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Mapping Abilities in Orthographic-Visual, Phonological-Auditory Processors, Memory and Reading among Students with Intellectual Disabilities (8-15 years) with Adequate Level of Adaptive Behavior, but Difficulties in Reading. (Pioneering Study)

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Abstract

Tov-li and Frish (2014) point out that in our modern world, reading is a necessary condition for integrating a person into a developmentally, culturally, economically and socially society. Reading is a basic life skill that is the cornerstone of a child's success in school and adult life. Being able to read well opens up many opportunities for self-realization, professional development and even socio-economic mobility. In the modern world, man is required in everyday life to understand texts of various kinds, from the need to fill out forms, to the understanding of written communication, using reading comprehension strategies. All of these require a written language control fluently. Reading and writing have always helped man, but today in a dynamic, global and changing world, they are even more necessary.

The American Psychiatric Association (APA, 2013) data show that 15% of people with mild and moderate. intellectual disabilities (IQ = 40-70) are unable to read even though they exhibit an adequate level of adaptive behavior expressed in independent functioning in daily life according to their classification and requirements Expected from people with mild or moderate intellectual disabilities. The question is why? What is the source of the students' difficulty?

From this, the purpose of this study was to investigate the source of difficulties in the phonological-auditory processor, orthographic-visual processor, and other reading-related abilities: short and long-term memory among students with intellectual disabilities (ages 9-15; 16-21 years) with an appropriate level of behavior Adaptive that they cannot read.

In the present study, we selected two processors from the Adams' (1990) model of the orthographic-visual processor and the phonological-auditory processor, as well as selecting additional reading-related and short-term visual memory capabilities as well as words-and-word ability.

In addition, the question examined whether there was a difference in the operation of the various processors in relation to the chronological age of the students.

Twelve children with intellectual disabilities participated in the study, including 6 boys (50%) and 6 girls (50%). The chronological age of the participants ranged from age 8 to age 15 (*M* = 11.08, *SD* = 1.95). Children's intellectual age (according to the Peabody Picture Vocabulary Scale - PPVT-3; Dunn & Dunn, 1997) ranged from age 6 to age 11 (*M* = 7.75, *SD* = 2.05).

From two-way ANOVA (2X4) variance analyzes with repeated measurements. We compared the scores in the orthographic-visual processor sub-tests (in the perception and visual memory) with a distinction between the scores in the perception (total score) of the auditory-phonological processor. It also found that within the orthographic-visual processor. The highest score range was visual distinction, (The Rapid Automatized Naming (RAN) test checked visual scanning ability, attention level and concentration and scanning strategies; Denckla & Rudel, 1976a, 1976b), then sequential memory test. In addition, it found that among the phonological-auditory processor subtests, the highest score was in both subtests of letter recognition and naming letters, first phoneme isolation and then syllable omission and finally single words. Another finding is that, in both reading ability tests, participants showed greater ability to identify spelling patterns than single word reading. In examining the relationship between gender and the processors and capabilities tested according to different analysis tests, no main effect was found and no interaction between the tested domain and gender. In contrast, there were significant positive associations between participants' ability in areas related to the orthographic-visual processor and the mental age tested according to the Peabody Picture Vocabulary Scale (PPVT-3; Dunn & Dunn, 1997). In addition, the higher of a participant, the greater its capabilities in the areas of visual-auditory and audio-phonological treatments, also the target population was find to have higher short-term memory capabilities. The lowest or

most significant score is in long-term memory. In order to test the contribution of the study variables to the reading ability of all participants, a multiple regression test was performed (using the Stepwise method), where the predicted variable is the reading ability. The test results indicate a multiple correlation of $\beta = 0.87$; $R^2 = .77$, $p < 0.001$. After the first step, it turns out that the variable that successfully predicts reading ability is precisely the ability of the phonological-auditory processor ($F(1, 10) = 33.02$, $p < .001$; $R^2 = .77$). That is, 77% of the variance in the reading ability variable which explained by the ability of the phonological-auditory processor to be tested. It turns out that except for this variable, no contribution of any variable from other variables tested to predict reading ability