



Research Article

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Adaptive Behavior in Children with Intellectual Disabilities

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Abstract

Children with intellectual disabilities experience deficits in all the areas of adaptive function and some other aspects, unfortunately little is known about the independent functioning among gender and age related to these impairments in this type of neurogenetic disorders as intellectual disabilities. Adaptive behavior is essential for an optimal functioning in these categories. 53 participants aged between 5 and 11 in school years have been administered the Vineland Adaptive Behavior Scales, Montreal Cognitive Assessment scale (MoCA) and Raven's Standard Progressive Matrices (IQ). Motor abilities are the area that is more affected in children with intellectual disabilities with a significant impairment appeared at an early age, which remain low even in the following years. These differences are potentially oriented by the etiologies related to the disorder. Adaptive behavior is an important area of challenge for children with intellectual disabilities throughout their development. Daily living skills and competencies are also a significant strength in relation to other areas of adaptive functioning.

Keywords: Intellectual disability, children, adaptive behavior, daily living skills, motor skills

1. Introduction

The definition of mental retardation in the DSM-5 [American Psychiatric Association, 2013] recognizes that the intellectual deficit of individuals with intellectual disabilities affects both the intellectual area [ID] and the adaptive functions of the individual [Will, Caravella, Hahn, Fidler & Roberts, 2018]. ID is manifested mainly by the lack of understanding, reasoning, problem solving, planning and abstract thinking [Woodman, Mailick, Anderson & Esbensen, 2014]. Coping with the

diagnosis of intellectual disability puts children and their family in front of a new reality filled with unpredictable challenges and difficulties [Hahn, Brady, Warren & Fleming, 2015; Golya & McIntyre, 2018]. The need that these children have to function in many areas requires the support and the follow-up of caregivers of children with intellectual disabilities [Tan, van Gorp, Voorman, Geytenbeek & Reinders-Messelink et al., 2020; Price, Morris & Costello, 2018; Warren, Brady, Fleming & Hahn, 2017]. Challenging for the family and the child may be aspects related to dressing or preparing food, following rules and building and maintaining relationships with others [Picardi, Gigantesco, Tarolla, Stoppioni & Cerbo et al., 2018; Mervis & Pitts, 2015; Salomone, Shephard, Milosavljevic, Johnson, Charman & BASIS Team, 2018; Wolfe, Stueber, McQuillin, Jichi & Patch et al., 2018].

Often children with intellectual disabilities have obvious difficulties compared to their peers in terms of communication that relates to the ability to understand and react after receiving a message from another person who tries to interact with them [Fenning & Baker, 2012]. Their ability to write and communicate messages in various forms also have visible difficulties [Farmer, Adedipe, Bal, Chlebowski & Thurm, 2020; Hill, Gray, Kamps & Enrique Varela, 2015]. Another area that encounters difficulties is the ability of the child with intellectual disabilities to independently perform all those activities related to meeting everyday life needs [Green & Baker, 2011]. This implies that children with intellectual disabilities present obvious difficulties in aspects related to interpersonal relationships, play, leisure and coping skills [Mervis, Klein-Tasman, Huffmn, Vellerman & Pitss et al., 2015]. These difficulties vary from one child to another influenced by the severity of the symptoms [Pugliese, Anthony, Strang, Dudley & Wallace et al., 2016]. Thus, children diagnosed with severe intellectual disabilities have a much greater level of difficulty compared to children with moderate and mild intellectual disabilities [Han, Thurm, Golden Williams, Joseph & Zein et al. 2013]. Referring to the mild intellectual ability, the level of difficulty allows the clinician to work better with the child and if there are favorable conditions related to external and internal support sources, the prognosis of the evolution of the disorder is predicted to be positive [Mazon, Consel, Amestoy & Hesling et al., 2019; Rice, Zablotzky, Avila, Colpe & Schieve et al., 2016; Green, Caplan & Baker, 2014; Reichow, Hume, Barton & Boyd, 2018]. In addition to these areas that associate with intellectual disability, what is important for a good understanding of a child's needs is a careful assessment of maladaptive behaviors [Doody, Murphy, Lyons, Gallen & Ryan et al., 2019] such as internalizing and externalizing behaviors [Rods, Chavira & Baker, 2017]. An exploration of maladaptive behavior helps us identify the problematic aspects and manage the case, avoiding any risk that may impinge the child [Sullivan, Diepstra, Heng, Ally & Bradley et al., 2018; Caravella & Roberts, 2017].

2. Method

The aim of this study is to assess the main areas of adaptive behaviors present in children with intellectual disabilities.

Hypothesis 1: There is a strong and positive relationship between the level of mental retardation and the level of delay in social maturity.

Hypothesis 2: There is a strong and positive relationship between the level of cognitive impairment and the level of retardation in social maturity.

Hypothesis 3: There are no statistically and significant differences in the level of delay in social maturity related to the gender, place of residence, age and school grade of children.

2.1 Sample

A sample of 53 children diagnosed with intellectual disabilities was referred for evaluation to the office for Psychological Issues in the Administration of the Regional Directorate of Education in Drenas, Kosovo.

2.2 Instruments

Instruments used to conduct this study were:

The Vineland test (The adaptive behavior assessment) school version (Vineland / 3-18) conceived for children of preschool and school age from 3 to 18 years old. It consists of 5 areas as communication, skills in daily life, socialization, motor skills and maladaptive behaviors. The Vineland Social Maturity Scales (VSMS), measure social competence in individuals from all ages. The test represents a significant contribution in the assessment of adaptive behavior or behaviors that make a person independent and socially responsible.

MoCA (Montreal Cognitive Assessment) Test. This test assesses various cognitive areas such as: attention and concentration, executive functions, memory, conceptual thinking, visual-constructive skills, speech / language, calculations and orientation. The requested time to administer MOCA is approx. 10 minutes.

The Raven Progressive Color Matrix (IQ) test aims to measure IQ. This test is designed to measure psychomotor development in children aged 5 to 11 years old who show difficulties in cognitive and motor functions. This test is used to measure fluid intelligence and crystallized intelligence. It is called progressive because it starts with mild statements and comes up raising difficulty, while colored because Raven used the color test to be more appealing to children. This test belongs to nonverbal tests.

2.3 Ethics

Data for the current study were collected in the period from June 2019 to February 2020. In the first step for the identification of children, the authors obtained a permission and approval from the Ethics Commission at the Municipal Directorate of Education, the Municipality of Drenas. Written permission was also obtained from each parent of the children to conduct the study. Parents were made familiar with the purposes of the study, with the instruments that would be used with their children and with how the study results would be treated and published, ensuring complete anonymity and confidentiality to both parents and children.

3. Results

Data for this study were collected from 53 children from the Municipality of Drenas in Kosovo. These children are enrolled in various levels of compulsory education in Kosovo. The study involved 24 female and 29 male children. Expressed in percentage, the participation of male children in this study was 54.7% of all children, while the participation of female children was equal to 45.3%. In the preparatory class were 8 children or 15.1% of all children participating in the study. In the first grade there were 6 children or 11.3% of all children. In the second grade there were 7 children or 13.2% of all children. In the third grade there were 6 children or 11.3%. In the fourth grade there were 9 children or 17%. In the fifth grade there were 8 children or 15.1%. In the sixth grade there were 9 children or 17%. Most of these children (7 children or 63.6%) were boys and the rest (4 children or 36.45%), girls. These children were identified in almost all grades, starting from the preparatory grade to the sixth grade, with the exception of the first grade. Most of these children (54.5%) result in moderate mental retardation. Another part (36.4%) had mild mental retardation and only 1 child resulted in severe mental retardation.

Table 1. Average age of children, according to gender

Children age		N	Minimum	Maximum	Mean	Std. Deviation
Female	Children age in years	24	5.03	11.85	8.8388	2.19320
	Valid N (listwise)	24				
Male	Children age in years	29	5.09	11.79	8.6921	2.16806
	Valid N (listwise)	29				

The average age of the girls participating in the study was similar to that of the boys. Specifically, the minimum age of girls was 5.03 years old, while the maximum age was 11.85 years and the average age of girls was 8.8 years old (SD = 2.19). The minimum age of boys was 5.09 years, while the maximum age was 11.79 years and the average age of boys was 8.69 years old (SD = 2.16).

From the current study it resulted that the majority of the children tested (77.4%) are at the rate of the level of adaptive abilities (social maturity) according to their respective age. Only 20.8% of children are one year later in adaptive behaviors and only 1 child is 2 years or more later in adaptive behaviors.

Once the general picture of adaptive behaviors of these children diagnosed with intellectual disabilities has been clarified, the possible differences of this variable according to the gender, place of residence, class and age of the children will be analyzed.

Most girls (83.3% of them) and most boys (72.4% of them) have appropriate behaviors developed according to their age. There are 16.7% of girls and 24.1% of boys who have a delay of 1 year in adaptive behaviors. It is noted that, there is an almost equal distribution among children who are at the rate of behaviors appropriated to their age development. 48.8% of them are girls and 51.2% are boys. Meanwhile, the situation is slightly different in children who have a year of delay in their adaptive behaviors. Most of them are boys, respectively 63.6% and the rest 36.4% are girls. The analysis goes further through the conduct of a non-parametric test (*chi square test*).

Table 2. Chi-Square Test between gender and social maturity

	Values	df	Asy. Sign. (2-sided)
Pearson Chi-Square	1.383 ^a	2	.501
Likelihood Ratio	1.767	2	.413
Linear-by-Linear Association	1.193	1	.275
N of Valid Cases	53		
a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .45.			

The results of the Chi square test show that there is no statistically significant relationship between gender and adaptive behaviors of children ($p = 0.501 > 0.05$). Thus, the differences observed in the descriptive analyzes are not confirmed by the non-parametric test.

Even the non-parametric Mann-Whitney test confirms the same finding. There are no statistically significant differences in the level of child-adaptive behaviors related to the child gender. In this case, the adaptive behavior variable is considered an ordinary variable. The analysis shows that this variable (level of social maturity) does not have a normal distribution of data. The Mann-Whitney test showed that there is no statistically significant difference between levels of social maturity and gender of children ($p = 0.325 > 0.05$). About 75% of children in preparatory classes are in the normal rate of adaptive behaviors while 35% of them are a year late in adaptive behaviors. All first graders are at the normal rate of adaptive behaviors, according to their age development. 85.7% of children in the second grade have on the normal rate and 14.3% had a year delay in adaptive behaviors. 66.7% of third grade children are at the rate while 33.3% of them are one year later in adaptive behaviors. 88.9% of fourth graders are in the rate and 12.5% are one year later in adaptive behaviors. 44.4% of sixth graders are in the normal rate and the same figures (44.45%) are for those with one year of delay of adaptive behaviors. Since the adaptive behavior variable has an abnormal data distribution, to analyze the relationship between this variable and the other classroom variable, the Spearman coefficient was calculated. It results that there is no statistically significant relationship between the class of students and the level of adaptive behaviors of children ($p = 0.118 > 0.05$). This means that there are no changes in the level of adaptive behaviors of children, according to the classes they attend. It also resulted that, there is no statistically significant relationship between the biological age of students and the levels of adaptive behaviors ($p = 0.260 > 0.05$). This means that the

levels of adaptive behaviors do not change depending on the biological age of the children. At the normal rate of adaptive behaviors are most of the children living in rural areas and also most of the children living in urban areas. Specifically, 76.7% of children living in rural areas and 78.3% of children living in urban areas are at the normal rate of adaptive behaviors. About 20% of children living in rural areas and 21.7% of children living in urban areas have a 1 year of delay in the manifestation of adaptive behaviors. It is observed that there is an almost equal distribution in urban and rural areas of children who are in the normal rate of adaptive behaviors. Specifically, in the rate of adaptive behaviors are about 56% of children living in rural areas and about 44% of children living in urban areas. The same situation is evident with children who show 1 year delay in adaptive behaviors.

Table 3. Relationship between the level of mental retardation, cognitive skills and adaptive behaviors

			IQ Col Progr Matrix Test J C Raven	Cognitive skills for all development areas assessed by MoCA Test	Level of social maturity according to Vineland scale
Spearman's rho	IQ Col Progr Matrix Test J C Raven	Correlation Coefficient	1.000	.599**	.785**
		Sig. (2-tailed)	.	.000	.000
		N	53	39	53
	Cognitive skills for all development areas assessed by MoCA Test	Correlation Coefficient	.599**	1.000	.770**
		Sig. (2-tailed)	.000	.	.000
		N	39	39	39
	Level of social maturity according to Vineland scale	Correlation Coefficient	.785**	.770**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	53	39	53
**. Correlation is significant at the 0.01 level (2-tailed).					

A statistically significant relationship between the level of mental retardation and the level of cognitive impairment ($p = 0.000 < 0.05$, $r = 0.599$). The relationship between the level of mental retardation and the level of cognitive impairment is positive and moderate. This means that the more severe the level of mental retardation the more impaired the child's cognitive abilities are and vice versa. There is a statistically significant relationship between the level of mental retardation and the level of delay in adaptive behaviors ($p = 0.000 < 0.05$, $r = 0.785$). The relationship between the level of mental retardation and the level of delay in adaptive behaviors is positive and strong. This means that the more severe the level of mental retardation the higher the delay in the child's adaptive behaviors and vice versa. There is a statistically significant relationship between the level of cognitive impairment and the level of delay in adaptive behaviors ($p = 0.00 < 0.05$, $r = 0.770$). The relationship between the level of cognitive impairment and the level of delay in adaptive behaviors is positive and strong. This means that the more impaired the cognitive skills, the higher the delay in adaptive behaviors and vice versa.

4. Discussions

Adaptive behaviors are a priority for the overall functioning of the individual both in daily life activities as well as with favorable outcomes in all areas of cognitive functions, academic and general well-being of the child and his family [Scheffers, van Vugt & Moonen, 2020 ; Bertollo & Yerys, 2019; Pugliese, Anthony, Strang, Dudley & Wallace et al., 2015; Bernard Paulais, Mazetto, Thiébaud, Nassif & Costa Coelho De Souza et al., 2019]. Impairments in adaptive behavior are typical of children with intellectual disabilities and can usually be associated with many other neurodevelopmental disorders that are in comorbidity with AKI.

Based on the overall results of the study, it resulted that only one child had a severe level of

intellectual disability. The rest of the children participating in the study mainly belonged to a moderate and mild level of intellectual disability. Referring to studies, moderate or severe levels of intellectual disability tend to severely impair a child's functioning in terms of socialization, communication, motor skills and daily motor skills [Hassiotis, Strydom, Crawford, Hall & Omar et al., 2014; Hamburg, Lowe, Startin, Padilla & Coppus et al., 2019]. It also resulted that difficulties in adaptive behaviors affect the increase of the child's problems in the field of cognitive functioning, developing obvious difficulties in their academic progress in every direction. What resulted from our study is that moderate, severe, and profound levels of intellectual disability tend to be associated with marked delays in adaptive behaviors.

This means that children with moderate or severe intellectual disabilities will show increased problems in terms of communication, ability to perform daily tasks, motor skills, socialization and an increasing tendency to exhibiting maladaptive behavior [Novell, Esteba-Castillo & Rodriguez, 2020]. Another aspect that associates intellectual disability and adaptive behaviors related to the overall functioning of the child are cognitive abilities. It was found that in children diagnosed with moderate and severe intellectual disabilities, severe and profound problems with adaptive behaviors tended to increase with increasing the gravity of the symptoms and also to increase impairments in cognitive abilities in these children.

5. Conclusions

The current study suggests that the majority of children who participated in the study and who were diagnosed with intellectual disabilities, 77% of them, are in the normal rate of age-adaptive behaviors. It was noted that there are no statistically significant differences in the level of adaptive behaviors related to gender, age, grade and place of residence. Our findings showed that there is a strong and positive relationship between the level of mental retardation and the level of delay in adaptive behaviors. There is a strong and positive relationship between cognitive impairment and the level of delay in adaptive behaviors. The results suggest that school-age children with intellectual disabilities are in need of early intervention in all areas of adaptive behaviors with specific differences according to the severity level of intellectual disability.

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