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**Rapid Naming Ability of Children
on the Autistic Spectrum**

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ABSTRACT

Both speech and language are parts of the larger process of communication. Communication is the primary function of language. (Muma, 1978 in Owens, 1992). It is the process participants use to exchange information, ideas, needs and desires, an active process that involves encoding, transmitting and decoding of a message (Owens, 1992).

Language enables people to convey and receive ideas and messages, and function effectively in society. (Bemstein & Tiegerman, 1993 in Plaut, 1994).

Verbal message can be conveyed by means of the voice channel, written language or sign language. Speech is the oral channel of language.

Speaking is one of man's complex skills. It is a skill which is unique to our species. Every typically developing child acquires speaking skills at an early age. The ability to acquire language is clearly driven by a genetically given propensity for language. Speech develops throughout the years of childhood and necessitates interaction between the child and his or her language environment.

The mature language user also keeps expanding his lexicon as new words are needed or arise in the language. (Levelt, 1989).

Numerous research projects attempted to explain the process wherein the speaker can transform intentions, thoughts and feelings into fluently articulated speech. Words serve to invoke concepts. They do this by using largely arbitrary phonological emblems. To bridge the divide between meaning and sound in production, many theories postulate that there is an intermediate retrieval step in the transition from a concept to the sound form that conventionally conveys the relevant meaning. Because messages

are not represented linguistically, appropriate words must be located within or retrieved from the vast mental dictionary in a speaker's memory. (Bock, Konopka & Middleton, 2006).

In order to produce effective oral verbal interaction (speech for communication purposes), one requires word retrieval – the ability to find the requested word as rapidly as possible, in order to convey the desired message in the most precise and intelligible manner.

Our mind has a concept for every existing object in the form of a mental image, as well as a lexical entry, which is the actual word (form or meaning), stored in the mental lexicon. This lexicon is the long-range memory reservoir where words are stored throughout life. It includes semantic information about the meaning of the word, syntactical information related to the manner in which the word is incorporated in a sentence and information pertaining to form –spelling and the manner in which it is spoken. When a word is retrieved from the mental lexicon, it is accompanied by its syntactical, morphological and phonological attributes. From this word reserve, we create phrases and sentences (Jackendoff, 2002 in Elman, 2004).

People know and use thousands of words most of which are accessed in the space of microseconds for the purpose of speech. This indicates that, the mental lexicon is meticulously organized. It is important to keep in mind that efficient organization enables both -quick retrieval and storage of a maximum number of concepts. The conclusion is that the mental lexicon is both extensive and highly complex (Aitchison, 2002).

How does the speaker retrieve the correct word from among thousands of others? The lexical retrieval process has to be capable of choosing the right word, as well as the correct transformation of the word. As a result, the retrieval model has to take into account how syntax changes the retrieved words (Pinker, 1999 in Schwartz, 2002).

Language production requires the retrieval of a sound mold in association with meaning. In order to comprehend or produce a name which signifies an object, the child has to store in the mind non-verbal information about the type of object – shape, color, function – as well as a phonological representation of the sound mold which makes up its label.

Object naming is a process we learn to perform during the early stages of language development. It is a process which takes place throughout life, rapidly and without conscious attention, except for those times when we “cannot think” of the required word (Lahey & Edwards, 1996).

Children with naming difficulties are individuals for whom lexical retrieval problems impede the normal pattern of language development and use. These problems include inaccurately producing the correct word even when the word’s meaning is understood.

The terms word retrieval problem or word finding difficulty describe a situation in which an individual who knows and understands words and had used them effectively in the past, sometimes finds it difficult to come up with the appropriate word as rapidly as desired. The problem is defined as difficulty in retrieving a specific word in a given situation (Leonard, 1999).

Word finding problems may be evident in the production of a single word, connected discourse, or both. (German 1992 in Tingley et al, 2003). People with a word retrieval problem may seem to be unable to answer

questions, while in fact they know the answers and are prevented from expressing themselves clearly.

Word retrieval difficulties have been observed among diverse populations, including children who are not making good progress at school, children with dyslexia and children with language difficulties (Dockrell et al, 1998, Lahey and Edwards, 1999).

It has been found that word finding difficulties delay and lower the quality of oral communication, also hampering the acquisition of reading skills. Both oral communication interaction and reading are processes which require efficient word retrieval from the mental lexicon (Snyder & Godley, 1992 in Tingley et al, 2003).

Autism Spectrum Disorders.

Autism Spectrum Disorders are also known as continuum or spectrum of autistic disorders (Sverd, Dubey, Schweitzer & Ninan, 2003). Children with these deficiencies have problems with communication, playing with other children and general attitude towards other people, including their family (Kasher & Meilijson, 2003).

Parents of children with autism most often report that the first sign of a problem with their child is either the absence of language or the loss of language that had begun to develop in the second year of life (Kurita, 1985 in Tager-Flusberg, 2000a; Lord & Paul, 1997)

A delay or absence in language development and a lack of communications skills are characteristics of the autism spectrum, varying from child to child. Language deficiencies may include a delay in expressive and receptive language development, partial or total lack of expressive and

receptive language, problems with initiating or participating in conversation and stereotyped, repetitive and idiosyncratic language.

In spite of the fact that the research literature often describes naming difficulties among children with language and learning impairments, there is little evidence of rapid naming problems among children on the autism spectrum with language ability.

When relating to speech and language difficulties in population on the autistic spectrum, most of the research focuses on the different language components, such as a poor vocabulary, grammatical skill and faulty syntactical, semantic and pragmatic system, which prevent normal verbal interaction and communication. Identification of word retrieval problems and subsequent therapy designed to impart suitable retrieval strategies among children on the autistic spectrum may develop better oral language skills.

Research outline and hypothesises

A total of sixty children served as subjects for this study. They were divided into three groups:

1. Twenty children with typical development of communication, language and speech abilities.
2. Twenty children diagnosed as PDD NOS.
3. Twenty children diagnosed as Asperger Syndrome.

The children with typical development of communication, language and speech served as a control group.

All the children were of elementary school age, ranging from six years and three months old, to twelve years and nine months old, had a similar social

and economic background, and had reading skills enabling them to cope with written letters and numerals.

The Autistic children were integrated in regular elementary schools, had language skills enabling language and oral communication interaction and had been given communications therapy by a speech-language pathologist from an early age.

None of the children had undergone any past diagnosis and/or focused therapy related to word retrieval deficiency.

The study consists of two parts. In the first part, all the children were presented with the following three word retrieval tests:

- Rapid Automatized Naming (RAN) - including the rapid automatized naming of common objects, colors, numbers and letters.
- Verbal fluency – including semantic and phonological naming tasks.
- Word finding (TWF-2) – including picture naming of nouns and verbs, as well as sentence completion.

In the second part of the study, an intervention plan was structured and administered by the researcher in order to study the effectiveness on retrieval production. Ten low graders children, (five from the Asperger group and five from the PDD group) were given forty minutes' therapy sessions once a week over a period of four months (15 sessions) and then - at the end of the intervention period - were submitted again to the tests. In addition, the other ten low graders children (Five from the Asperger group and five from the PDD group) were tested again without any intervention therapy.

The hypotheses of the research:

- The children on the Autistic spectrum will demonstrate more problems with word retrieval than the typically developing children.
- The PDD NOS children will demonstrate more problems with word retrieval than the Asperger children.
- The children who participate in the intervention therapy will improve their retrieval skills following the intervention plan.
- The children who were tested again without an intervention plan will have similar score as their primary results.

Results and discussion.

The ability to recognize visual symbols, name them accurately and rapidly and produce verbal fluency is considered developmental in nature. Thus, performance on the tests should be strongly correlated to chronological age. According to the developmental nature of retrieval abilities, the current research shows that among the typically developing children, and Asperger children there was a significant difference between retrieval time in the lower grades (first-third grade) and the upper grades (fourth-sixth grade) in most of the research tests materials.

In the PDD NOS group, for most of the test material, the children found the retrieval tasks hard to perform in low grades as in high grades.

The hypothesis of the research

The research findings support **the first hypothesis** which assumed that children on the Autistic spectrum will demonstrate more problems with word retrieval than typically developing children.

The research results of most of the tests (Rapid Automated Naming Test, Phonologic Verbal Fluency Test, and all the subtests of the Word Finding Test) support **the second hypothesis** of the research which assumed that

PDD NOS children will demonstrate more problems with word retrieval than the Asperger children.

The third and fourth hypotheses of the current research deal with the impact of therapy intervention on word retrieval ability in Asperger and PDD groups. The hypotheses assumed that the children who participate in the therapy will improve their retrieval skills following the intervention plan while the children who were tested again without any intervention therapy will have a similar score as their initial results.

We can see from the results that most of the children who were engaged in the therapy intervention managed to improve their retrieval abilities after treatment. The impact of therapy was most significant among the PDD Group.

Limitations of the research: Although there was positive evidence of the impact of intervention therapy on retrieval abilities, it was only assessed among a small group of children and in low grades of elementary school. We assume that evaluating word retrieval in a small group does not capture the full range of intervention impact and limits the generalness of the study.

Conclusions and implications for clinical practice and further research:

In order to produce effective oral-verbal interaction (speech for communication purposes), one requires word retrieval – the ability to find the requested word as rapidly as possible, in order to convey the desired message in the most precise and intelligible manner. Word retrieval plays a central role in language processing and cognitive development.

In conclusion, the most compelling evidence for the present research was the difference in word retrieval ability between children on the autistic spectrum and typically developing children.

Overall, these results do offer strong support for the notion that among children on the autistic spectrum (Asperger and PDD NOS) there are children for whom lexical retrieval problems impede the normal pattern of language development and use.

The research found a positive impact of intervention therapy on retrieval abilities among children diagnosed as PDD NOS, and Asperger Syndrome. The findings suggest that children on the autistic spectrum, especially those who were diagnosed as PDD NOS and have word retrieval difficulties can gain and improve verbal skills and discourse from therapy intervention focused on word finding and rapid naming skills.

In light of the importance of these research findings we propose to continue in this research direction and place particular emphasis on professional intervention dealing with word finding materials.

Future research can benefit from the problems which surfaced while conducting this study. A larger group should be engaged, producing language intervention focused on retrieval abilities over a longer period and with longer measurement intervals.

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