

Determining the Developmental Level of Artistic Expression in Students with Cerebral Palsy

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Abstract

Drawings are a significant determinant of children's maturation and can be considered a reflection of the achieved level of a child's intellectual abilities, but also an indicator of a child's maturity and his or her emotional adaptation.

The aim of this study was to determine the developmental level of artistic expression in students with cerebral palsy through the estimation of developmental stage by interpreting human figure drawings, and through defining the characteristics of artistic expression in relation to gender, age, type of school, grade, and upper limbs laterality of students with cerebral palsy.

The study was conducted on the sample of 37 elementary school students, of both genders, aged 8–19, and diagnosed with cerebral palsy. The developmental level of artistic expression was determined on the basis of the stages determined as the criteria for human figure drawings.

The results show that in the population of students with cerebral palsy the most frequent developmental stage of artistic expression was the Beginning of Conventional Drawings of human figures; that the better achievement with the statistical significance was found in girls when compared to boys ($p < 0.05$), among participants from regular school in relation to participants from special school ($p < 0.01$), among older participants as compared to participants from junior grades ($p < 0.05$), and in participants aged 12–14 when compared to those from the group of 8–11 years of age ($p < 0.05$).

These findings indicate that children with cerebral palsy go through different developmental stages of artistic expression more slowly than typically developing

children, which may be a consequence of primary disability, experiential factors, and specific development of these children.

Key words: *age; elementary school; gender; human figure drawings; specific development.*

Introduction

Historically speaking, drawings point to the first traces of culture, telling us that they have existed as long as the human race and that they are, as a way of human expression, as old as the civilization itself. When it comes to children and their development, it could be said that drawings are an important determinant of their maturation. Drawings can be seen as reflections of the achieved level of a child's intellectual abilities but also as indicators of a child's emotional adaptation and maturity (Watkins, Glutting, & Youngstrom, 2005 as cited in Gligorović & Vučinić, 2011). Children's drawings are recognized as the best way for children to express themselves, they represent a window into their inner world, i.e. they mirror their emotional life and personality (Pacić, 2011).

Drawings represent one of the major forms of children's creative expression at an early age. They enable children to explore, solve problems or give a visual form to their own ideas and observations. Children's drawings are unique, characteristic and reflect their understanding of the world, within the possibilities of their perception and intelligence, imagination and emotional impulses, and therefore artistic expression is considered highly individual (Radić-Šestić & Tašić-Ivović, 2007). Due to the fact that children project their emotions, needs, conflicts, desires, intentions and expectations into the drawings, they are considered very suitable tools for both diagnosis and treatment (Pacić, 2011).

Children's artistic work can be studied from different points of view. A great number of early studies of children's artistic expression focused on identifying the characteristics of children's drawings, on the causes of their occurrence, and on the changes of these characteristics over time, in other words, with the increase of children's age. Studies suggest that children's artistic development is conditioned by the achieved levels of motor development, awareness and emotions, and that artistic expression can occur only when the necessary preconditions have been met. Pacić, Likić, Damjanović, Zolnjan, and Eminović (2011) report that drawing abilities are influenced by perceptual abilities, manipulative dexterity, visuomotor coordination, spatial orientation and a whole range of mental functions such as attention, imagination, thinking and intelligence, along with the inevitable motivational and emotional factors. Radić-Šestić and Tašić-Ivović (2007) believe that drawing, as a psychomotor activity expressed in areas of fine motor skills of upper limbs, depend on visual memory, attention and visuomotor control, while Gligorović and Vučinić (2011) state that the maturity of visuospatial, visuoconstructive and motor abilities has an impact on the quality of the drawings. Horváth (2009) emphasizes the necessity for

a comprehensive approach to the issue of children's drawings which is discussed from several aspects, such as the place of motor development in drawing development, and the influence of motor impairment (e.g. muscle tone, voluntary movements control), gross motor functions (e.g. sitting), perceptive or cognitive disorders, attention, sensory and perceptual-motor disturbances, and emotions on the development of drawing skills. Pacić (2011) states that one of the characteristics of children's artistic expression development is the presence of shared characteristics of artistic expression in children of the same age, which is the most visible during the period between the ninth and tenth year of life, followed by the appearance of individual differences, which is particularly intensified during the adolescence.

The development of artistic abilities goes through specific stages, with a variable number and duration period, which have been differently defined by different authors. Common to all these theoretical assumptions is that the developmental stages of artistic abilities are defined on the bases of the elements that are considered characteristic for a particular stage. Of course, it is important to note that a strict classification of the stages is generally possible only in didactic rather than in practical terms, since in each stage of child's artistic expression the elements of the previous one may still exist or there may already be some manifestations of the elements from the following stage, so it is usually very difficult to define a clear boundary between two consecutive stages.

According to Karlavaris (1987), Kerschensteiner is the first author who proposed the classification of the development of children's artistic expression, as follows: 1) the scribbling or scribbles stage (from 2 to 4 years, scribbles are random, at first uncontrolled, but progressively become more controlled, a child learns to hold a pencil, develops hand-eye coordination and fine and gross muscle development in a playful manner while exploring art materials), 2) the stage of schemes or symbols, characterized by ideoplastic drawings (from 4 to 7 years, drawings represent child's knowledge of the object rather than direct observation of its appearance or memory of an object, drawings also become more detailed and proportional, they are followed by created stories, colors are more realistic and stereotypical, but there is a schema as a way of drawing in the same way), and 3) the stage of lines and forms, characterized by physioplastic drawings (from 7 to 9 years, drawings are more realistic and far more detailed, spatial perspective is evident and skyline and ground lines start to show). On the other hand, Luquet (1913) divided the development of children's artistic expression into: 1) fortuitous realism (up to 3 years, a child starts from scribbles similar to something from life and progresses to intentional drawings representing something from the life before they start drawing), 2) failed realism (up to 5 years, the topics of the drawings are recognized by adults even though there are numerous "mistakes", omissions and imperfections, and the human figure appears as the first recognizable form that a child draws), 3) intellectual realism (up to 8 years, a child tries to portrait features of an item or a topic in their characteristic shape), and 4)

visual realism (up to 10 years, there is an intention to produce life-like representations with details from one visual perspective). The development of the characteristics of children's drawing has been described and investigated in numerous studies. All these classifications have been based on different criteria. In his study of children's drawings, Read (1943) proposed a theory of modes of perception that are directly correlated with four basic types of psychological functions (thinking, feeling, sensation and intuition), thus offering four corresponding categories of mature creativity (realism, super-realism, expressionism and constructivism). Lowenfeld (1957) described the following stages: 1) scribbling stage at the age of 2 (with the naming of scribbles as an important milestone in the development), 2) the pre-schematic stage at the age from 3 to 4 years (with the first conscious creation of form and a person as the first representational attempt), 3) the schematic stage at the age of 6 (with a "schema" as a definite way of drawing an object which represents the child's active knowledge, and everything is put on the base line), 4) the gang stage or the dawning realism at the age from 8 to 10 (with more details and a horizon line rather than a base line, and with a strong influence of peer social connections on drawings), and 5) the pseudo-naturalistic stage at the age of 12 (with all the details and a three-dimensional space, but at the same time this stage represents the end of artistic expression as a spontaneous activity because children become more critical of their drawings). One of the most frequently cited classification follows children's artistic expression development through the following representational stages: 1) pre-schematic stage of the early scribble activities, 2) schematic stage in which different observations of essential characteristics of objects are used, 3) mixed stage leading from the former to the latter, 4) true-to-appearance stage in which a view of an object or several objects and their compositional arrangement is taken from a single point of vantage, and 5) perspective stage when a representation of space through a form of distance (line) perspective is added (Lark-Horovitz & Norton, 1959).

However, for the purposes of this research we have chosen the most frequently used classification of children's artistic expression development in special education and rehabilitation, which has proved to be the most appropriate in interpreting the achievements of children with developmental disabilities, as presented in the study conducted by Gligorović and Buha-Đurović (2009). In addition, this classification provides the most appropriate interpretation of results and a comparison of achievement within the population of children with developmental disabilities, and more adequate comparison of their achievements in relation to the standardized achievements of children from the typically developing population. According to this classification, there are five basic developmental stages of drawing and artistic expression, and these are:

Stage I – A Tadpole or Cephalopod Schema

Features: head is presented as a circular or angular line within which some or all elements of face are drawn; trunk is omitted; arms are either omitted or drawn as

two lines dangling from the head; legs are drawn as two dangling lines; it is usually characteristic of children aged 3–4 years.

Stage II – Transitional Form

Features: head is presented as a closed circular or angular line within which some or all elements of face are drawn; trunk is separated or there is an indication of separate trunk (trunk is placed between the vertical lines of legs); arms, if any, can be found under the head which is placed on the vertical lines of legs; it is usually characteristic of children aged 4–5 years.

Stage III – The Beginning of Conventional Drawings

Features: human figure drawing has all of the six key body components; at this stage of development the human figure drawing is formed when vertical lines of legs are connected by a horizontal line which usually forms a triangular shape; in these drawings, some body parts, such as head and trunk, are clearly visible with an indication of arms and legs; it is usually characteristic of children at the age of 5.

Stage IV – Conventional-Segmented Phase

Features: head is presented as closed circular line within which some or all elements of face are drawn; trunk is always drawn and clearly separated from the head and legs; arms are always drawn starting from the neck or trunk at an angle of 45–90 degrees and presented by single lines or enclosed areas; legs are placed under the trunk and presented by single lines or enclosed areas; it is usually characteristic of children aged between 5–6 and 8–9 years.

Stage V – Conventional-Outlining Drawing Phase (Visual Realism)

Features: neck is always drawn and presented by two lines that connect head to shoulders; arms are always drawn beginning from the shoulders, open to trunk; it is usually characteristic of typically developing children aged between 8–9 and 12 years.

The characteristics of drawings, drawing and the development of artistic expression are the most commonly studied topics among typically developing children (Gligorović & Vučinić, 2011; Henderson & Thomas, 1990; Karlavaris, 1987; Koks, 2000; Thomas & Silk, 1990) and children with learning disabilities (Gligorović & Radić-Šestić, 2010; Hartman, 1972), although the studies that have dealt with this issue in children with disabilities can be found in recent literature and especially in children with mild and moderate intellectual disability (Đorđević, 2005; Gligorović & Buha-Đurović, 2009; Kaljača & Glumbić, 2005), but also in children with hearing impairment (Radić-Šestić & Tašić-Ivović, 2007). However, only few studies have dealt with the characteristics of drawings of children with cerebral palsy and their artistic expression (Horváth, 2009; Pacić, 2011; Tirnanić, Prica, & Čukić, 2008).

The aim of this study was to determine the developmental level of artistic expression in students with cerebral palsy. This objective has been operationalized through: 1) determination of the developmental stage of artistic expression in the participants with

cerebral palsy by interpreting their human figure drawings, and 2) determination of the relations between artistic expression stages and gender, age, type of school, grade, and upper limbs laterality of the participants with cerebral palsy.

Methods

Study Population and Sampling

The study sample consisted of 37 participants with cerebral palsy, of both genders, aged 8–19 years. The participants were students attending first to eighth grade, from two elementary schools, in one of which the teaching was conducted in accordance with the regular curriculum, and in the other it followed the special curriculum. Inclusion criteria were: 1) diagnosis of cerebral palsy (data were taken from the school documentation), 2) elementary school attendance, and 3) the ability to hold a pen. Comorbidity of cerebral palsy and intellectual disability was an exclusion criterion. Table 1 shows the distribution of participants in relation to their gender, type of school, grade, age group, and upper limbs laterality.

Table 1. *Distribution of participants according to gender, type of school, grade, age group, and upper limbs laterality*

		N	%
Gender	Male	15	41
	Female	22	59
	Total	37	100
Type of school	Regular	17	46
	Special	20	54
	Total	37	100
Grade	1st	3	8.1
	2nd	4	10.8
	3rd	6	16.2
	4th	5	13.5
	5th	3	8.1
	6th	5	13.5
	7th	4	10.8
	8th	7	18.9
	Total	37	100
Age	8–11 years	14	37.8
	12–14 years	11	29.8
	15–18 years	12	32.4
	Total	37	100
Upper limbs laterality	Right hand	22	59.5
	Left hand	15	40.5
	Total	37	100

Legend: N = number of participants, % = percentage.

Fifteen participants from our sample were male (41%) and 22 were female (59%). Although participants were elementary school students, aged between 8 and 19 years

(SD = 12.8), it is important to note that there were students of different chronological age in the same grades. Regarding the type of school, 20 participants (54%) attended special school, while 17 participants (46%) attended regular school. There were 18 participants (47%) in the junior grades (first to fourth), and 19 participants (53%) in the higher grades (fifth to eighth). Regarding the upper limbs laterality of the participants, 22 of them (59.5%) were right-hand dominant, whereas 15 (40.5%) were left-hand dominant.

Location and Time of Research

The research was conducted in the 2010/2011 school year in Belgrade, in the elementary school “Miodrag Matić” where the teaching was carried out according to a modified curriculum, and in the elementary school “Dragan Hercog” where the teaching was carried out according to the regular curriculum.

Instrument and Assessment Procedure

Human figure drawings were used as an instrument of assessment in this study. Participants were given a blank A4 size paper and a wooden pencil, and were instructed to draw a human figure, as best as they could. The interpretation and assessment of drawings were carried out according to the stages determined as the criteria, as given in Gligorović and Buha-Đurović (2009). It should be noted that a five-point scoring system was used in the assessment in the following way: one point indicated Stage I (a tadpole or cephalopod schema), two points indicated Stage II (transitional form), three points indicated Stage III (the beginning of conventional drawings), four points indicated Stage IV (conventional-segmented phase), and five points indicated Stage V (conventional-outlining drawing phase).

Statistical Analysis

In accordance with the objective of this study, tests of parametric and nonparametric statistics were used for statistical analysis of the data collected: measures of frequency and percentages, measure of central tendency, arithmetic mean and standard deviation, methods for determining statistical significance between the arithmetic means of small samples, and univariate analysis of variance (ANOVA). In order to verify the reliability of the test used in this study, coefficient of reliability ((Cronbach = 0.813) was determined. A *p* value of < 0.05 was considered statistically significant.

Results

Table 2 presents the distribution of participants according to their developmental stage of human figure drawings. It can be seen that all developmental stages are present in the participants from our sample, with the exception of the scribbling stage, which is expected given that the participants were school-aged. The Stage of a Tadpole or Cephalopod Schema, as the earliest form of human figures drawings, was found in 24.3% of our participants. In comparison, the Transition Form as Stage II occurred in

a smaller percentage, or in 10.8% of the participants. The Beginning of Conventional Drawings of human figures, i.e. Stage III, was present in one third of the participants, or in 32.4%. The Conventional-Segmented Phase, or Stage IV, occurred in 24.3% of the participants from our sample, while the Conventional-Outlining Drawings, or Stage V, occurred in the lowest percentage, that is in 8.1% of the participants.

Table 2. Distribution of the participants according to the developmental stages of human figure drawings

Developmental stage of human figure drawings	N	%
Tadpole	9	24.3
Transitional Form	4	10.8
Beginning of Conventional Drawings	12	32.4
Conventional-Segmented	9	24.3
Conventional-Outlining	3	8.1
Total	37	100

Legend: N = number of participants, % = percentage.

Table 3 presents the distribution of the participants in relation to their gender and achieved developmental stage of human figure drawings.

Table 3. Distribution of the participants according to gender and the developmental stages of human figure drawings

Developmental stage of human figure drawings	Male		Female		Total	
	N	%	N	%	N	%
Tadpole	6	40	3	13.6	9	24.3
Transitional Form	4	26.7	0	0	4	10.8
Beginning of Conventional Drawings	4	26.7	8	36.4	12	32.5
Conventional-Segmented	1	6.6	8	36.4	9	24.3
Conventional-Outlining	0	0	3	13.6	3	8.1
Total	15	100	22	100	37	100

Legend: N = number of participants, % = percentage.

Table 4 shows the scores achieved by the participants according to their gender. The results indicate a statistically significant difference in favor of female participants, $p < 0.05$ ($p = 0.001$, $F = 13.471$).

Table 4. The achieved scores according to the participants' gender

Gender	N	\bar{X}	SD	SD err	Min	Max
Male	15	2.00	1.000	0.258	1	4
Female	22	3.36	1.177	0.251	1	5
Total	37	2.81	1.288	0.212	1	5
$F = 13.471, df = 1, p = 0.001$						

Legend: N = number of participants, \bar{X} = arithmetic mean, SD = standard deviation, SD err = standard deviation error, Min = minimum score achieved, Max = maximum score achieved.

Table 5 presents the distribution of the participants in relation to age groups and achieved developmental stages of human figure drawings, and Table 6 gives the scores achieved by the participants according to their chronological age. The participants aged 12–14 years had the highest achievement, $p < 0.05$ ($p = 0.015$, $F = 4.783$).

Table 5. Distribution of the participants according to age groups and the developmental stages of human figure drawings

Developmental stage of human figure drawings	8–11 years		12–14 years		15–19 years		Total	
	N	%	N	%	N	%	N	%
Tadpole	7	50	1	9.1	1	8.3	9	24.3
Transitional Form	2	14.3	1	9.1	1	8.3	4	10.8
Beginning of Conventional Drawings	2	14.3	3	27.3	7	58.4	12	32.5
Conventional-Segmented	3	21.4	4	36.3	2	16.7	9	24.3
Conventional-Outlining	0	0	2	18.2	1	8.3	3	8.1
Total	14	100	11	100	12	100	37	100

Legend: N = number of participants, % = percentage.

Table 6. The participants' scores according to their chronological age

Age (years)	N	\bar{X}	SD	SD err	Min	Max
8–11	14	2.07	1.269	.339	1	4
12–14	11	3.45	1.214	.366	1	5
15–19	12	3.08	0.996	.288	1	5
Total	37	2.81	1.288	.212	1	5
$F = 4.783$, $df = 2$, $p = 0.015$						

Legend: N = number of participants, \bar{X} = arithmetic mean, SD = standard deviation, SD err = standard deviation error, Min = minimum score achieved, Max = maximum score achieved.

Bonferroni post-hoc test was applied to examine between which groups the difference was statistically significant. The obtained results indicated that there was a statistically significant difference between the participants aged 8–11 years and the participants aged 12–14 years according to the type of human figure, in favor of the older participants ($p = 0.018$).

Table 7 presents the distribution of the participants in relation to the type of school and achieved developmental stage of human figure drawings. Table 8 shows the scores achieved by the participants according to the type of school they attended. The results presented here suggest that the type of school had an impact on the achieved developmental stage of human figure drawings. Results also indicated that there was a highly significant statistical difference between the participants who attended regular school and the participants who attended special school in favor of those who attended regular school, $p < 0.01$ ($p = 0.007$, $F = 8.227$).

Table 7. Distribution of the participants according to the type of school and the developmental stage of human figure drawings

Developmental stage of human figure drawings	Special		Regular		Total	
	N	%	N	%	N	%
Tadpole	7	35	2	11.8	9	24.3
Transitional Form	3	15	1	5.8	4	10.8
Beginning of Conventional Drawings	8	40	4	23.5	12	32.5
Conventional-Segmented	1	5	8	47.1	9	24.3
Conventional-Outlining	1	5	2	11.8	3	8.1
Total	20	100	17	100	37	100

Legend: N = number of participants, % = percentage.

Table 8. The participants' scores according to the type of school

Type of school	N	\bar{X}	SD	SD err	Min	Max
Special	20	2.30	1.174	0.263	1	5
Regular	17	3.41	1.176	0.285	1	5
Total	37	2.81	1.288	0.212	1	5

F = 8.227, df = 1, p = 0.007

Legend: N = number of participants, \bar{X} = arithmetic mean, SD = standard deviation, SD err = standard deviation error, Min = minimum score achieved, Max = maximum score achieved.

Table 9 shows the distribution of the participants in relation to the attended school grade and the achieved developmental stage of human figure drawings. As can be seen from Table 10, statistically significant difference was found between the participants in relation to the grade they attended, $p < 0.05$ ($p = 0.026$, $F = 5.412$). The participants who attended higher (fifth to eighth) grades achieved higher scores when compared to the participants who attended junior (first to fourth) grades.

Table 9. Distribution of the participants according to grade and the developmental stage of human figure drawings

Developmental stage of human figure drawings	1 st -4 th		5 th -8 th		Total	
	N	%	N	%	N	%
Tadpole	8	44.4	1	5.3	9	24.3
Transitional Form	2	11.1	2	10.5	4	10.8
Beginning of Conventional Drawings	3	16.7	9	47.4	12	32.5
Conventional-Segmented	4	22.2	5	26.3	9	24.3
Conventional-Outlining	1	5.6	2	10.5	3	8.1
Total	18	100	19	100	37	100

Legend: N = number of participants, % = percentage.

Table 10. The participants' scores in relation to the attended school grade

Grade	N	\bar{X}	SD	SD err	Min	Max
1 st -4 th	18	2.33	1.414	0.333	1	5
5 th -8 th	19	3.26	0.991	0.227	1	5
Total	37	2.81	1.288	0.212	1	5
F = 5.412, df = 1, p = 0.026						

Legend: N = number of participants, \bar{X} = arithmetic mean, SD = standard deviation, SD err = standard deviation error, Min = minimum score achieved, Max = maximum score achieved.

Table 11 presents the distribution of the participants in relation to the upper limbs laterality and achieved developmental stages of human figure drawings. As can be seen from Table 12, no statistically significant difference was found between the participants in relation to their upper limbs laterality, although right-hand dominant participants were more successful than the left-hand dominant.

Table 11. Distribution of the participants according to upper limbs laterality and the developmental stage of human figure drawings

Developmental stage of human figure drawings	Right hand		Left hand		Total	
	N	%	N	%	N	%
Tadpole	5	22.7	4	26.6	9	24.3
Transitional Form	3	13.6	1	6.7	4	10.8
Beginning of Conventional Drawings	7	31.8	5	33.4	12	32.5
Conventional-Segmented	5	22.8	4	26.6	9	24.3
Conventional-Outlining	2	9.1	1	6.7	3	8.1
Total	22	100	15	100	37	100

Legend: N = number of participants, % = structural percentages.

Table 12. The participants' scores in relation to the upper limbs laterality

Upper Limbs Laterality	N	\bar{X}	SD	SD err	Min	Max
Right hand	22	2.82	1.296	0.276	1	5
Left hand	15	2.80	1.320	0.341	1	5
Total	37	2.81	1.288	0.212	1	5
F = 0.002, df = 1, p = 0.967						

Legend: N = number of participants, \bar{X} = arithmetic mean, SD = standard deviation, SD err = standard deviation error, Min = minimum score achieved, Max = maximum score achieved.



Figure 1. A Tadpole drawn by a 9-year-old male participant



Figure 2. A Tadpole drawn by an 11-year-old male participant



Figure 3. A Transitional Form of a human figure drawn by a 17-year-old female participant



Figure 4. The Beginning of Conventional Drawings of a human figure drawn by a 12-year-old female participant



Figure 5. A Conventional-Segmented Stage of a human figure drawn by a 15-year-old female participant



Figure 6. A Conventional-Outlining Stage of a human figure drawn by a 14-year-old female participant

Discussion

The analysis of human figure drawings allowed us to determine which developmental levels of artistic expression were characteristic in our sample of students with cerebral palsy, and showed that all developmental stages could be found with the exception of the Scribbling Stage. The Beginning of Conventional Drawings Stage, which includes all of the six key body components (head, trunk usually in the triangular form with an indication of arms and legs) and is equivalent to about 5 years of age, was found in 32.4% of the participants. Drawings of the Stage I, or a Tadpole, which is equivalent to about 3–4 years of age, were noted in 24.3% of the participants. The Conventional-Segmented Stage was confirmed in the same percentage (24.3%) of the participants. The other two developmental stages of human figure drawings, the Transitional Form and the Conventional-Outlining Drawings, were found in a smaller percentage of participants, 10.8% and 8.1%, respectively. These results indicate that, when it comes to the developmental stages of human figure drawings, students with cerebral palsy showed significant delays compared to the standardized achievements of typically developing students of the same chronological age.

The results of empirical research conducted by Đorđević (2005) on school-age participants with mild intellectual disabilities indicate that these children are passing more slowly through different developmental stages of artistic expression, but that their drawings contain all the features within a particular stage of artistic expression as in the case of typically developing children. The results of our study on the achievements of the participants with cerebral palsy may be explained by these findings (Đorđević, 2005), although the influence of experiential factors should not be ignored.

Gender is included as a significant variable in assessing the type of human figure drawings, as the literature data point out that girls are generally more successful than boys in drawing, in the case of the typically developing population (Gligorović & Vučinić, 2011). Thus, girls draw more mature forms of the type of human figure, and their drawings are also “richer” and contain more details when it comes to assessing the quality of the drawings (Pacić, 2011). Our findings are consistent with some previous claims found in literature and show a statistically significant difference between male and female participants in favor of the female participants, $p < 0.05$ ($p = 0.001$, $F = 13.471$).

The fact is that, in the population of students with cerebral palsy, chronological age does not usually correspond to the grade that the student attends, as it is common in the population of typically developing students. As a result, students of different chronological age can be found in the same grade. For this reason, we have also examined the developmental stages of artistic expression of students with cerebral palsy not only in relation to the attended grade but also in relation to their chronological age. We have analyzed the achievements of the participants who were previously classified into three age groups that included students of 8–11, 12–14, and 15–19 years of age. It was found that the achievements of the participants in

the second age group (12–14 years) were the best, but the difference was significant only in relation to the achievements of the first age group (8–11 years). A possible explanation for the better achievement of the participants in the second age group when compared to the achievements of the participants from the third age group (15–19 years) lies in the fact that, at this age, children have the highest motivation for drawing as a medium of expression, after which their motivation begins to decline. Reinforcement for this stance is found in the literature data. Gligorović and Buha-Đurović (2009) found no difference in relation to the age of children and adults with mild and moderate intellectual disability, or these differences were insignificant. On the other hand, contrary results were found in the study conducted by Kaljača and Glumbić (2005) on the sample of participants with moderate intellectual disability where the average increase of achievement was in the function of chronological age, and the highest and most obvious difference was observed between the participants of 11–12 and 13–15 years of age, in favor of the older ones.

With regard to the type of school which they attended, it was found that the participants attending regular school drew more mature forms of human figures and their achievements were better than those of the participants attending special school, with highly statistically significant difference, $p < 0.01$ ($p = 0.007$, $F = 8.227$). The importance of education was emphasized by Gligorović and Buha-Đurović (2009) who found significant delays in the drawing development in their sample of children with mild and moderate intellectual disabilities, and came to the conclusion that educational experience, in addition to intellectual capacities, was a key factor for the development of a child's drawing skills. The participants from their sample attended special schools or were outside the school system. As for the children with cerebral palsy, the impact of education in regular schools has proved to be important in other domains of their school functioning, too (Milićević, Potić, Nedović, & Medenica, 2012). Nevertheless, it remains unclear whether it was a consequence of a particular educational context, or whether it was in connection with their intellectual abilities, i.e. the assumption that children with intact intellectual abilities were more often educated in regular schools, as opposed to children with lower intellectual and/or motor abilities, who were more frequently educated in special schools.

When it comes to the impact of grade that each participant had attended on the stages of artistic expression related to the type of human figures drawings, the obtained results were as expected. The participants who attended higher (fifth to eighth) grades proved to be more successful than the participants from junior grades (first to fourth), with statistically significant difference, $p < 0.05$ ($p = 0.026$, $F = 5.412$). Similar results, in terms of better achievement with respect to attended grades, were also found in typically developing children and children with impaired hearing, as Radić-Šestić and Tašić-Ivović (2007) reported.

As for the upper limbs laterality, it was found that it was not a variable of importance for the artistic expression of our participants. Although the results indicated some

differences in the achievements of right-hand and left-hand dominant participants with cerebral palsy, these differences were not statistically significant.

Conclusion

This study was conducted with the aim to determine the developmental level of artistic expression in students with cerebral palsy by determining the specific artistic expression stages through the analysis of human figure drawings, and by defining the artistic expression characteristics in relation to gender, age, type of school, grade, and upper limbs laterality of students with cerebral palsy. Significant delays were found in the development of artistic expression of students with cerebral palsy in comparison to the standardized achievements of the same age students from the typically developing population. In addition, the existence of correlations of higher or lower level between the developmental stage of artistic expression of students with cerebral palsy and gender, age, grade and type of school they attended, was confirmed.

Although human figure drawings are only one of the possible criteria that may be used to interpret the developmental level of artistic expression in students, a single assessment instrument was included in this research. Moreover, a reliance on the stages of artistic expression and the categorization of artistic expression through stages are perhaps not the most current scientific view of art pedagogy when it comes to children of typically developing population. However, there are several reasons why such research design was applied. First, the determination of the developmental level of artistic expression in children with cerebral palsy, through the determination of characteristic stages of artistic expression by analyzing human figure drawing, is the most dominant and the most frequently used model in special education and rehabilitation, primarily due to the diagnostic value of this approach. This means that the applied research design allows more adequate comparison of achievements within the population of children with developmental disabilities, but also in relation to the standardized achievements of children from the typically developing population. Finally, given the fact that empirical research in this area is deficient in special education, applied design tends to expand the corpus of studies by general, basic knowledge of artistic expression in children with cerebral palsy, which would serve as a basis for more direct and more concise research within this population in the future. Among other things, these research studies would acknowledge all the developmental specificities of children with cerebral palsy, which are reflected in the numerous motor, sensory-perceptual, cognitive and other disorders, and also disorders of specific mental functions, with manifestations in the domain of spatial relations perception, visuomotor control, constructive praxis, attention, nonverbal analytical and synthetic thinking, as in other areas of importance for the artistic expression of children with cerebral palsy, such as handwriting performance (Bumin & Kavak, 2010; Horváth, 2009; Rapačić & Nedović, 2011).

However, there are numerous limitations to this study, which may cause difficulties in the interpretation of presented results to some extent. The first limitation to the

applied research design could be related to the absence of the control group, although this could only conditionally be a limitation, considering that the control group is not even necessary if the instrument with the achievements standardized for a typically developing population was used. A further limitation of this study is in the fact that the participants from our sample were not grouped according to the level of their intellectual functioning, and that the achieved scores were not analyzed from this aspect. Further, the largest and certainly the most significant limitation is the fact that subsamples of the participants in relation to the types and forms of cerebral palsy were not formed, considering this population's heterogeneity in every way, especially in terms of motor and cognitive skills, but also in terms of basic psychological mechanisms and functions. Finally, the sample size itself is not small, but it is small if such heterogeneous populations, such as children with cerebral palsy, is taken into consideration. For an adequate interpretation of the results obtained in this study, the applied research design still requires the forming of subsamples according to several criteria, which would further split the sample and make results difficult to interpret, or even preclude interpretation, regardless of the statistical procedures for small samples that were used.

For all these reasons, and due to the fact that the relation between the brain injury and the child personality in general is still not fully known, it is difficult to declare the obtained characteristics of artistic expression in children with cerebral palsy a consequence of the primary organ impairment only. Literature data (Horváth, 2009; Kaljača & Glumbić, 2005) highlight the impact of experiential factors and, in particular, the specific development of these children, which along with other factors, such as environmental influences, past experiences and emotions evoked by drawing, affect the quality of drawings, and should not be ignored. This finding reinforces our knowledge about contributing factors that researchers and practitioners should take into consideration when planning and providing special developmental programs, especially ones focused on drawing development.

Despite the limitations, this study does highlight significant interaction between cerebral palsy as primary disability and various variables, such as gender, age, type of school, grade and upper limbs laterality. In order to gain a better insight into the capabilities of children with cerebral palsy in the area of artistic expression and to enable more efficient and appropriate art classes in the future, it is necessary to conduct studies which would rely on the information obtained in this study, but also eliminate all the limitations of this study by applying appropriate methodological approach and research design. Future research should focus on a variety of socio-demographic, personality and experiential variables, on the influence of social interaction between the child and social settings on the drawing development, and on numerous disability factors (e.g. degree of severity, type of cerebral palsy). We believe that a coherent system of knowledge would be obtained in this way, and that knowledge would be of practical relevance in the education of children with cerebral palsy, regardless of

the education system in which their education would be implemented. In addition, it would be important from the aspect of functional abilities treatment of children with cerebral palsy, but also from the aspect of increasing their social competence index, both in school and in the wider social environment.

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Utvrđivanje razvojnog stupnja likovnog izražavanja kod učenika s cerebralnom paralizom

Sažetak

Crteži su značajan pokazatelj dječjeg sazrijevanja i mogu se smatrati odrazom postignute razine intelektualnih sposobnosti kod djeteta, ali i pokazateljem zrelosti djeteta i njegove emocionalne prilagodbe.

Cilj je ovog istraživanja utvrditi razvojni stupanj likovnog izražavanja učenika s cerebralnom paralizom na osnovi procjene razvojne faze tumačenjem crteža ljudskog lika te definiranjem obilježja likovnog izražavanja učenika s cerebralnom paralizom s obzirom na spol, dob, vrstu škole, razred i lateralizaciju gornjih ekstremiteta.

Istraživanje je provedeno na uzorku od 37 učenika osnovnih škola, pripadnika oba spola, u dobi od 8 do 19 godina i s dijagnozom cerebralne paralize. Razvojna razina likovnog izražavanja utvrđena je na temelju faza koje su definirane kao kriteriji za crteže ljudske figure.

Rezultati pokazuju da je u populaciji učenika s cerebralnom paralizom najčešća razvojna faza likovnog izražavanja bila početak konvencionalnog crteža ljudskog lika, da su statistički značajno bolja postignuća utvrđena kod djevojčica u odnosu na dječake ($p < 0,05$), među sudionicima iz redovne škole u odnosu na sudionike iz škole za djecu s posebnim potrebama ($p < 0,01$), kod starijih sudionika u odnosu na sudionike iz nižih razreda ($p < 0,05$) i kod sudionika u dobnoj skupini od 12 do 14 godina u odnosu na one iz skupine od 8 do 11 godina ($p < 0,05$).

Ovi rezultati pokazuju da djeca s cerebralnom paralizom prolaze kroz različite razvojne faze likovnog izražavanja sporije nego djeca urednog razvoja, što može biti posljedica primarnog poremećaja, iskustvenih faktora i posebnosti razvoja te djece.

Ključne riječi: *dob; crteži ljudskog lika; osnovna škola; specifični razvoj; spol.*

Uvod

Povijesno gledano, crteži sežu do prvih tragova kulture govoreći nam da postoje koliko i ljudska rasa i da su oni, kao način ljudskog izražavanja, stari koliko i sama civilizacija. Kada je riječ o djeci i njihovu razvoju, moglo bi se reći da su crteži važna

odrednica dječjeg sazrijevanja. Crteži se mogu gledati kao odraz postignute razine djetetovih intelektualnih sposobnosti, ali i kao pokazatelji djetetove emocionalne prilagodbe i zrelosti (Watkins, Glutting i Youngstrom, 2005 citirano u Gligorović i Vučinić, 2011). Dječji su crteži prepoznati kao najbolji način s pomoću kojega se djeca mogu izražavati, oni predstavljaju prozor u njihov unutarnji svijet, odnosno, oni zrcale njihov emocionalni život i osobnost (Pacić, 2011).

Crteži predstavljaju jedan od osnovnih oblika dječjeg kreativnog izražavanja u ranoj dobi. Preko crteža djeca istražuju, rješavaju probleme ili daju vizualni oblik osobnim idejama i zapažanjima. Dječji su crteži jedinstveni, karakteristični i odražavaju njihovo razumijevanje svijeta, u granicama mogućnosti njihove percepcije i inteligencije, mašte i emocionalnih poticaja, a time se i umjetnički izraz smatra vrlo individualnim (Radić-Šestić i Tasić-Ivović, 2007). Zbog činjenice da djeca preko crteža projiciraju svoje osjećaje, potrebe, želje, sukobe, namjere i očekivanja, crteži se smatraju vrlo pogodnim sredstvom, kako za dijagnozu tako i za liječenje (Pacić, 2011).

Dječji umjetnički rad može se promatrati s različitih gledišta. Velik broj ranih istraživanja dječjega likovnog izražavanja usmjeren je na identificiranje obilježja dječjih crteža, na uzroke njihova nastanka i na promjene tih svojstava tijekom vremena, drugim riječima s povećanjem dobi djeteta. Istraživanja pokazuju da je dječji umjetnički razvoj uvjetovan postignutim razinama motoričkog razvoja, svijesti i osjećaja te da se umjetnički izraz može postići samo kada su zadovoljeni nužni preduvjeti. Pacić, Likić, Damjanović, Zolnjan i Eminović (2011) navode da su sposobnosti crtanja pod utjecajem perceptivnih sposobnosti, manipulativne spretnosti, vizuomotorne koordinacije, prostorne orijentacije i cijelog niza mentalnih funkcija, kao što su pozornost, mašta, razmišljanje i inteligencija, uz neizbježne motivacijske i emocionalne čimbenike. Radić-Šestić i Tasić-Ivović (2007) vjeruju da crtanje, kao psihomotorna aktivnost izražena u području fine motoričke vještine gornjih ekstremiteta, ovisi o vizualnom pamćenju, pozornosti i vizuomotornoj kontroli, dok Gligorović i Vučinić (2011) navode da zrelost vizuoprostorne, vizuokonstruktivne i motoričke sposobnosti utječe na kvalitetu crteža. Horváth (2009) naglašava potrebu za sveobuhvatnim pristupom problemu dječjih crteža koji se razmatraju s nekoliko aspekata, kao što je mjesto motoričkog razvoja u razvoju crtanja i utjecaj motoričkih oštećenja (npr. mišićni tonus, kontrola voljnih pokreta), grubih motoričkih funkcija (npr. sjedenje), perceptivnih i kognitivnih poteškoća, pažnje, osjetilnih i perceptivno-motoričkih poremećaja i emocija na razvoj vještine crtanja. Pacić (2011) navodi da je jedna od osobina razvoja dječjeg likovnog izraza prisutnost zajedničkih osobina likovnog izražavanja u djece iste dobi, koja je najzastupljenija u razdoblju između devete i desete godine, nakon čega slijedi pojava individualnih razlika koje postaju posebno naglašene tijekom adolescencije.

Razvoj likovnih sposobnosti prolazi određene faze, s različitim brojem i razdobljem trajanja, a koje su različiti autori definirali na različite načine. Zajedničko svim tim teorijskim pretpostavkama jest da su razvojne faze likovnih sposobnosti određene na

temelju elemenata koji se smatraju karakterističnima za određenu fazu. Naravno, važno je napomenuti da je stroga podjela na faze općenito moguća samo u didaktičkom prije nego u praktičnom smislu, budući da se u svakoj fazi dječjeg likovnog izražavanja još uvijek mogu uočiti neke naznake elemenata prethodne ili sljedeće faze, tako da je obično vrlo teško odrediti jasnu granicu između dviju uzastopnih faza.

Prema Karlavaris (1987), Kerschensteiner je prvi autor koji je predložio sljedeću periodizaciju razvoja dječjeg likovnog izražavanja: 1) faza šaranja ili škrabanja (od 2. do 4. godine: škrabotine su slučajne, isprva nekontrolirane, ali ubrzo postaju kontrolirane, dijete uči držati olovku, razvija koordinaciju ruke i oka te finu i grubu motoriku igrajući se i istražujući likovne materijale), 2) faza shema ili simbola: karakterizirana ideoplastičnim crtežima (od 4. do 7. godine: crteži predstavljaju djetetovo poznavanje objekta više nego izravno promatranje njegova izgleda ili prisjećanje objekta, crteži također postaju detaljniji i proporcionalniji, potkrijepljeni su izmišljenim pričama, boje su realističnije i stereotipne, ali prisutna je i shema kao oblik crtanja na isti način), 3) faza linija i oblika koju karakteriziraju fizioplastični crteži (od 7. do 9. godine: crteži su realniji i uvelike detaljniji, prostorna perspektiva je vidljiva, a pojavljuju se i linije horizonta i zemlje). S druge strane, Luquet (1913) je podijelio razvoj dječjeg likovnog izražavanja na sljedeći način: 1) slučajni realizam (do 3. godine: dijete počinje od škrabotina koje nalikuju nečemu iz života i napreduje do namjernih crteža koji predstavljaju nešto iz njegova života prije početka crtanja), 2) neuspjeli realizam (do 5. godine: odrasli prepoznaju teme crteža, unatoč brojnim „pogreškama“, propustima i nesavršenostima, a ljudski lik pojavljuje se kao prvi prepoznatljivi oblik koji dijete crta), 3) intelektualni realizam (do 8. godine: dijete pokušava slikati obilježja predmeta ili teme u karakterističnom obliku), 4) vizualni realizam (do 10. godine: postoji namjera stvaranja realističnih prikaza s detaljima, iz jedne vizualne perspektive). Razvoj karakteristika dječjeg crteža opisan je i istražen u brojnim istraživanjima. Sve se te klasifikacije temelje na različitim kriterijima. U svojoj je studiji o dječjim crtežima Read (1943) iznio teoriju o načinima percepcije koji su izravno povezani s četiri osnovne vrste psihičkih funkcija (razmišljanje, osjećaj, dojam i intuicija), čime se nude četiri odgovarajuće kategorije zrelog stvaralaštva (realizam, super-realizam, ekspresionizam i konstruktivizam). Lowenfeld (1957) je opisao sljedeće faze: 1) faza šaranja u dobi od 2 godine (uz imenovanje škrabotina kao važan korak u razvoju), 2) predshematska faza u dobi od 3. do 4. godine (s prvim svjesnim stvaranjem oblika i osobe kao prvim pokušajem predočavanja), 3) shematska faza u dobi od 6 godina (sa „shemom“ kao definitivnim načinom crtanja objekta koji predstavlja djetetovo aktivno znanje, a sve se stavlja na osnovnu liniju), 4) vršnjačka faza ili faza realizma u nastajanju u dobi od 8 do 10 godina (s više detalja i s crtom horizonta radije nego osnovnom linijom, kao i sa snažnim utjecajem vršnjačkih društvenih veza na crteže) i 5) pseudo-naturalistička faza u dobi od 12 godina (sa svim detaljima i trodimenzionalnim prostorom, ali u isto vrijeme ta faza predstavlja kraj likovnog izražavanja kao spontane aktivnosti jer djeca postaju kritična prema svojim crtežima).

Jedna od najčešće citiranih klasifikacija slijedi razvoj dječjeg likovnog izražavanja u sljedećim reprezentativnim fazama: 1) predshematska faza ranih aktivnosti škrabanja, 2) shematska faza u kojoj se koriste različita opažanja temeljnih osobina predmeta, 3) mješovita faza koja vodi od prethodne do sljedeće, 4) stvarna/realna faza u kojoj se jedan ili više objekata i njihova kompozicija percipira iz jedne točke promatranja, 5) faza perspektive u kojoj se dodaje prikaz prostora kroz oblik perspektive daljine (linije) (Lark-Horovitz i Norton, 1959).

Međutim, za potrebe ovog istraživanja odabrali smo najčešće korištenu klasifikaciju razvoja dječjeg likovnog izražavanja u odgoju i obrazovanju i rehabilitaciji osoba s poteškoćama u razvoju, koja se pokazala najprikladnijom u tumačenju postignuća djece s poteškoćama u razvoju, kao što je prikazano u istraživanju koje su proveli Gligorović i Buha-Đurović (2009). Također, ta klasifikacija omogućuje najprikladnije tumačenje rezultata i usporedbu postignuća u populaciji djece s poteškoćama u razvoju i primjereniju usporedbu njihovih postignuća u odnosu na standardizirana postignuća djece urednog razvoja. Prema toj klasifikaciji postoji pet osnovnih razvojnih stupnjeva crtanja i likovnog izražavanja, a to su:

Faza I – Shema punoglavca ili glavonošca

Značajke: glava je predstavljena kao kružna ili pravokutna linija unutar koje su nacrtani neki ili svi elementi lica; trup je izostavljen; ruke su ili izostavljene ili nacrtane kao dvije linije koje vise iz glave; noge su nacrtane kao dvije linije koje vise; taj je način crtanja obično karakterističan za djecu u dobi od 3 do 4 godine.

Faza II – Prijelazni oblik

Značajke: glava je predstavljena kao zatvorena kružna ili pravokutna linija unutar koje su nacrtani neki ili svi elementi lica; trup je odvojen ili postoji naznaka odvojenog trupa (trup je smješten između okomitih linija nogu); ruke, ako ih ima, nalaze se ispod glave koja je smještena na okomitim linijama nogu; taj je način crtanja obično karakterističan za djecu u dobi od 4 do 5 godina.

Faza III – Početak konvencionalnog crteža

Značajke: crtež ljudskog lika ima svih šest ključnih dijelova tijela; u toj fazi razvoja crtež ljudske figure oblikovan je kada su okomite linije nogu povezane s vodoravnim linijama koje obično tvore trokutasti oblik; u tim crtežima neki dijelovi tijela, kao što su glava i trup, jasno su vidljivi s naznakama ruku i nogu; taj je način crtanja obično karakterističan za djecu u dobi od 5 godina.

Faza IV – Konvencionalna-segmentirana faza

Značajke: glava je predstavljena kao zatvorena kružna linija unutar koje su nacrtani neki ili svi elementi lica; trup je uvijek nacrtan i jasno odvojen od glave i nogu; ruke su uvijek nacrtane počevši od vrata ili trupa pod kutom od 45 do 90 stupnjeva, a predstavljene su kao jedna linija ili zatvorena površina; noge su smještene ispod trupa i predstavljene su kao jedna linija ili zatvorena površina; taj je način crtanja obično karakterističan za djecu u dobi od 5 do 6 i od 8 do 9 godina.

Faza V – Faza konvencionalno-strukturiranog crteža (vizualni realizam)

Značajke: vrat je uvijek nacrtan i predstavljen kao dvije linije koje povezuju glavu s ramenima; ruke su uvijek nacrtane počevši od ramena, otvorene do trupa; taj je način crtanja obično karakterističan za djecu urednog razvoja u dobi od 8 do 9 i 12 godina.

Karakteristike crteža, crtanje i razvoj likovnog izražavanja najčešće su proučavane teme kod djece urednoga razvoja (Gligorović i Vučinić, 2011; Henderson i Thomas, 1990; Karlavaris, 1987; Koks, 2000; Thomas i Silk, 1990) i djece s poteškoćama u učenju (Gligorović i Radić-Šestić, 2010; Hartman, 1972), iako se i istraživanja koja su se bavila tim pitanjem kod djece s poteškoćama u razvoju mogu naći u novijoj literaturi, a osobito kod djece s blagim i umjerenim intelektualnim poteškoćama (Đorđević, 2005; Gligorović i Buha-Đurović, 2009; Kaljača i Glumbić, 2005), ali i kod djece s oštećenjem sluha (Radić-Šestić i Tasić-Ivović, 2007). Međutim, samo se nekolicina istraživanja bavila obilježjima crteža djece s cerebralnom paralizom i njihovim likovnim izražavanjem (Horváth, 2009; Pacić, 2011; Tirnanić, Prica i Čukić, 2008).

Cilj je ovoga istraživanja utvrditi razvojni stupanj likovnog izražavanja učenika s cerebralnom paralizom. Taj cilj operacionaliziran je: 1) određivanjem razvojne faze likovnog izražavanja učenika s cerebralnom paralizom interpretacijom njihovih crteža ljudskog lika i 2) određivanjem odnosa između faza likovnog izražavanja i spola, dobi, vrste škole, razreda i lateralizacije gornjih ekstremiteta učenika s cerebralnom paralizom.

Metode

Ispitanici i uzorkovanje

Uzorak istraživanja sastojao se od 37 ispitanika oba spola u dobi od 8 do 19 godina, kojima je dijagnosticirana cerebralna paraliza. Ispitanici su bili učenici od prvog do osmog razreda koji pohađaju dvije osnovne škole, u jednoj od njih nastava je provedena prema redovnom, a u drugoj prema posebnom nastavnom planu i programu. Kriteriji za uključivanje u istraživanje bili su: 1) dijagnoza cerebralne paralize (podatci su dobiveni prema školskoj dokumentaciji), 2) pohađanje nastave, i 3) sposobnost držanja olovke. Komorbiditet cerebralne paralize i nekog oblika intelektualne poteškoće bio je kriterij za isključivanje iz istraživanja. Tablica 1 prikazuje raspodjelu ispitanika s obzirom na spol, vrstu škole, razred, dobnu skupinu i lateralizaciju gornjih ekstremiteta.

Tablica 1.

Petnaest ispitanika iz našeg uzorka bilo je muškog spola (41%), a 22 ispitanika bila su ženskog spola (59%). Iako su ispitanici bili učenici osnovne škole u dobi između 8 i 19 godina (SD = 12,8), važno je napomenuti da su učenici različite kronološke dobi pohađali isti razred. S obzirom na vrstu škole, 20 ispitanika (54%) pohađalo je školu s posebnim programom, a 17 ispitanika (46%) pohađalo je školu s redovnim

programom. Od ukupnog broja ispitanika 18 ispitanika (47%) pohađalo je niže razrede (od prvog do četvrtog), a 19 ispitanika (53%) pohađalo je više razrede osnovne škole (od petog do osmog). Što se tiče lateralizacije gornjih ekstremiteta ispitanika kod njih 22 (59,5%) desna je ruka dominantna, dok je kod njih 15 (40,5%) lijeva ruka dominantna.

Mjesto i vrijeme provođenja istraživanja

Istraživanje je provedeno u 2010./2011. školskoj godini u Beogradu, u osnovnoj školi „Miodrag Matić“ gdje se nastava provodi prema prilagođenom nastavnom planu i programu, te u osnovnoj školi „Dragan Hercog“ gdje se nastava provodi prema redovnom nastavnom planu i programu.

Instrument i postupak procjene

Crteži ljudskog lika poslužili su kao instrument procjene u ovom istraživanju. Ispitanici su dobili prazan papir veličine A4 i drvenu olovku, te su dobili uputu da nacrtaju ljudski lik, najbolje što mogu. Interpretacija i procjena crteža provedena je u skladu s fazama koje su određene kao kriterij za procjenu, prema Gligorović i Buha-Đurović (2009). Treba napomenuti da je pri bodovanju korišten sustav od pet bodova, na sljedeći način: jedan bod označava fazu I (shema punoglavca ili glavonošca), dva boda označavaju fazu II (prijelazni oblik), tri boda označavaju fazu III (početak konvencionalnog crteža), četiri boda označavaju fazu IV (konvencionalna-segmentirana faza), a pet bodova označava fazu V (faza konvencionalno-strukturiranog crteža).

Statistička analiza

U skladu s ciljem ovog istraživanja primijenjene su metode parametrijske i neparametrijske statistike za statističku analizu prikupljenih podataka: mjere frekvencije i postotci, mjere središnje tendencije, aritmetička sredina i standardna devijacija, metode za utvrđivanje statističke značajnosti između aritmetičke sredine na malom uzorku i jednosmjerna analiza varijance (ANOVA). Kako bi se provjerila pouzdanost testa koji se koristi u ovom istraživanju, utvrđen je koeficijent pouzdanosti (Cronbach $\alpha = 0,813$). Vrijednost $p < 0,05$ smatrana je statistički značajnom.

Rezultati

Tablica 2 prikazuje raspodjelu ispitanika prema njihovom stupnju razvoja crteža ljudskog lika. Može se vidjeti da su sve razvojne faze prisutne kod ispitanika iz našeg uzorka, s izuzetkom faze šaranja, što je i očekivano s obzirom na to da su u pitanju ispitanici školske dobi. Faza sheme punoglavca ili glavonošca, kao najraniji oblik crteža ljudske figure, pronađena je u 24,3% naših ispitanika. Usporedno, prijelazni oblik kao faza II pojavio se u manjem postotku, odnosno kod 10,8% ispitanika. Početak konvencionalnog crteža ljudske figure, tj. faza III, uočena je kod jedne trećine ispitanika, odnosno 32,4%. Konvencionalna-segmentirana faza, odnosno

faza IV, utvrđena je kod 24,3% ispitanika iz našeg uzorka, dok je faza konvencionalno-strukturiranog crteža, ili faza V, utvrđena u najnižem postotku, kod 8,1% ispitanika.

Tablica 2.

Tablica 3 prikazuje raspodjelu ispitanika s obzirom na spol i postignut stupanj razvoja crteža ljudskog lika.

Tablica 3.

Tablica 4 prikazuje postignute rezultate ispitanika prema spolu. Dobiveni rezultati ukazuju na statistički značajnu razliku u korist ispitanica, $p < 0,05$ ($p = 0,001$, $F = 13,471$).

Tablica 4.

U tablici 5 prikazana je raspodjela ispitanika s obzirom na dobnu skupinu i postignut stupanj razvoja crtanja ljudskog lika. Tablica 6 daje rezultate ispitanika postignute s obzirom na njihovu kronološku dob. Ispitanici u dobi od 12 do 14 godina imali su najbolji uspjeh, $p < 0,05$ ($p = 0,015$, $F = 4,783$).

Tablica 5. i 6.

Bonferroni post-hoc test primijenjen je kako bi se ispitalo između kojih je skupina razlika statistički značajna. Dobiveni su rezultati pokazali da postoji statistički značajna razlika između ispitanika u dobi od 8 do 11 godina i ispitanika u dobi od 12 do 14 godina prema vrsti ljudskog lika, u korist starijih ispitanika ($p = 0,018$).

U tablici 7 prikazana je raspodjela ispitanika s obzirom na vrstu škole i postignut stupanj razvoja crtanja ljudskog lika. Tablica 8 prikazuje rezultate ispitanika postignute prema vrsti škole koju pohađaju. Prikazani rezultati ukazuju na to da je vrsta škole imala utjecaj na postignuti stupanj razvoja crtanja ljudskih figura. Rezultati također pokazuju da postoji vrlo značajna statistička razlika između ispitanika koji su pohađali redovnu školu i ispitanika koji su pohađali školu s posebnim programom u korist onih koji su pohađali redovnu školu, $p < 0,01$ ($p = 0,007$, $F = 8,227$).

Tablica 7. i 8.

Tablica 9 prikazuje raspodjelu ispitanika s obzirom na razred koji su pohađali i postignut stupanj razvoja crteža ljudskog lika. Kao što se može vidjeti iz tablice 10, utvrđena je statistički značajna razlika između ispitanika s obzirom na razred koji su pohađali, $p < 0,05$ ($p = 0,026$, $F = 5,412$). Ispitanici koji su pohađali više razrede (od petog do osmog) postigli su bolje rezultate u odnosu na ispitanike koji su pohađali niže razrede (od prvog do četvrtog).

Tablica 9. i 10.

Tablica 11 prikazuje raspodjelu ispitanika prema lateralizaciji gornjih ekstremiteta i postignutom stupnju razvoja crteža ljudskog lika. Kao što se može vidjeti iz tablice 12, nema statistički značajne razlike između ispitanika s obzirom na lateralizaciju gornjih

ekstremiteta, iako su ispitanici kojima je dominantna desna strana bili uspješniji od ispitanika kojima je dominantna lijeva strana.

Tablica 11. i 12.

Slika 1. – 6.

Rasprava

Analiza crteža ljudskog lika omogućila nam je da utvrdimo koje su razvojne razine likovnog izražavanja bile karakteristične u našem uzorku učenika s cerebralnom paralizom. Pokazalo se da su u istraživanju identificirane sve razvojne faze s izuzetkom faze šaranja. Faza početka konvencionalnog crteža, koja uključuje svih šest ključnih komponenti tijela (glava, tijelo najčešće u obliku trokuta s naznakom ruku i nogu), a odgovara starosti od 5 godina, utvrđena je kod 32,4% ispitanika. Crteži faze I, ili punoglavac, koji odgovaraju starosti od 3 – 4 godine, zabilježeni su kod 24,3% ispitanika. Konvencionalno-segmentirana faza potvrđena je u istom postotku (24,3%) ispitanika. Druge dvije razvojne faze crtanja ljudskog lika, prijelazni oblik i konvencionalno-strukturirani crtež, pronađene su kod manjeg postotka ispitanika, 10,8% za prijelazni oblik i 8,1% za konvencionalno-strukturirani crtež. Ti rezultati pokazuju da su, kada je riječ o razvojnim fazama crtanja ljudskog lika, učenici s cerebralnom paralizom pokazali značajna kašnjenja u odnosu na standardizirana dostignuća u populaciji osoba urednog razvoja iste kronološke dobi.

Rezultati empirijskog istraživanja koje je proveo Đorđević (2005) na ispitanicima školske dobi s lakšim intelektualnim poteškoćama upućuju na to da ova djeca prolaze sporije kroz različite razvojne faze likovnog izražavanja, ali i da njihovi crteži sadrže sve značajke pojedinih faza likovnog izražavanja kao djece urednog razvoja. Rezultati našeg istraživanja na postignućima ispitanika s cerebralnom paralizom mogu se objasniti tim rezultatima (Đorđević, 2005), iako ne treba zanemariti utjecaj iskustvenih čimbenika.

Spol je uključen kao značajna varijabla u procjenjivanju vrste crteža ljudskih figura, budući da podatci u literaturi (Gligorović i Vučinić, 2011) ističu da su djevojke općenito uspješnije od dječaka u crtanju, u populaciji djece urednog razvoja. Tako se kod procjene kvalitete crteža (Pacić, 2011) može reći da djevojke crtaju zrelije oblike s obzirom na vrstu ljudskog lika, njihovi su crteži „bogatiji” i sadrže više detalja. Naši rezultati su u skladu s nekim ranijim tvrdnjama koje se mogu pronaći u literaturi i pokazuju statistički značajnu razliku između ispitanika s obzirom na spol u korist ispitanica, $p < 0,05$ ($p = 0,001$, $F = 13,471$).

Činjenica je da, u populaciji učenika s cerebralnom paralizom, za razliku od populacije učenika urednog razvoja, kronološka dob obično ne odgovara razredu koji učenik pohađa. Kao posljedica toga, učenici različite kronološke dobi mogu se naći u istom razredu. Stoga smo također ispitali razvojne faze likovnog izražavanja učenika s cerebralnom paralizom s obzirom na njihovu kronološku dob, ne samo

s obzirom na razred koji pohađaju. Analizirali smo postignuća ispitanika koji su prethodno bili svrstani u tri dobne skupine: učenici od 8 do 11, od 12 do 14 i od 15 do 19 godina. Utvrđeno je da su ispitanici u drugoj dobnoj skupini (od 12 do 14 godina) bili najuspješniji, ali razlika je bila značajna samo u odnosu na postignuća u prvoj dobnoj skupini (od 8 do 11 godina). Moguće objašnjenje za bolje postignuće ispitanika u drugoj dobnoj skupini u odnosu na postignuće ispitanika iz treće dobne skupine (od 15 do 19 godina) leži u činjenici da, u ovoj dobi, učenici imaju najveću motivaciju za crtanje kao medij izražavanja, nakon čega njihova motivacija počinje opadati. Potvrdu za taj stav nalazimo u podacima iz literature. Gligorović i Buha-Đurović (2009) nisu utvrdili razliku s obzirom na dob djece i odraslih osoba s blagim i srednjim intelektualnim poteškoćama, ili su te razlike bile beznačajne. S druge strane, suprotni su rezultati dobiveni u istraživanju koje su proveli Kaljača i Glumbić (2005) na uzorku ispitanika s umjerenim intelektualnim poteškoćama, gdje je prosječno povećanje postignuća bilo u funkciji kronološke dobi, a najveća i najočitija razlika zabilježena je između ispitanika od 11. do 12. i od 13. do 15. godine, u korist starijih ispitanika.

S obzirom na vrstu škole koju pohađaju, utvrđeno je da su ispitanici koji pohađaju redovnu školu crtali zrelije oblike ljudskih likova i njihova postignuća bila su bolja od ispitanika koji pohađaju školu s posebnim programom, uz vrlo značajnu statističku razliku, $p < 0,01$ ($p = 0,007$, $F = 8,227$). Važnost obrazovanja naglasili su Gligorović i Buha-Đurović (2009) koji su pronašli značajno kašnjenje u razvoju crtanja u svom uzorku djece s blagim i umjerenim intelektualnim poteškoćama pa su došli do zaključka da je obrazovno iskustvo, osim intelektualnih kapaciteta, bilo ključni čimbenik u razvoju vještine crtanja kod djece. Ispitanici iz njihova uzorka pohađali su škole s posebnim programom ili su bili izvan školskog sustava. Tako se kod djece s cerebralnom paralizom pokazalo da je utjecaj obrazovanja u redovnim školama važan i u drugim područjima njihovih školskih aktivnosti (Milićević, Potić, Nedović i Medenica, 2012). Ipak, ostaje nejasno je li to posljedica određenoga obrazovnog konteksta, odnosno je li to u vezi s njihovim intelektualnim sposobnostima, tj. pretpostavlja se da se djeca s netaknutim intelektualnim sposobnostima češće obrazuju u redovitim školama, za razliku od djece s nižim intelektualnim i/ili motoričkim sposobnostima, koja se češće obrazuju u školama za djecu s posebnim poteškoćama.

Kada je riječ o utjecaju razreda koji su ispitanici pohađali na faze likovnog izražavanja u vezi s vrstom crteža ljudskog lika, dobiveni su rezultati u skladu s očekivanjima. Ispitanici koji su pohađali više razrede (od petog do osmog) pokazali su se uspješnijima od ispitanika koji su pohađali niže razrede (od prvog do četvrtog), uz statistički značajnu razliku, $p < 0,05$ ($p = 0,026$, $F = 5,412$). Slični su rezultati, u smislu boljeg postignuća s obzirom na razred koji su pohađali, dobiveni kod djece urednog razvoja i djece s oštećenjem sluha, prema Radić-Šestić i Tasić-Ivović (2007).

Lateralizacija gornjih ekstremiteta nije se pokazala od važnosti za likovno izražavanje naših ispitanika. Iako rezultati pokazuju neke razlike u postignućima ispitanika s

cerebralnom paralizom kojima je dominantna desna ili lijeva strana, navedene razlike nisu bile statistički značajne.

Zaključak

Opisano istraživanje provedeno je s ciljem utvrđivanja razvojnog stupnja likovnog izražavanja učenika s cerebralnom paralizom određivanjem specifičnih faza likovnog izražavanja analizom crteža ljudskih likova i definiranjem karakteristika likovnog izražavanja s obzirom na spol, dob, vrstu škole, razred i lateralizaciju gornjih ekstremiteta učenika s cerebralnom paralizom. Značajna su kašnjenja pronađena u razvoju likovnog izražavanja učenika s cerebralnom paralizom u usporedbi sa standardnim postignućima učenika urednog razvoja i iste dobi. Osim toga, potvrđena je korelacija na višoj ili nižoj razini između razvojnih faza likovnog izražavanja učenika s cerebralnom paralizom i spola, dobi, razreda i vrste škole koju su pohađali.

Iako je crtež ljudskog lika samo jedan od mogućih kriterija kojima se može protumačiti razvojni stupanj likovnog izražavanja djece, u opisanom je istraživanju korišten samo jedan mjerni instrument. Nadalje, oslanjanje na faze likovnog izražavanja i kategorizacija likovnog izričaja prema fazama možda i ne predstavlja najnoviji znanstveni pogled na pedagogiju likovne umjetnosti kada je riječ o djeci urednog razvoja. Međutim, postoji nekoliko razloga za ovaj dizajn istraživanja. Prvo, određivanje razvojnog stupnja likovnog izražavanja učenika s cerebralnom paralizom na temelju određivanja karakterističnih faza likovnog izražavanja analizom crteža ljudskog lika najdominantniji je i najčešće korišten model u obrazovanju i rehabilitaciji osoba s posebnim potrebama, ponajprije zbog dijagnostičke vrijednosti tog pristupa. To znači da primijenjeni dizajn omogućuje primjereniju usporedbu postignuća unutar populacije djece s poteškoćama u razvoju, ali i u odnosu na standardizirana postignuća djece urednog razvoja. Napokon, s obzirom na činjenicu da je u tom području nedovoljan broj empirijskih istraživanja vezanih uz posebne obrazovne programe, primijenjeni dizajn ima tendenciju proširiti korpus istraživanja općih, temeljnih znanja likovnog izražavanja kod djece s cerebralnom paralizom, koji će poslužiti kao osnova za izravnija i sažetija istraživanja unutar te populacije u budućnosti. Između ostalog, ova će istraživanja priznati sve razvojne specifičnosti djece s cerebralnom paralizom koje se ogledaju u brojnim motornim, osjetilno-perceptivnim, kognitivnim i drugim poremećajima, ali i poremećajima pojedinih mentalnih funkcija, uz manifestacije u domeni percepcije prostornih odnosa, vizuomotorne kontrole, konstruktivne prakse, pažnje, neverbalnog analitičkog i sintetičkog razmišljanja, kao i na drugim područjima od značaja za likovno izražavanje djece s cerebralnom paralizom, kao što je vještina pisanja (Bumin i Kavak, 2010; Horváth, 2009; Rapaić i Nedović, 2011).

Međutim, postoje brojna ograničenja u ovom istraživanju, što može uzrokovati određene poteškoće u tumačenju predstavljenih rezultata. Prvo ograničenje vezano uz primijenjene metode istraživanja moglo bi se odnositi na nepostojanje kontrolne skupine, iako to može samo uvjetno biti ograničenje, s obzirom na to da kontrolna

skupina nije ni potrebna jer je korišten instrument s dostignućima standardiziranim za populaciju djece urednog razvoja. Dodatno ograničenje ovog istraživanja jest u činjenici da ispitanici iz našeg uzorka nisu bili grupirani prema razini njihova intelektualnog funkcioniranja te da ostvareni rezultati nisu analizirani s tog aspekta. Nadalje, najveće i svakako najznačajnije ograničenje jest činjenica da nije formiran poduzorak ispitanika u odnosu na vrstu i oblik cerebralne paralize, uzimajući u obzir heterogenost te populacije u svakom pogledu, osobito u pogledu motornih i kognitivnih vještina, ali također i u smislu osnovnih psiholoških mehanizama i funkcija. Na kraju, sama veličina uzorka nije mala, ali se može smatrati malom ako uzmemo u obzir heterogenu populaciju kao što su djeca s cerebralnom paralizom. Za pouzdanu interpretaciju rezultata dobivenih u ovom istraživanju primijenjeni dizajn istraživanja još uvijek zahtijeva formiranje poduzoraka prema nekoliko kriterija, što bi dodatno podijelilo uzorak i otežalo, ili čak onemogućilo, interpretaciju rezultata bez obzira na činjenicu da su u analizi korišteni statistički postupci za male uzorke.

Zbog svih tih razloga, te s obzirom na činjenicu da odnos između ozljede mozga i osobnosti djeteta u cjelini još uvijek nije u potpunosti poznat, teško je proglasiti dobivene karakteristike likovnog izražavanja djece s cerebralnom paralizom samo posljedicom primarnog oštećenja organa. Podatci dostupni u literaturi (Horváth, 2009; Kaljača i Glumbić, 2005) naglašavaju utjecaj iskustvenih čimbenika i, osobito, poseban razvoj te djece, koji zajedno s drugim čimbenicima kao što su utjecaj okoliša, prošlih iskustava i emocija, evocirani crtanjem utječu na kvalitetu crteža i ne smiju biti zanemareni. Dobiveni rezultati učvršćuju naše znanje o čimbenicima koje istraživači i stručnjaci trebaju uzeti u obzir prilikom planiranja i provođenja posebnih razvojnih programa, posebno onih usmjerenih na razvoj crtanja.

Unatoč ograničenjima, ovo istraživanje ističe značajnu interakciju između cerebralne paralize kao primarne poteškoće i niza varijabli, kao što su spol, dob, vrsta škole, razred i lateralizacija gornjih ekstremiteta. Kako bi se dobio bolji uvid u sposobnosti djece s cerebralnom paralizom u području likovnog izražavanja i omogućio učinkovitiji i primjereniji likovni odgoj u budućnosti, potrebno je provesti istraživanja koja bi se oslanjala na informacije dobivene u ovom istraživanju, ali istodobno i eliminirala sva ograničenja ovog istraživanja primjenom odgovarajućeg metodološkog pristupa i istraživačkog dizajna. Buduća istraživanja treba usmjeriti na različite socio-demografske i iskustvene varijable, varijable vezane uz osobnost ispitanika, na utjecaj društvene interakcije između djeteta i društvenog okruženja na razvoj crtanja, kao i na brojne čimbenike vezane uz različite poteškoće (npr. stupanj jačine i tipa cerebralne paralize). Vjerujemo da će se na taj način dobiti koherentan sustav podataka, i da će ti podatci biti od praktične važnosti u obrazovanju djece s cerebralnom paralizom, neovisno o obrazovnom sustavu u kojem će se njihovo obrazovanje provoditi. Osim toga, to bi bilo važno i s aspekta funkcionalne sposobnosti liječenja djece s cerebralnom paralizom, ali i s aspekta povećanja njihova indeksa socijalne kompetencije, kako u školi tako i u širem društvenom okruženju.