-economic status areas in the center of the country.

All children were administered dynamic assessment (DA) and standardized tests. The DA measures were Proverbial Understanding Test (Tzuriel & Valdman, 2010), Metaphorical Thinking Test (Tzuriel, Yosef & Valdman, 2008), and Children's Conceptual and Perceptual Analogies Modifiability test-Construction Analogies version (CCPAM, Tzuriel, 2002, 2007). The standardized tests were Spoken Language Test (MAASE, Rom, Morag & Peleg, 2007), Executive Memory Test – The Rule Shift Card Test (WCST – Wisconsin Card Sorting Test, Heaton, 1981), Children's Local Coherence Test (Tzuriel & Groman, 2013), Global-Local Processing Strategies Test (GLPS, Kimchi & Palmer, 1982), and Theory of Mind Tests – Sally and Anne and John and Mary Tests (Baron-Cohen, 1989; Perner &Wimmer, 1985). Tests were administered individually in 4-7 meetings, with respect to the child's comfort and ability.

Most of the research's assumptions have been reinforced. As was expected, children with HFA improved their performance in proverbial understanding test more than TD children. The findings have shown that TD children perform better in metaphorical thinking than HFA children. In addition, the research's findings have also shown significant positive correlations between local coherence and theory of mind tests and proverbial understanding. The relationship between local coherence and proverbial understanding has been found as the strongest. This finding may broaden the knowledge about the reciprocal contribution of the ability to understand figurative language and the ability to understand social situations. Examination of prediction of proverbial understanding by verbal ability, analogical reasoning, metaphorical thinking, executive memory, local coherence perception and understanding of false believe in others has shown that (a) proverbial understanding is mainly predicted by local coherence and verbal ability in the whole sample; (b) HFA children's proverbial understanding ability is mainly predicted by verbal ability and local coherence while metaphorical thinking and executive memory are the strongest predictors of TD children's proverbial understanding.

The current study's contribution has been shown in the following aspects: (a) Construction of a novel measure of local-central coherence that can be used with HFA children aged 5-11 years, (b) Application of proverbial understanding measure with HFA children aged 5-11 years; (c) Showing that HFA children perform lower than TD children on proverbial understanding and local-central coherence measures, which tap the ability to understand social situations; (d) Showing qualitative differences of performance between HFA children and TD children across the items of the proverbial understanding test; (e) Showing that proverbial understanding is predicted mainly by local coherence reasoning and verbal ability.