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P R E D G O V O R

Poštovani čitaoci, autori, saradnici,

Zadovoljstvo nam je predstaviti novo izdanje časopisa *Defektologija* sa izmjenjenim nazivom – Istraživanja u edukaciji i rehabilitaciji. Razvoj defektološke nauke, teorije i prakse, ali suštinska promjena društvenog viđenja invalidnosti, rezultirali su, pored ostalog, izmjenom naziva *defektologija* u naziv *edukacijsko-rehabilitacijska znanost*. Samim tim, javila se potreba da se časopis *Defektologija*, koji je u kontinuitetu izlazio pune 23 godine, terminološki uskladi sa nazivom znanosti čije teorijske i praktične rezultate istražuje, prikazuje i unapređuje. Nadamo se da ćete u časopisu naći korisne i interesantne teme iz područja edukacijsko rehabilitacijske znanosti, ali i iz srodnih disciplina, a naša misija je da stvorimo prostor za dinamičan i progresivan istraživački dijalog.

Zahvaljujemo se svima koji su nas pratili u dosadašnjem znanstvenom putovanju, ali i svima onima koji će nam se pridružiti u budućnosti.

Uredništvo

F O R E W O R D

Dear readers, authors, associates,

It is our pleasure to introduce you a new edition of the jornal Defectology with the changed name - Research in Education and Rehabilitation. The development of defectology as science, theory and practice, but also, a fundamental change in the social vision of disability, resulted in, among other things, the change of the name defectology into the name education and rehabilitation science. Consequently, the need for the jornal "Defectology", which has been continuing for 23 years to come, has been terminologically aligned with the name of science, whose theoretical and practical results are investigates, displays and promots. We hope that you will find useful and interesting reading from the wide field of education and rehabilitation science, but also from related disciplines, and our mission is to create a place for dynamic and progressive research dialogue.

We thank all those who have followed us in the current scientific journey, but also to all those who will join us in the future.

Editorial

Research in Education and Rehabilitation 2022; 5(1): 1-8 DOI 10.51558/2744-1555.2022.5.1.1

THE TREATMENT OF VOCAL STEREOTYPY IN CHILDREN WITH AUTISM SPECTRUM DISORDER

TRETMAN VOKALNIH STEREOTIPIJA KOD DECE SA POREMEĆAJIMA IZ SPEKTRA AUTIZMA

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ABSTRACT

People with autism spectrum disorder (ASD) exhibit different impairments in the domain of auditory processing of pitch, altitude and prosody of sounds and voices from the environment. It is believed that altered sensory processing of these individuals originates from insufficient stimulation from the persons' surroundings, therefore they have the need to stimulate themselves in a way of emitting vocal stereotypes of different forms. Having that in mind, the aim of this literature review is to present interventions used in reducing vocal stereotypy in children with ASD, as well as to examine their efficiency.

For literature search engines Google Scholar, SCIndex, ProQuest and Serbian Library Consortium for Coordinated Acquisition – KoBson were used. Original research articles were searched in Serbian and English language. Literature review focused on interventions whose primary aim was reducing vocal stereotypy with the self-stimulatory function in participants diagnosed with ASD. A total number of participants in all articles was nine, whose mean age was 7.1 years old. Different procedures were implemented and in 34.8 sessions on average these procedures and their combination led to an 86.5% of success in reducing vocal stereotypy on average. Having the success of mentioned interventions in mind, it is necessary to educate special educators from our region on how to implement them and introduce these procedures in curriculum of all the Faculties which educate future special educators who will work with children diagnosed with ASD.

Key words: Vocal stereotypy, auto stimulation, self-stimulation, autism, treatment.

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SAŽETAK

Ljudi sa poremećajima iz spektra autizma (PSA) imaju različite probleme u domenima auditivnog procesuiranja visine, jačine i prozodije glasova i tonova iz okruženja. Veruje se da prisutno izmenjeno senzorno procesuiranje potiče zbog nedostatka stimulacije koja dolazi iz njihovog okruženja, zbog čega imaju potrebu da se dodatno stimulišu u vidu emitovanja različitih vokalnih stereotipija različite forme. Imajući navedeno u vidu, cilj ovog pregleda literature je da prikaže intervencije primenjene u cilju redukcije vokalnih stereotipija kod dece sa PSA i da prikaže njihovu efikasnost. Za pretragu literature korišćeni su pretraživači Google Scholar, SCIndex, ProQuest i Konzorcijum biblioteka Srbije za objedinjenu nabavku – KoBson. Radovi istraživačkog karaktera su traženi na srpskom i engleskom jeziku. Pregled literature fokusiran je na intervencije sprovedene sa ciljem redukcije vokalnih stereotipija za koje se pokazalo da imaju funkciju auto stimulacije kod ispitanika sa PSA. Ukupan broj ispitanika u svim radovima iz pregleda je bio devet, prosečnog uzrasta od 7.1 godina. Različite procedure su primenjivane i za 34.8 tretmana u proseku su bile uspešne izolovano ili u kombinaciji u redukciji vokalnih stereotipija za 86.5% u proseku. Imajući u vidu uspešnost prikazanih intervencija, neophodno je edukovati defektologe iz našeg područja o načinima implementacije istih, kao i uvrstiti njihovo podučavanje u kurikulume fakulteta koji edukuju buduće defektologe koji će u budućnosti raditi sa populacijom dece sa PSA.

Ključne reči: Vokalne stereotipije, autostimulacija, samostimulacija, autizam, tretman.

INTRODUCTION

Interaction with the environment and other people relies on the information we receive through our senses (Van Dam, Paris & Ernst, 2014) and in order to perform everyday activities, it is necessary that a person has the ability to adequately integrate information received from different sensory inputs (Hainaut & Bolmont, 2013). Sensory system receives information from seven different modalities and those are: auditive, visual, tactile, olfactory, gustatory, vestibular and proprioceptive (Mamic & Fulgosi Masnjak, 2010). The adequate development and information input through different sensors has a huge impact on a quality of life of an individual, as well as his or hers behavior (Boterberg & Warreyn, 2016) and appropriate sensory processing is the basis of satisfactory adaptive behavior of a person, as well as the possibility to obtain new information (Jirikowic, Olson & Kartin, 2008). Difficulties in sensory processing have an impact on overall development of a person, as well as quality of life (Dunn, 1997).

Normal sensory processing is crucial for receiving, modulating, integrating and organizing information received, in order to produce acceptable behavioral responses of an individual (Bundy et al., 2002).

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Different forms of auto stimulating behaviors are described in the literature as the behavior that obtains pleasant sensory sensations. If the treatment for maladaptive behavior that comes from sensory processing difficulties reduction is constructed in the right way, which would ensure changing inadequate behaviors with adequate ones, but that would allow the person to feel the same or at least similar sensory pleasure.

Adamson, O'Hare & Graham (2006) conducted a research where they used a screening instrument called *Short sensory profile* (Dunn, 1999) on a sample of 44 participants diagnosed with autism spectrum disorders (ASD) with the aim to determine the frequency of sensory difficulties. The results showed that over 70% of the participants display sensory processing impairments, as well as have preferences toward unusual stimulations. Other research (Watling, Deitz & White, 2001) used *Sensory profile questionnaire* (Dunn & Westman, 1995) to assess sensory differences among 40 participants with typical development and 40 participants with ASD, all between ages of three and six. The results show that there are significant differences between those two participant groups and highlight that among the group of participants with ASD there was a need for obtaining sensory stimulation in various ways.

People with autism spectrum disorder (ASD) exhibit different impairments in the domain of auditory processing of pitch, altitude and prosody of sounds and voices from the environment (O'Connor, 2012). It is believed that altered sensory processing of these individuals originates from insufficient stimulation from the persons' surroundings (Eveloff, 1960), therefore they have the need to stimulate themselves in a way of emitting vocal stereotypes of different forms. Having that in mind, the aim of this literature review is to present interventions that were proven to be successful in reducing vocal stereotypical behavior in a sample of people with ASD, as well as to examine their efficiency.

METHOD

For literature search engines Google Scholar, SCIndex, ProQuest and Serbian Library Consortium for Coordinated Acquisition – KoBson were used. Original research articles were searched in Serbian and English language and articles published in the last 15 years were used. Keywords used for searching the literature were autism, autism spectrum disorder and they were crossed with terms vocal stereotypy, auditory self-stimulation, auditory auto stimulation.

The articles were selected by using keywords in the title or abstract. After reading the abstracts, theoretical and review papers were excluded, and papers that showed the results of treatments of different forms of vocal stereotypy were presented, whose function was self-stimulation. The final selection of articles included five papers, whose methodology was described in detail.

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The treatment of vocal stereotypy – literature review

Research by Ahearn, Clark, MacDonald & Chung (2007) was conducted with the aim of reducing vocal stereotypic behavior with four participants diagnosed with ASD, with the average age of seven years. Applied procedure was response interruption and redirection (RIRD), which includes stopping the vocal stereotypy and reinforcing its redirection and it was combined with reinforcing appropriate verbal behavior. For three participants that had developed intraverbal skills, intervention consisted of stopping the vocal stereotypy and asking the participant a set of three questions that were socially significant. For the participant that did not have intraverbal skills, the authors used vocal imitation as redirection. Duration of the intervention was five minutes for each participant and the dependent measure was the duration of vocal stereotypy in one session. After five minutes, intervention was stopped and duration of vocal stereotypy was also noted in the next five minutes, as well as the percentage of using functional communication words. Baseline data indicated that the percentage of vocal stereotypy in a session was between 25% and 78% for all participants. The results of this research suggest that by applying mentioned intervention, vocal stereotypy can be reduced to between 1% and 24% of sessions in 19 sessions on average. Therefore, a decrease in vocal stereotypy between 70% and 97% was noted in all participants. Also, the authors emphasize that the use of functional communication increased in all four participants. The intervention effects were maintained in the next six months as well.

The research conducted by Saylor, Sidener, Reeve, Fetherston & Progar (2012) the authors examined the treatment possibilities of vocal stereotypical behavior which was proven to have the function of auditory sensory reinforcement. The sample consisted of two children, a five-year-old boy and a six-year-old girl, both diagnosed with ASD. The authors implemented a matched stimulation procedure which was noncontingent on the exhibited behavior and which involved the use of an audio player by the participants themselves. The sound loudness was constant and safe, but as well as not too loud, in order for the participants to be able to hear verbal demands from the therapist while wearing headphones which emitted the auditory stimulation. The authors varied three types of sounds, the white noise, audio recording of participants' vocal stereotypy and children's music and they were played on three different color headphones. The authors encouraged independent choice of headphones and measured the percentage of vocal stereotypy based on selected sound. The intervention duration was for each child 30 sessions, each in duration of 10 minutes. Prior to intervention implementation, vocal stereotypy was measured in 20 intervals that were in duration of 30 seconds each and the measured frequency was 75% of the intervals in the first participants and 85% in the second participant. Both participants preferred listening to audio recording of their own stereotypy and children's music and made that selection.

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The intervention effectiveness was 100% in both participants when children's music was emitted and the stereotypy was reduced for 73% following 100% when audio recording of their own stereotypy was emitted. Audio recording of white noise was not proven to be successful. The authors debate the social acceptance of wearing headphones in school context is a topic that should further be discussed.

A case study conducted by Hodges, Wilder & Ertel (2018) focused on a four year old participant diagnosed with ASD who emitted vocal stereotypy that was maintained by automatic auditory reinforcement. Researches implemented differential reinforcement of other behavior (DRO) that was combined with noncontingent reinforcement (NCR). The participant had toys available and play was divided into one minute intervals. If the target behavior did not occur within the interval, access to musical toys was available. Intervals progressed over time and later, a token system was introduced. The participant received tokens that she could exchange for access to musical toys. Prior to intervention implementation, vocal stereotypy was emitted in 83% of 3 minute intervals. After 50 sessions, vocal stereotypy was reduced to the duration of 30% in 3 minute intervals. The intervention continued and led to an overall reduction of the target behavior by 90%.

Reduction of vocal stereotypy was the aim of the case study focused on an eleven-year-old participant diagnosed with ASD (O'Connor, Prieto, Hoffmann, DeQuinzio & Taylor, 2011). The participant exhibited vocal stereotypy whenever he was reading and looking at books, which disabled the process of obtaining knowledge from used books, as well as other children at school. The authors implemented discrimination training procedure, where they taught the participant that with a presence of a red card, if he emits vocal stereotypy his access to a book would be denied. If the green card is presented, this was a signal that time frame where his engagement in vocal stereotypy is allowed. All sessions were in total duration of five minutes and they were gradually prolonged. In generalization probes, where the frequency of problem behavior was measured in different settings and environments (classroom and school library), the vocal stereotypy was reduced for 100%, where the red card was present. It is important to highlight that the green card remained being present in the participants' parents car, which he used on his way to and back from the school.

Another research that used discrimination training procedure with the aim to reduce vocal stereotypy in an eight-year-old participant diagnosed with ASD was the study conducted by Haley, Heick & Luiselli (2010). The participant exhibited vocal stereotypy in the school environment, which disabled the process of obtaining knowledge, as well as other students in the classroom. The authors implemented discrimination training procedure, where they taught the participant that emitting vocal stereotypy is not allowed when he is presented with the red card, while it is allowed when he is presented with the green card. If he exhibits stereotypy while presented with the red card, the therapist would stop it with the comment 'You cannot talk in classes'.

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The red card also had words 'Quiet' and 'You can talk' written on them. If the participant followed the given rule, he would receive reinforcement and if he did not follow the rule, the reinforcement was not available. Baseline data about the frequency of vocal stereotypy prior to intervention implementation was 48%, while after 31 sessions, reduction of 59% was noted.

Table 1. Literature review

Reference	Sample	Procedure	Number of sessions	Treatment effectiveness
Ahearn, Clark, MacDonald & Chung, 2007	Four participants diagnosed with ASD, with the average age of 7 years	RIRD	19 sessions on average	83.5% on average
Saylor, Sidener, Reeve, Fetherston & Progar, 2012	Two participants diagnosed with ASD, with the average age of 5.5 years	Matched stimulation	30 sessions	100%
Hodges, Wilder & Ertel, 2018	A four-year-old participant diagnosed with ASD	NCR and DRO	50 sessions	90%
O'Connor, Prieto, Hoffmann, DeQuinzio & Taylor, 2011	An eleven-year-old participant diagnosed with ASD	Discrimination training	44 sessions	100%
Haley, Heick & Luiselli, 2010	An eight-year-old participant diagnosed with ASD	Discrimination training	31 sessions	59%

CONCLUSION

Literature review focused on interventions whose primary aim was reducing vocal stereotypy with the self-stimulatory function in participants diagnosed with ASD. A total number of participants in all five articles was nine, whose mean age was 7.1 years old. Procedures that were implemented included discrimination training, RIRD, matched stimulation, NCR and DRO procedure and in 34.8 sessions on average these procedures and their combination led to an 86.5% of success in reducing vocal stereotypy on average.

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This implies that all of these procedures can be successfully used in reducing vocal stereotypy whose function is auto stimulation in children diagnosed with ASD.

Having the success of mentioned interventions in mind, it is necessary to educate special educators from our region on how to implement them and introduce these procedures in curriculum of all the Faculties which educate future special educators who will work with children diagnosed with ASD. The fact that none of the research articles were implemented in our region with the aim of reducing vocal stereotypy in children with ASD can be interpreted that none of the procedures that can lead to this particular behavior reduction is known to experts working with population of children with ASD in our region.

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THE INFLUENCE OF THE PATIENT'S AGE ON THE DURATION OF THE PROCEDURE AND THE AMOUNT OF RADIATION DELIVERED WHEN PERFORMING DIAGNOSTIC CORONARY ANGIOGRAPHY

UTICAJ DOBI PACIJENTA NA TRAJANJE PROCEDURE I KOLIČINU ISPORUČENOG ZRAČENJA PRI IZVOĐENJU DIJAGNOSTIČKE KORONARNE ANGIOGRAFIJE

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Original Scientific Article

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ABSTRACT

The aim of the research was to determine whether the age of the patient affects the duration of the procedure and the amount of ionizied radiation delivered when performing diagnostic coronary angiography. The research was conducted at the Clinic for Invasive Cardiology of the Public Health Institution "University Clinical Center" Tuzla in the period from December 2018. to January 2020. The research included a total sample of 240 respondents, average chronological age of 62.60 ± 9.22 years, ranging from 24 to 85 years. Out of a total of 240 respondents, in 121 respondents coronarny angiography was performed using transradial arterial approach and 119 by performing a transfemoral arterial approach. The total sample was divided into two subsamples of respondents. The first sub-sample consists of respondents up to 65 years of age, and the second sub-sample consists of respondents over 65 years of age. During each performance of coronary angiography, the duration of the procedure (in minutes and seconds) and the amount of radiation delivered during the procedure (in mGy) were measured. The research data were processed using the method of parametric and non-parametric statistics. The Mann-Whitney U test was used to verify the research objective. Based on the obtained research results, it can be concluded that in patients over 65 years of age, the duration of the coronary angiography procedure is longer, and is at the limit of statistical significance (p= 0.057). The amount of delivered radiation is higher in respondents over 65 years of age, but it is not statistically significant (p= 0.396).

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Keywords: Coronary angiography, coronary disease, procedure duration, age, amount of delivered radiation.

SAŽETAK

Cilj istraživanja je bio utvrditi da li dob pacijenta utiče na trajanje procedure i količinu isporučenog zračenja pri izvođenju dijagnostičke koronarne angiografije. Istraživanje je sprovedeno na Klinici za invazivnu kardiologiju JZU UKC Tuzla u periodu od decembra 2018. do januara 2020. godine. Istraživanjem je obuhvaćen ukupan uzorak od 240 ispitanika, prosječne hronološke dobi 62,60 ± 9,22 godina raspona od 24 – 85 godina. Od 240 ispitanika 121 je urađen transradijalnim arterijskim pristupom a 119 transfemoralnim arterijskom pristupom. Ukupan uzorak je podijeljen na dva subuzorka ispitanika. Prvi subuzorak čine ispitanici do 65 godina starosti, a drugi iznad 65 godina starosti. Tokom svakog izvođenja koronarne angiografije mjerilo se vrijeme trajanja procedure (u minutama i sekundama) i količina isporučenog zračenja za vrijeme procedure (u mGy). Podaci istraživanja obrađeni su metodom parameterijske i neparametrijske statistike. Za provjeru postavljenog cilja istraživanja primjenio se Mann-Whitney U test. Na osnovu dobijenih rezultata istraživanja može se zaključiti da je kod pacijenata iznad 65 godina trajanje procedure koronarne angiografije duže, te je na granici statističke signifikantnosti (p= 0,057). Količina isporučenog zračenja je veća kod ispitanika iznad 65 godina ali nije statistički signifikantna (p= 0,396).

Ključne riječi: Koronarna angiografija, koronarna bolest, trajanje procedure, dob, količina isporučenog zračenja.

INTRODUCTION

Coronary artery disease is a complex disease that reduces or completely stops blood flow through one or more arteries that supply the heart muscle, which leads to various clinical manifestations in the patient, including angina pectoris and acute coronary syndrome (ACS); (Williams, 2009).

Coronary angiography is the gold standard in the diagnosis of coronary artery disease. It is an invasive radiographic procedure in which a contrast agent (most often iodine) is injected through catheters placed at the ostia of the coronary arteries, which are visualized radiographically in order to detect stenosis or occlusions of the coronary arteries (Scanlon et al., 1999). Coronary angiography is an indisputable method for detecting significant flow-limiting stenosis, which can be revascularized by percutaneous interventions or surgicaly.

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The rational use of coronary angiography as a diagnostic method implies a high percentage of finding critical stenosis on the coronary arteries, which is followed by percutaneous intervention.

In patients with severe symptoms or a clinical constellation suggesting a high risk condition, early invasive coronary angiography, without prior noninvasive assessment of the patient, may be a good strategy to identify potential lesions amenable to revascularization (Wijns et al., 2010). The methods used to perform invasive coronary angiography have improved significantly, resulting in lower complication rates and faster discharge of patients from the hospital. This is especially true if invasive coronary angiography is performed via the radial artery (Jolly et al., 2009).

Older people have more cardiovascular risk factors and a higher prevalence of ischemic disease than younger people, but due to age-related physiological changes, frailty and comorbidities, they are also more likely to experience procedural complications. Coronary angiography is generally safe to perform in the elderly. However, increased risks of bleeding, stroke, contrast-induced kidney injury, increased prevalence of peripheral arterial disease and tortuosity, chronic kidney disease, and decreased tolerance to sedatives and narcotics are factors that warrant attention. Despite certain risks and procedural difficulties, the elderly benefit from coronary angiography due to the higher prevalence of multi-vessel coronary disease and involvement of the left main, atypical presentations, and inconclusive noninvasive testing (Butany and Buja, 2016; Roberts and Shirani, 1998). Given that the need for coronary angiography in a patient is an adequate indication, regardless of age, previous studies focused more on the comparison of two arterial approaches (transfemoral and transradial) in the elderly population (Rouge et al., 2018; Alnasser et al., 2017). Currently, there are no studies that directly compare the duration of the coronary angiography procedure and the amount of delivered ionizing radiation, in relation to patient age, regardless of which arterial access was used.

Accordingly, the research question would be whether there is a difference in relation to the age of the patient and the duration of the coronary angiography procedure. Also, the goal is to determine whether there is a difference in relation to the amount of delivered radiation when performing diagnostic coronary angiography.

MATERIAL AND METHODS

Sample of respondents

The research was conducted at the Clinic for Invasive Cardiology of the Public Health Institution "University Clinical Center" Tuzla in the period from December 2018. to January 2020. The research included a total sample of 240 respondents, average chronological age 62.60 ± 9.22 years, ranging from 24 to 85 years. Out of 240 patients, 137 (57.1%) respondents were male, and 103 (42.9%) respondents were female.

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Out of a total of 240 respondents, in 121 coronary anguiography was performed using transradial arterial approach and 119 by performing a transfemoral arterial approach.
Of the 121 respondents where transradial arterial approach was used, 69 (57%) were under the age of 65 and 52 (43%) were over 65 years old. Of the 119 respondents where transfemoral arterial approach was used, 65 (54.6%) were under the age of 65 and 54 (45.4%) were over 65 years old. Data were taken directly from the CATH lab. (catheterization laboratory) on a Phillips ALLURA XPER FD2 machine. All procedures were performed by one operator.

Measuring instruments

During each coronary angiography, the duration of the procedure (in minutes and seconds) and the total amount of radiation delivered during the procedure (in mGy) were measured. The duration of the procedure is measured from the beginning of the palpation of the access artery on the prepared patient until the removal of the diagnostic catheter after the imaging is completed. For all coronary angiographies, six basic angiographic projections were made, and in case of need for better visualization of individual segments of arteries, one or two additional projections were made.

Data processing methods

The research data was processed using the method of parametric and non-parametric statistics. The basic statistical parameters of the measure of central tendency, measure of dispersion were calculated, and the obtained results were presented in a table. Arithmetic mean, median and mode were calculated from measures of central tendency, and standard deviation, minimum and maximum results from measures of dispersion. The Mann-Whitney U test was used to verify the research objective. Research data were processed in the statistical package SPSS 20 for Windows.

RESULTS AND DISCUSSION

The results in Table 1 show that the chronological age of the respondents is 62.60±9.23 years. The minimum and maximum age ranges from 24 to 85 years. The average total duration of the procedure is 11.26 ± 4.23 minutes. The minimum and maximum duration of the procedure ranges from 4.58 to 32.19 minutes. The measures of symmetry (SK) are 1.55 and flatness (KU) is 4.58, which points to the conclusion that the data are positively asymmetric, and in terms of shape, the data distribution is elongated or leptokurtic.

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The average amount of delivered radiation is 217.07 ± 83.61 mGy, the minimum is 87.42 mGy, and the maximum is 502.11 mGy. The measures of symmetry and flatness are 0.75 and 0.34, which means that the data distribution is asymmetrical and flattened.

Given that the elderly population is generally burdened with more comorbidities, and especially due to the presence of generalized atherosclerosis, our results are somewhat expected. In practice, in elderly people, ensuring arterial access has proved to be more demanding, and due to the higher prevalence of generalized atherosclerosis and tortuosity in the arterial bed, the placement of the catheter to the ostia of the coronary arteries also proved to be more demanding. So far, we have not been able to find studies that directly compare the duration of the coronary angiography procedure and the amount of ionizing radiation delivered in relation to the age of the patients, regardless of which arterial approach was used. A large meta-analysis of nearly 20,000 patients from 2015. shows that the transradial arterial approach is associated with a small but significant increase in ionizing radiation exposure compared to the transfemoral arterial approach (Plourde et al., 2015). The same study also shows that the difference in radiation exposure decreases as years go past, which is probably related to the increase in the number of procedures due to greater acceptance of the transradial arterial approach, but also to technological progress.

Table 1. Measures of central tendency and measures of dispersion in relation to observed variables

Variables	AM	SE	MED	MOD	SD	SK	KU	MIN	MAX
Chronological age	62,60	0,60	64	70	9,23	-0,73	0,87	24	85
Total duration of the procedure (min.)	11,26	0,27	10,55	10.55	4,23	1,55	3,85	4,58	32,19
Amount of delivered radiation	217,07	5,40	205,63	110.11[a]	83,61	0,75	0,34	87,42	502,11

Table 2 shows the results of descriptive statistics in relation to the age of the respondents and the variables related to "Total duration of the procedure" and "Amount of delivered radiation". The results show that the arithmetic values of both variables are higher in respondents over 65 years old in comparison to respondents up to 65 years of age. From the results, it can be concluded that the total duration of the procedure in respondents over 65 years old is longer and the amount of radiation is greater. In order to see if the differences are statistically significant, the results are shown in Table 3.

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Table 2. The results of descriptive statistics in relation to the age of the respondents and the observed variables in the research

Variables	Age	N	M	SD	SE
Total duration of the procedure	up to 65 years old	135	10,71	3,57	0,31
	over 65 years old	105	11,96	4,88	0,48
Amount of delivered radiation	up to 65 years old	135	213,18	82,26	7,08
	over 65 years old	105	222,07	85,46	8,34

Based on the results shown in Table 3, it can be concluded that there is no statistically significant difference between respondents under 65 and over 65 years of age on the variables "Total duration of the procedure" and "Amount of delivered radiation". Although the results are not statistically significant, the results in relation to the variable "Total duration of the procedure" are at the limit of significance, which means that objectively it can be assumed that the performance of the coronary angiography procedure in patients over 65 years of age will take longer.

The fact that approximately the same percentage of patients in both age groups was operated with a transfemoral or transradial approach adds special significance to these results.

Table 3. Mann-Whitney U test results

Variables	Age	N	Average rank	Sum of ranks	Z	p
Total duration of the procedure	up to 65 years old	135	112.99	15253.50	-1.90	.057
	over 65 years old	105	130.16	13666.50		
Amount of delivered radiation	up to 65 years old	135	117.15	15815.00	-.84	.396
	over 65 years old	105	124.81	13105.00		

CONCLUSION

Diagnostic coronary angiography is generally safe to perform in the elderly. However, increased risks of hemorrhage, stroke, contrast-induced renal injury, increased prevalence of peripheral arterial disease and tortuosity, chronic kidney disease, and decreased tolerance to sedatives and narcotics are factors that warrant attention.

Despite certain risks and procedural difficulties, the elderly benefit from coronary angiography because of the higher prevalence of multivessel coronary artery disease and left main coronary artery involvement, atypical presentations, and inconclusive noninvasive testing. From our research, it can be seen that at the level of statistical significance of 0.057, the total duration of the procedure increases as the age of the respondent increases.

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That is to say that the procedure of coronary angiography in patients over 65 years of age takes longer, regardless of which arterial approach is used. The amount of delivered radiation is higher in respondents over 65 years of age, but it is not statistically significant (p= 0.396).

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THE INFLUENCE OF THE INDIVIDUAL EDUCATIONAL-REHABILITATION PROGRAM ON THE MOTOR COORDINATION OF STUDENTS WITH VISUAL IMPAIRMENT

UTICAJ INDIDIVIDUALNOG EDUKACIJSKO-REHABILITACIJSKOG PROGRAMA NA MOTORIČKU KOORDINACIJU UČENIKA S OŠTEĆENJEM VIDA

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Case Study

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ABSTRACT

The motor development of the child, especially motor coordination, is important for performing purposeful activities. The aim of this study was to determine the impact of individual educational and rehabilitation treatment on motor coordination in students with visual impairment. The sample included one student, male, aged 9 years, with a diagnosis of nystagmus, amblyopia and astigmatism. The initial and final assessment was done with the student, and the Beery-Buktenica developmental test of visual-motor integration (VMI) fifth edition was used for the same, which is intended for the assessment of visual-motor integration, visual perception and motor coordination. For the purposes of this research, the subtest *Motor Coordination* was used, which consists of 30 tasks. After the initial assessment, an individual educational-rehabilitation treatment lasting 2 months was conducted. Survey data was processed by frequency analysis. Based on the obtained results, it can be concluded that there has been an improvement in students in the field of motor coordination. The results of the research indicated the importance of recognizing students with motor coordination difficulties as early as possible, as well as the importance of conducting educational and rehabilitation treatment, with a positive effect on motor coordination.

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Keywords: visual impairment, motor coordination, educational-rehabilitation program.

SAŽETAK

Motorički razvoj djeteta, posebno motorička koordinacija, važna je za izvođenje svrsihodnih aktivnosti. Cilj ovog istraživanja bio je utvrditi uticaj individualnog edukacijsko-rehabilitacijskog tretmana na motoričku koordinaciju kod učenika s oštećenjem vida. Uzorak ispitanika je obuhvatio jednog učenika, muškog spola, uzrasta 9 godina, s dijagnozom nistagmusa, ambliopije i astigmatizma. S učenikom je urađena inicijalna i finalna procjena, te je za istu korišten Beery-Buktenica razvojni test vizuelno-motoričke integracije (VMI) peto izdanje, koji je namijenjen za procjenu vizuelno-motoričke integracije, vizuelne percepcije i motoričke koordinacije. Za potrebe ovog istraživanja korišten je subtest *Motorička koordinacija* koji se sastoji od 30 zadataka. Nakon inicijalne procjene, proveden je individualni edukacijsko-rehabilitacijski tretman u trajanju od 2 mjeseca. Podaci istraživanja obrađeni su frekvencijskom analizom. Na osnovu dobijenih rezultata, može se zaključiti da je došlo do poboljšanja učenika u području motoričke koordinacije. Rezultati istraživanja ukazali su na važnost što ranijeg prepoznavanja učenika s teškoćama motoričke koordinacije, kao i važnost provođenja edukacijsko-rehabilitacijskog tretmana, uz pozitivan učinak na motoričku koordinaciju.

Ključne riječi: oštećenje vida, motorička koordinacija, edukacijsko-rehabilitacijski program.

INTRODUCTION

Visually impaired children differ according to personal characteristics, as well as according to the degree of visual impairment (Fajdetić, 2012). Because they face different developmental tasks and challenges posed by the environment (Farrel, 2004), visually impaired children need to be taught to interpret information gathered through visual sense, using a variety of motor skills. Therefore, it is important that they are well developed with the joint action of all other senses (Fajdetić, 2015). Beraković and Jokić Maršić (2018) state, that an important precondition for a child's optimal development in all developmental areas is the encouragement of motor development at an early age. Thus, the development of motor skills refers to the increasing ability of the child to harmoniously use its own body to move and use objects (Starc, Čudina-Obradović, Pleša, Profaca and Letica, 2004). Motor development takes place through children's movements at an early stage that represent reflex responses to the environment. Over time, these movements are upgraded and become increasingly cognitively controlled (Piaget, 1953; according to Carlson, Rowe and Curby, 2013), so motor skills are very important for the development of other traits. The development of the hand greatly affects the development of the whole organism. Performing various complex hand movements leads to the development of the cerebral cortex, which becomes the center for distinguishing a large number of stimuli that are received through hand movements.

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A significant part of the motor zone of the cerebral cortex is represented by the centers for hand and finger movements (Jablan, 2007; according to Radžo Alibegović and Teskeredžić, 2016). Motor skills are innate, but we can develop them in different ways from an early age, because the developed abilities serve to perform motor tasks more efficiently, and thus enable more successful movement (Pejčić and Trajkovski 2018). "The importance of motor skills can be reflected in the fact that if an individual does not develop certain abilities to a level that can be achieved, taking into account genetic limits, he/she will not be able to master everyday tasks necessary for normal functioning" (Bavčević, 2020). As such, motor skills are divided into different categories: gross motor skills refer to whole body movements (such as jumping), while fine motor skills include arm and hand movements. Fine motor skills are a prerequisite for the successful development of graphomotor skills, which implies the ability to perform graphemes (Ambrosi-Randić and Glivarec, 2017). Fine motor skills are very important for early learning (Becker, Miao, Duncan and McClelland, 2014), so fine motor skills developed in this way are shown in drawing, writing, cutting and painting and similar skills (Goldberg, 2003). The most important motor ability of a child is coordination. It is at the core of every movement (Iveković, 2013). It is also called motor intelligence, considering that it is a complex motor ability that participates in the realization of the simplest, but also the most complex forms of movement (Sekulić and Metikoš, 2007). **I**veković (2013) defines coordination as "the ability that enables the body to purposefully and in a controlled manner energetically, temporally and spatially organize two or more patterns of movement into one whole, in order to achieve specific movement." The frequency of visual disturbances or refractive anomalies in school children is 8% to 21%. In children of younger school age, initially, visual disturbances may manifest as fatigue at doing chores, headache, reluctance or refusal to read, write or do chores at school, burning in the eyes, watery eyes etc. Sometimes children with visual impairments help themselves without even being aware of it, when writing or reading, by bringing objects, papers, or a book closer to their eyes in order to see better (Teskeredžić, Mešić and Begić, 2018). Atasavun Uysal and Düger (2011) state, that children with various visual impairments lag behind in the development of motor skills, compared to children without visual impairment who improved their motor skills during primary school (Duvnjak, Soudil-Prokopec and Škrobo, 2015). In order to improve the motor development of these children, it is important to understand which motor skills, individually in each child, pose the biggest problems (Haibach, Wagner and Lieberman, 2014). In children with visual impairment, there is no reference point of movement, because of which the position of the body in space is somewhat different. Their movements are scarce and uncoordinated because they do not have the ability to imitate movements (in case they cannot be perceived by sight) as well as the supervision of movements (Duvnjak, Soudil-Prokopec and Škrobo, 2015).

The aim of the study was to determine the impact of individual educational and rehabilitation treatment on motor coordination in students with visual impairment.

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RESEARCH METHODS

Sample of respondents

The sample included one male student, aged 9, with a diagnosis of nystagmus, amblyopia and astigmatism. Visual impairment was binocularly corrected with spectacles (as of November 10, 2020), and the following correction was achieved:

OD: cum -1,50 Cyl ax 174°

OS: cum -1,00 Cyl ax 179°

The student is currently attending the 4th grade of the Elementary School "Turija" according to the regular educational program. He has never been involved in individual rehabilitation treatments to improve his visual and motor functioning. Regardless of the student's non-involvement in various programs, as well as untimely correction with glasses, his academic achievement is at the level of a very good student.

Measuring instrument

In order to verify the set goal of the research, the fifth edition of the Beery-Buktenica developmental test of visual-motor integration (VMI) (Beery K. E. and Beery N. A., 2004) was applied in the research. It can be used by children and adults, chronologically aged from 2 to 100, individually and in groups. The VMI test contains a total of 90 tasks and consists of : The main test "Visual-motor integration" and two additional sub-tests "Visual perception" and "Motor coordination". For the purposes of this research, the subtest "Motor coordination" was used, which consists of 30 tasks. The first three tasks are intended for preschool children. The child should sit on a chair on its own, take a pencil correctly, and solve tasks with one hand and hold the paper with the other hand. For the remaining 27 tasks, the child should draw the shapes with a pencil, but it must take care not to exceed the boundaries of the shapes. Children older than 5 years start with task number 4. Each correct answer is evaluated with 1 point, while incorrect answer with 0 points.

Research conducting method

The research was conducted individually, in the premises of the "Village of Peace" Foundation in accordance with the created activities within the program. First of all, an initial assessment was made in order to determine the current level of functioning of students in the field of motor coordination. Then the development of an individual educational-rehabilitation program was started, which consisted of exercises and a plan of necessary skills based on the improvement of gross and fine motor skills. The next step was to implement an educational-rehabilitation program, continuously for 7 weeks.

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When performing the activities, the working conditions were taken into account, such as: natural lighting in order to facilitate the student's activities; conducting the program in the morning, since then the student is most rested; provided peace and reduced the number of distractions within the room where the tasks are performed, so that the student maintains attention while working. For the rehabilitation program, the tasks from the Developmental Test of Visual Perception, Second Edition (DTVP-2) (Hammill, Pearson and Voress, 1993) were used, which relate to the following subtests: 1. Hand-eye coordination; 2. Position in space; 3. Mapping; 4. Separation of a figure from the background; 5. Relations in space; 6. Visual closure; 7. Visual-motor speed; 8. Constancy of shape. After the treatment, a final assessment was made to determine the effectiveness of the treatment on motor coordination in students with visual impairment.

Data processing methods

The statistical program SPSS 21.0 (Statistical Package for the Social Sciences) was used to process the obtained data. Survey data were processed by non-parametric statistics, basic statistical parameters, i.e. frequencies and percentages were calculated, and the obtained results were presented in tables and graphs.

RESULTS AND DISCUSSION

The role of the sense of vision in a child's development and the integration of information that we receive through other senses explains the negative effects of vision impairment on almost all developmental domains. If not corrected in time, visual impairment can have a negative impact on achievements in various areas of daily functioning (Stanimirov, Jablan, Andjelković and Vučinić, 2018; according to Begić Jahić, Vantić-Tanjić, Teskeredžić, Radžo Alibegović, 2019). Adequate visual perception and motor coordination are necessary for activities that require harmonious performance of motor skills. If visual and motor functioning is impaired, children will have various problems that will manifest themselves most often through mastering school tasks and chores, which will greatly affect the student's academic achievement, but also the student's self-confidence, if he/she often fails at school. Such children generally have untidy handwriting, as it is difficult to perform tasks that require developed fine motor skills, as well as skills needed for orientation and coordination of the body, and it is recommended to work with them using rehabilitation programs.

At the beginning of the treatment, the student showed certain deviations through the work when it comes to fine motor skills. The student was very inaccurate and slow, however, the readiness of the student to work and systematic exercises improved the quality of fine motor skills, which is evident through the results obtained by the later implementation of the educational-rehabilitation program. Through continuous treatments, the student shows more correct coordination of movements, more correct grip and holding of the pencil, as well as speed and accuracy during work.

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Table 1 shows the results in the field of motor coordination. The analysis of the obtained values determined the results that the student achieved on the tasks, in the final measurement after the educational-rehabilitation treatment. These results were best demonstrated in tasks 17, 18, 19, 20, 21, 22, 24 and 26, which relate to the tasks of spatial relations because they require that the template from the presented sheet be reproduced on the basis of evenly distributed dots. The only task in which the student showed the best results in the initial measurement, and failed to maintain it through treatment, was task number 16.

One of the reasons for the student's failure is the complexity of the task, since the task consisted of two figures connected at one point, which is difficult for the student to see due to the state of his visual function, i.e. the presence of nystagmus and astigmatism that does not allow spatial viewing and recognition of figures that are very close or meet only at one point.

Table 1. Presentation of results on motor coordination (initial-final)

Motor coordination	Assessment	Not done	Done
MC16	Initial		✓
	Intersection	✓	
	Final	✓	
MC17	Initial	✓	
	Intersection		✓
	Final		✓
MC18	Initial	✓	
	Intersection		✓
	Final		✓
MC19	Initial	✓	
	Intersection		✓
	Final		✓
MC20	Initial	✓	
	Intersection		✓
	Final		✓
MC21	Initial	✓	
	Intersection	✓	
	Final		✓
MC22	Initial	✓	
	Intersection	✓	
	Final		✓
MC24	Initial	✓	
	Intersection	✓	
	Final		✓
MC26	Initial	✓	
	Intersection	✓	
	Final		✓

Legend: MK- motor coordination.

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The tabular presentation (Table 2) shows the task results that have not changed, when it comes to the student achievement, in the field of motor coordination. In the initial testing, the student failed in the tasks presented below, and there was no positive progress, even after the individual educational and rehabilitation treatment.

Table 1. Presentation of results on motor coordination (no recorded changes)

Motor coordination	Assessment	Not done	Done
MC23	Initial	✓	
	Intersection	✓	
	Final	✓	
MC25	Initial	✓	
	Intersection	✓	
	Final	✓	
MC27	Initial	✓	
	Intersection	✓	
	Final	✓	
MC28	Initial	✓	
	Intersection	✓	
	Final	✓	
MC29	Initial	✓	
	Intersection	✓	
	Final	✓	
MC30	Initial	✓	
	Intersection	✓	
	Final	✓	

In the remaining variables of the instrument that are not tabulated (due to operationalization) student has successfully done through the initial testing, intersectional assessment, but also the final testing, done two months after the implementation of the individual educational-rehabilitation program.

Based on the results of the research, Graph 1 shows the summary results in the field of "Motor Coordination", obtained immediately before the implementation of the educational-rehabilitation program, one month after, and two months after the implementation of the educational-rehabilitation program. On the initial assessment, the student scored 16 points, and on the assessment done a month later, he scored 19, out of a total of 30 points. Compared to the initial assessment, the student scores 23 points in the final assessment, which confirms the importance of consistent application of individual educational and rehabilitation treatment with a student with motor coordination difficulties (Chart 1).

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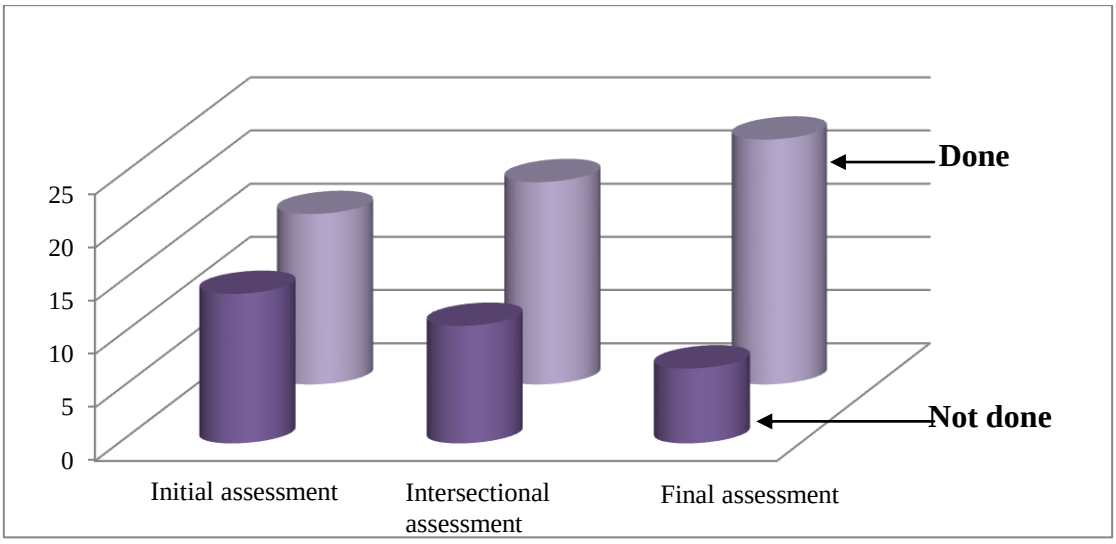

Graph 1. Summary result of frequencies on motor coordination

Sanghavi and Kelkar (2005) state that visual perception and motor functioning enable motor coordination and psychomotor speed necessary for adequate child functioning, while authors Wilson and McKenzie (1998) state that problems with visual components are related to problems in motor coordination.

Best (2010) considers that motor abilities that have the greatest connection with cognitive can be considered complex, because their performance requires a higher level of cognitive abilities, while those that are low correlation are such that require less cognitive engagement in task performance.

The results of research conducted by Lazarević, Stevanović and Lalić-Vuletić (2016) showed that more attention needs to be paid to developing fine graphomotor skills at preschool age, since the quality of graphomotor skills can significantly affect children's school achievement.

By reviewing various researches, it was realized that difficulties of visual perception have a negative impact on the development of motor skills, and that as such they negatively affect students' graphomotor abilities.

Difficulties in motor planning create difficulties in performing fine motor skills, which is further reflected in difficulties in writing (untidy handwriting), copying, slowness, difficulty navigating on paper, and clumsiness in tasks that require fine movements (Kuhar et al., 2007).

In order to improve the dexterity of the hands of these students, coordination of movements, and thus their academic achievement, it is necessary to continuously practice through rehabilitation programs that will certainly have positive effects on students' graphomotor skills.

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Coordinated hand dynamics in visually impaired children was examined by Radžo Alibegović and Teskeredžić (2016).

The sample consisted of 58 children, of which 29 children were visually impaired, and 29 children were without visual impairment. Coordinated hand dynamics was assessed using the psychomotor dimension B from the Ozeretski test. The results of the research showed that there is a statistically significant difference between visually impaired children and children without visual impairment on the psychomotor dimension B. For this reason, the authors recommend that in working with visually impaired children, it is necessary to pay special attention to exercises of visual-motor coordination (eye-hand) as well as exercises for the development of fine motor skills. The fact is that the coordination of hand movements depends on the interaction between the child, the task and the environment, and is the result of perception, environment and activity of the motor system (Tükel, 2013; according to Begić, 2020).

Press, Hinojosa and Roston (2009) conclude that intervention and subsequent improvement of graphomotor skills can have a positive effect on the overall academic achievement of students who have difficulties with motor development. In support of these results are the results of research by Ratzon, Ephraim and Bart (2007) who researched the impact of the intervention program on visual-motor skills and graphomotor skills. 52 students of elementary school age were selected by the method of random selection and they were classified in the experimental and control group. The experimental group participated in 12 treatments, which included motor and perceptual-motor activities, as well as activities for fine and gross motor skills. The results showed that students from the experimental group, after the concluded program, achieved significantly better results than students from the control group, which indicates the importance of implementing intervention programs in working with elementary school students.

The effect of the intervention program of fine motor skills on graphomotor skills was also examined by Spanaki, Venetsanou, Evaggelinou and Skordilis (2014) on a sample of 64 students involved in kindergarten and elementary school (33 boys, 31 girls). Graphomotor abilities were tested using visual-motor control items, Bruininks-Oseretsky motor ability-long form test (BOTMP-LF). The intervention program lasted two months. Analysis of the results showed significant interaction effects for each graphomotor skill. The authors concluded that elementary school teachers and kindergarten teachers should consider fine motor skills programs to improve the graphomotor skills of all students.

Smits-Engelsman, Niemeijer, and Van Galen (2001) in their paper explained that students with poorer graphomotor abilities find it more difficult to adapt to spatial orientation on paper. Such students, while performing the task on paper, use strategies that do not depend so much on their visual functions.

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The quality of the manuscript can have a positive effect on the treatment, which was confirmed by the results of the research, according to which it was concluded that children included in physiotherapy treatment showed greater precision in writing after 3 months of work.

CONCLUSION

In the early period of development of a visually impaired child, it is very important to encourage motor development, since the gross and fine motor skills are necessary for performing daily activities. In these activities, we also include performing school tasks, which is quite difficult for a student if he/she has impaired motor coordination. Difficulties in motor functioning, during schooling, will first be reflected through graph motor skills and problems with the coordination of fine and gross motor skills, which will further negatively affect the academic achievement of students.

Based on the results obtained in this research, it can be concluded that the academic achievement of visually impaired students can be improved if rehabilitation programs are conducted with him/her, and if the teaching content, teaching aids and environment are adapted to his/her abilities. Through constant work with the student, through the implementation of educational and rehabilitation treatment, more efficient manipulation of subjects was achieved, and there was an improvement in publishing school activities that require fine and gross motor skills. The progress of the students itself pointed to the need to conduct individual educational and rehabilitation treatment with students with motor coordination difficulties, for a longer period of time, in order to achieve the set goals. Before implementing the educational-rehabilitation program, it is necessary to determine the current level of functioning of students, and in accordance with that, to create and implement a program.

The analysis of the obtained values, in this research, established that the individual-educational rehabilitation program showed a positive shift in the field of motor coordination, and that this achievement was best reflected in graphomotor skills, gross motor skills and body coordination.

By early detection of students with impaired motor coordination, it would be possible to act in a timely manner and start creating different therapeutic approaches. It is also important to encourage further research in the future on the importance of the need to implement rehabilitation programs in working with these students.

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ORIENTATION AND MOBILITY OF VISUALLY IMPAIRED CHILDREN IN RELATION TO THE CATEGORY OF LOW VISION AND TYPE OF VISUAL IMPAIRMENT

ORIJENTACIJA I MOBILITET DJECE OŠTEĆENOG VIDA U ODNOSU NA KATEGORIJU SLABOVIDNOSTI I VRSTU OŠTEĆENJA VIDA

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ABSTRACT

The aim of this research was to examine the orientation and mobility of children with visual impairment in relation to the category of low vision and the type of visual impairment. The research included a sample of 35 respondents with visual impairment, aged between 7 and 15 years. The research was conducted in Sarajevo at the Center for Blind and Visually Impaired Children and Youth "Nedžarići". The results of the research showed that in relation to the category of low vision, there were no statistically significant differences between arithmetic means, nor statistically significant correlations between respondents with severe low vision and respondents with moderate low vision. In relation to the type of visual impairment, there were also no statistically significant differences in orientation and mobility between visually impaired children.

Keywords: Orientation and mobility, visually impaired children, low vision.

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SAŽETAK

Cilj ovog istraživanja bio je ispitati orijentaciju i mobilitet kod djece sa oštećenjem vida u odnosu na kategoriju slabovidnosti i vrstu oštećenja vida.
Istraživanjem je bio obuhvaćen uzorak od 35 ispitanika sa oštećenjem vida, starosne dobi između 7 i 15 godina. Istraživanje je provedeno u Sarajevu u Centru za slijepu i slabovidnu djecu i omladinu „Neđarići“. Rezultati istraživanja pokazali su da u odnosu na kategoriju slabovidnosti između ispitanika sa teškom slabovidnosti i ispitanika sa srednje teškom slabovidnosti nije bilo statistički značajnih razlika između aritmetičkih sredina, niti statistički značajnih korelacija. U odnosu na vrstu oštećenja vida također nije bilo statistički značajnih razlika u orijentaciji i mobilitetu između djece oštećenog vida.

Ključne riječi: Orijentacija i mobilitet, djeca oštećenog vida, slabovidnost.

INTRODUCTION

Orientation in space is the ability of the organism to react to any change in the surrounding environment, i.e. that it places the analyzers in the best position for analyzing the reception of stimuli and responses to them (Dikić, Žigić, 2010).
In addition to the term orientation and movement, the term mobility is often used, but it does not mean only movement through a certain space or locomotion, but also "mental orientation", i.e. the ability of an individual to recognize the environment and its spatial and temporal relationships. Mobility contains two components: mental orientation and physical loco-motion. Mental orientation is the respondent's ability to recognize his environment in its temporal and spatial relationship to themselves, and locomotion is the respondent's ability to move from one place to another by means of his own organism. Mental orientation and movement are fundamental concepts of mobility, but they do not take place completely separately, but are mutually dependent (Zovko, 1994).
Orientation is getting to know and evaluating, and mobility is mastering the space. Mobility includes all movements and motor skills involved in movement. Placing the foot on the floor, placing the heel of the toes, controlling the body to maintain balance, etc. (Jablan, 2007).
Mobility for visually impaired children has a significant cognitive value because it expands the possibility of gaining direct experience of various objects and phenomena with which they come into contact; mobility expands the space of a blind child and increases the adaptive potential of a visually impaired person (Ražo Alibegović, 2013).
Visually impaired children are ready to walk at the age of one year. However, walking is usually absent during this period, which is attributed to a delay in reaching for objects that serve as auditory stimuli.

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Some authors attribute delayed walking to the lack of a mental map in locomotion and overly protective attitudes of parents, to an inadequate social bond between a blind child and parents. A factor of delay in mobility is an insufficiently developed body image and the position of the body in space. A good body image is important for orientation in space because one's own body is often the only safe reference point.

We say that something is in front, behind, to the right or left, up or down precisely in relation to one's own body. In blind people, the vertical position of the body is important for maintaining the correspondence between the body and the environment (Jablan, 2007).

Developmental delays in visually impaired children during the first year of life, which are related to loco-motor development and the development of fine motor skills, are caused by direct and indirect effects of the low vision (Ferrell, 1986; Fraiberg, 1977; Jan, Freeman and Scott, 1977; Leung and Hollins, 1989, Warren, 1984).

Orientation and mobility components include sensory concepts, motor development (total motor skills), environmental and social awareness, formal orientation and mobility skills, safety issues, use of local community resources, use of assistive technology, and efficient movement (Anthony et al, 2002; Griffin-Shirley, Tryst, & Rickard, 2000; Hill, Rosen, Correa, & Langley, 1984).

The main aim of this study was to determine the differences in orientation and mobility in visually impaired children in relation to the category of low vision and the type of visual impairment.

RESEARCH METHODS

Sample of respondents

The research included a sample of 35 respondents with visual impairment, aged between 7 and 15 years. Based on the definition given by the World Health Organization, the respondents from our sample with regard to visual acuity (visus) were classified into 2 categories:

I category – visus respondents 0,01-0,05 (severe low vision)

II category - visus respondents 0,1-0,3 (moderate low vision).

From 16 respondents with severe low vision, 7 were male and 9 were female. From 19 respondents with moderate low vision, 12 of them were male and 7 were female. With regard to the type of visual impairment (diagnosis), visually impaired respondents were divided based on visual apparatus damage into: functional visual impairment and organic visual impairment. Out of 35 respondents, 17 had functional visual impairment, and 18 had organic visual impairment.

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Variables

Anamnestic variables:

1. Visual acuity
2. Type of visual impairment

Variables for assessment of orientation and mobility:

1. orientation towards one's own body
2. body posture
3. operating with concepts
4. physical abilities
5. auditory abilities
6. orientation in a building and some of its rooms
7. orientation in the yard

Measuring instrument

Orientation and mobility were assessed using the Blind Mobility Assessment Instrument (Zovko, 1994). The instrument contains 10 areas in which 159 tasks are embedded. For the purposes of this research, 7 areas were used, which refer to:

- orientation towards one's own body
- body posture
- operating with concepts
- physical abilities
- auditory abilities
- orientation in a building and some of its rooms
- orientation in the yard

An analysis of medical records was used to collect data on visual acuity and type of visual impairment. Analysis of pedagogical-psychological documentation was used to collect data on gender, chronological age and intellectual level.

Research conducting method

The research was conducted in Sarajevo at the Center for Blind and Visually Impaired Children and Youth "Nedžarići". All respondents were examined individually in a separate room and in a pleasant environment.

Data processing methods

After the research, the obtained data was processed with the computer statistical program SPSS 16.0 for the Microsoft Windows operating system. Basic statistical parameters were calculated: minimum and maximum results, arithmetic mean and standard deviation.

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The t-test was used to determine the significance of the differences, and the Pearson and Spearman coefficients were used to determine the statistical significance of the correlation between the observed variables.

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RESULTS AND DISCUSSION

Orientation and mobility of respondents with visual impairment in relation to the low vision category are shown in Table 1. Between respondents with moderate low vision and severe low vision, there were no statistically significant differences between the arithmetic means, nor was a significant correlation achieved. On the variable of auditory ability, it was not possible to determine statistically significant differences of arithmetic means or the correlation of the difference, because all respondents scored the same number of points on that variable.

Table 1. Orientation and mobility of respondents with visual impairment in relation to the category of low vision

Variable	Severe low vision (N=16)		Moderate low vision (N=19)		t	p_{sig}	r_s	p_{sig}
	M	SD	M	SD				
Orientation towards one's own body	125,50	6,87	121,79	11,56	1,13	0,27	-0,21	0,22
Body posture	18,00	0,00	17,89	0,315	1,33	0,19	-0,23	0,19
Operating with concepts	24,00	0,00	22,63	5,50	0,99	0,33	-0,23	0,19
Physical abilities	24,00	0,00	23,89	0,46	0,95	0,36	-0,16	0,37
Auditory abilities	12,00	0,00[a]	12,00	0,00[a]	a.	a.	a.	a.
Orientation in a building and some of its rooms	74,50	2,68	74,26	3,05	0,24	0,03	-0,03	0,86
Orientation in the yard	42,50	3,22	42,58	3,11	-0,07	0,94	-0,03	0,87
Orientation and mobility overall	320,50	8,99	315,05	18,37	1,08	0,28	-0,14	0,43

Table 2. shows the results related to determining the existence of correlation and statistically significant differences of arithmetic means in orientation and mobility in respondents with visual impairment in relation to the type of visual impairment.

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It can be observed that there were no statistically significant differences and no correlation between the observed variables. On the auditory ability variable, it was not possible to determine statistically significant differences in arithmetic means or correlation, because respondents with both functional and organic visual impairment achieved the same results.

Table 2. Orientation and mobility of respondents with visual impairment in relation to the type of visual impairment

Variable	Functional (N=17)		Organic (N=18)		t	p_{sig}	r_s	p_{sig}
	M	SD	M	SD				
Orientation towards one's own body	122,11	11,79	124,77	7,46	-0.80	0,43	0,15	0,40
Body posture	17,88	0,33	18,00	0,00	-1,50	0,14	0,25	0,14
Operating with concepts	22,47	5,81	24,00	0,00	-1,03	0,27	0,25	0,14
Physical abilities	23,88	0,48	24,00	0,00	0,36	0,31	0,18	0,31
Auditory abilities	12,00	0,00[a]	12,00	0,00[a]	a.	a.	a.	a.
Orientation in a building and some of its rooms	74,06	3,17	74,67	2,57	-0,62	0,54	0,09	0,58
Orientation in the yard	42,41	3,26	42,67	3,07	-0,24	0,81	0,08	0,63
Orientation and mobility overall	314,82	19,21	320,11	9,06	-1,05	0,30	0,10	0,55

In relation to the category of low vision, there were no statistically significant differences between the arithmetic means, nor statistically significant correlations between respondents with severe low vision and respondents with moderate low vision. Both groups of respondents have approximately equally developed abilities of orientation and mobility, regardless of the category of low vision. These results indicate that for both respondents, the remaining senses and not the remains of sight are the dominant channels through which they receive information during orientation and movement.

In relation to the type of visual impairment, there were also no statistically significant differences in orientation and mobility. So, regardless of whether it is a functional or organic visual impairment, it did not affect the ability of orientation and mobility of our respondents. Also, there were no statistically significant correlations between orientation and mobility and the type of visual impairment.

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CONCLUSIONS

The results of the examination of the ability of orientation and mobility in relation to the category of low vision showed that there was no difference between respondents with moderate and severe low vision. This leads us to the conclusion that the category of low vision has no influence on the ability of orientation and mobility in visually impaired children. Regarding the type of visual impairment, there were also no statistically significant differences or correlation. Therefore, the type of visual impairment does not have a significant impact on the orientation and mobility of visually impaired children.

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LATENT STRUCTURE OF INTERPERSONAL TRUST AND GROUP AFFILIATION OF CHILDREN WITHOUT PARENTAL CARE

LATENTNA STRUKTURA INTERPERSONALNOG POVJERENJA I GRUPNE PRIPADNOSTI DJECE BEZ RODITELJSKOG STARANJA

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ABSTRACT

The aim of the study was to determine the latent structure of manifest variables of interpersonal trust and group affiliation of children without parental care. The research included a sample of 122 respondents of both genders, who benefited care in the Children's SOS Village in Gračanica, the Village of Peace in Turija and the Home for Children without Parental Care in Tuzla. In order to verify the set aim of the research, the Scaler of group affiliation and the Interpersonal trust test were used. A multivariate method of exploratory factor analysis was used to determine latent dimensions. The obtained data processed in the statistical package SPSS 20 for Windows. Based on the obtained research results, four factors were determined that determine the cause-and-effect relationships of interpersonal trust and group affiliation of children without parental care.

Key words: Children without parental care, educator, interpersonal trust, group affiliation.

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SAŽETAK

Cilj istraživanja bio je utvrditi latentnu strukturu manifestinih varijabli interpersonalnog povjerenja i grupne pripadnosti djece bez roditeljskog staranja. Istraživanjem je obuhvaćen prigodan uzorak od 122 ispitanika oba pola, koji su zbrinuti u Dječijem SOS selu Gračanica, Selu mira Turija i Domu za djecu bez roditeljskog staranja u Tuzli. U svrhu provjere postavljenog cilja istraživanja korišteni su Skaler grupne pripadnosti i Test interpersonalnog povjerenja. Za utvrđivanje latentnih dimenzija korištena je multivarijatna metoda eksplorativne faktorske analize. Dobijeni podaci obrađeni su u statističkom paketu SPSS 20 for windows. Na osnovu dobijenih rezultata istraživanja dobijena su četri faktora koji determinišu uzročno-posljedične veze interpersonalnog povjerenja i grupne pripadnosti djece bez roditeljskog staranja.

Ključne riječi: djeca bez roditeljskog staranja, vaspitač, interpersonalno povjerenje, grupna pripadnost.

INTRODUCTION

Family life is of the utmost importance and there is no other place in society like it. Children are attached to their parents even when the family is functioning poorly. If a child grows up in poor conditions, but its parents have not left it, it will feel safer in such conditions than in institutions with much better material conditions, because it will know that there is someone who takes care of it until it is able to take care of itself. Of course, there are situations in which the life of a child in the family is impossible and it is necessary to move it out of the biological family, but this option should be considered as a last resort (Bowlby, 1953). Children are left without parental care for various reasons: death of one or both parents, abandonment of the child by one or both parents, neglect of the child, child abuse and so on. Research shows that almost 60% of children are separated from their families for only one reason, about 30% for two reasons and about 0.3% of children without parental care for three or more reasons (Unicef, 2010). If children have been deprived of parental care for any reason, they will be taken under the state care, which is obliged to provide the biological family with social, psychological and other forms of support for overcoming the crisis situation. When, in addition, in the biological family, the child's further life is risky and the child's rights and interests are endangered by the child's stay in the biological family, the state is obliged to apply some of the legally prescribed forms of protection (Grujić, 2005). Foster home accommodation is considered a form of protection as a last resort, but the situation in our country shows that most children stay in the foster home until the age of eighteen and that this form of protection is dominant, although it should only be temporary (Arula, 2006).

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Sometimes it happens that the foster home is the only option for child protection, but it is certainly an indisputable fact that the internal organization of the foster home is rigid, despite numerous changes when it comes to organization and management (Buljubašić, 2004). Research shows that institutional accommodation is more prevalent in the Federation of Bosnia and Herzegovina and the family accommodation of children is more prevalent in the Republic of Srpska (Selimović and Sofović, 2010). As another form of protection of children without parental care, children's villages are stated, which arose as a need to overcome the shortcomings of the classic institutional care of children without parental care. Such institutions initially cared for war orphans. However, today they are also used for the care of abandoned children and are represented in about a hundred countries (Tomić et al., 2006). The humanitarian organization SOS (Save our ship) Kinderdorf has built two children's villages in Bosnia and Herzegovina - in Sarajevo and Gračanica. Children's villages have existed in our area for a short time, but despite that, they have given good results and an extremely strong emotional connection is quickly established between the children and the mother. The fact that the mother is constantly with the children and that she performs all the actions that biological mothers do for their children certainly contributes to the establishment of a strong and stable emotional connection between stepmothers and children (Buljubašić, 2004). Biological siblings have a prominent position in the social network of children and youth living in SOS Children's Villages. Thanks to the presence of biological siblings, the family they came from is always present (Sting, 2013). The Village of peace in Turija, Lukavac, was built in 1998 from the Rudolf Walter Foundation. In that village, children are placed in families that are organized similarly to family groups and one family consists of five to ten children. Foster home workers, commonly referred as aunts, who are permanently settled in the village, take care of the children (Buljubašić, 2004).

Children without parental care come to institutions with different experiences, different history of their biological family and different reasons for separation, which makes them especially vulnerable (Laklija, 2009). Socialization of children without parental care in foster home conditions can be successful only if the foster home functions harmoniously, if the staff and employees are ready for conscientious work and who will help children realize their abilities and interests (Dizdarević, 1999). Socialization often means the totality of social influence on the individual (Arslanagić, 1999). Among the most important agents of socialization we can include family, school, peers, mass media, organizations, occupation, marriage and parenthood (Potkonjak and Šimleša, 1989). Adults go through different types of secondary socialization, which we can call re-socialization because they have experience built into their personal structures. Accordingly, children without parental care who are handed over to society for care in the later period of their lives go through a process of re-socialization. Because children know what their lives looked like earlier, they go through a painstaking process of weaning from previous experiences and adjusting to new ones. Significant people in children's lives then become educators and foster home employees.

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In order for educators to be able to help children adapt to the new environment, they need to approach this call wholeheartedly. Empathy plays an important role in this vocation, because the suffering the child went through brought it closer to the world of adults (Mavrak, 1999). Among the qualities that an educator must possess, the following stand out: nobility, emotionality, empathy, patience, care and moderation. Educators should be emotionally and socially mature, in order to influence children by their own example to develop their potentials to the optimal level in the process of socialization (Dizdarević, 1999). The inclusion of children without parental care in schools is very important for this group of children and their secondary socialization. In addition to the adoption of teaching contents, students gain numerous experiences by participating in teaching and extracurricular activities. Children without parental care put the understanding of the school for their personal problems in the first place and then they put the help in learning in the second place (Arslanagić, 1999). The teacher has an important role in the process of socialization of children. He/she is first and foremost an educator. Teaching children is not only the hardest job in school, but the hardest job at all (Glasser, 1994). The teacher is another important person in the life of every child, so he/she should show interest in the private life of children. He/she needs to create an atmosphere in the classroom that will have a motivating effect on the students. A warm and cordial atmosphere, respect for the personality of each child strengthens the motivation to learn. In addition to school and teachers, peers have a significant role in the process of socializing children. Children have a need to socialize and affiliate, as well as to be accepted by other children in the class, school and other groups. Peers significantly influence the formation of attitudes and personality building of the child. In a group of peers, self-reliance, independence, responsibility, friendships, etc. are achieved. Acceptance of the child by its peers raises the child's sense of security. Children in the foster home share the same or similar destiny and in school they meet children who have different experiences, which plays an important role in the process of socialization (Arslanagić, 1999). Primary and secondary socialization of children without parental care takes place in various institutions and children from an early age are referred to educators, brothers, sisters, other children from the institution, pedagogues, school friends and teachers. The aim of this study was to determine the latent structure of manifest variables of interpersonal trust and group affiliation of children without parental care.

MATERIAL AND METHODS

Sample of participant

The sample for this study consists of respondents that taken care of in the Children's SOS Village in Gračanica, the Children's Village of Peace in Turija and the Home for Children without Parental Care in Tuzla. The research included a suitable sample of 122 respondents of both genders, of which 64 were female and 58 were male. The chronological age of the respondents ranged from 9 to 18 years.

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Method of conducting research

Prior to the research, the management of institutions for the protection of children without parental care was contacted, followed by letters requesting the research and a meeting was held to clarify the purpose and goal of the research. After the approval, the testing began. The research was conducted in three institutions for the protection and care of children without parental care in the Tuzla Canton: Children's SOS Village in Gračanica, Village of Peace in Turija and Home for Children without Parental Care in Tuzla. The survey was conducted in groups by houses and families. Each group consisted of 3 to 7 members. The children were explained how to fill in the answer sheet and then they were read one question at a time. If the children did not understand a question, they asked for help or an explanation from the research conductor.

Measuring instruments

The Interpersonal Family Trust Test (TIPP) was used to assess interpersonal trust. This test consists of 24 questions that are divided into the following subtests: 1. Problem solving; 2. Happiness; 3. Conflict resolution; 4. Challenge, imagination. The first subtest called Problem Solving consists of 6 items and the second, third and fourth contain 5 items each. For the purposes of this research, the TIPP test has been modified to be adapted for children without parental care, i.e. the stepmother is a substitute for the biological mother, pedagogue for the biological father, teachers for grandparents and sisters and brothers are joined by foster home members. Answers are offered on a scale from 0 to 4. Each item is read to the child and then the children write one of the following scale values on the answer sheet: 0 = says nothing about it, 1 = talks about it little and rarely, only talks about it exceptionally, 2 = talks about it occasionally, 3 = talks about it regularly, whenever needed to talk about it, 4 = asks for help and advice on this issue. The test score is obtained by summing all the items. Each subtest has a separate score and compositely makes up the score of the entire TIPP test.

The Group Affiliation Scaler (SGP) was used to assess group affiliation. This scaler consists of 28 items or tasks. The first 13 items give the score of group affiliation to the out-of-school group and the remaining 15 items give the score of affiliation to the group in school. In the initial form, this instrument had 20 + 20 particles, but by factorization this number was reduced to 28. This instrument measures group affiliation. All questions are answered with a Likert-type scale where the values are as follows: 1 = I completely disagree; and 5 = I completely agree. As in the Interpersonal trust test, each item is read to the children and they mark one of the offered scale values on the answer sheet.

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Data processing methods

A multivariate method of exploratory factor analysis was used to verify the set research aim. The obtained data was processed in the statistical package SPSS 20 for windows. The following is a presentation of the research results.

RESULTS AND DISCUSSION

In order to determine the cause-and-effect relationships, i.e. to reduce the manifest variables to latent dimensions, a multivariate method of exploratory factor analysis was applied. The system of manifest, i.e. dependent variables includes variables related to affiliation to an out-of-school group, affiliation to a group in school, as well as variables of interpersonal trust. In addition to these variables, the system of manifest variables also includes the moderator of variables, which is school achievement, which can theoretically be expected to saturate with one of the isolated factors. The Kaiser-Meyer-Olkin test was calculated and based on the obtained results (χ^2 = 1504.39; p = 0.000), the system of manifest variables was justifiably subjected to factor analysis (Table 1). When speaking about rotations and criteria: the direct oblimin rotation and the Guttma-Kaiser criterion were selected.

Table 1. KMO and Bartlett test

Kaiser-Meyer-Olkin	0,832
χ^2	1504,38
df	171
p	0,000

Table 2 shows isolated main components, i.e. factors with an intrinsic value above 1. The first factor carries the most variability and is the most important in explaining the cause-and-effect relationships of group affiliation and interpersonal trust of children without parental care. The first factor explains 37.26% of the variance, the second factor explains 13.03%, the third factor explains 11.32%, while the fourth factor explains 7.34% of the variance.

Table 2. Total variance explained

Components	Intristic values	Percentage of variance	CUM %
1	7,07	37,26	37,25
2	2,47	13,03	50,29
3	2,15	11,32	61,61
4	1,39	7,34	68,96

Note: CUM – Cumulative percentage

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Table 3 shows the communalities of the variables and it can be seen, that they range from 0.42 to 0.85. The highest communities are achieved by variables in the subtest "Happiness" for: respondent addressing to the pedagogue (0.85) and addressing to the teacher (0.83); and in the subtest "Conflict Resolution" for: respondent addressing to the sister, brother and family members (0.81). Also, high communities are achieved by variables on the subtest "Challenge, imagination" for: respondent addressing to the pedagogue (0.79) and addressing to the teacher (0.75); and on the subtest "Problem solving" where respondents address to the pedagogue (0.74). The lowest communality was achieved by the variable of school achievement (0.42).

Table 3. Communalities of variables

	Initially	Extraction
School achievement	1,000	0,421
Affiliation to an out-of-school group	1,000	0,513
Affiliation to a school group	1,000	0,589
Problem solving Educator	1,000	0,656
Problem solving Pedagogue	1,000	0,740
Problem solving Sister, brother, housemates	1,000	0,717
Problem solving Teacher	1,000	0,667
Happiness Educator	1,000	0,679
Happiness Pedagogue	1,000	0,847
Happiness Sister, brother, housemates	1,000	0,747
Happiness Teacher	1,000	0,825
Conflict Resolution Educator	1,000	0,722
Conflict Resolution Pedagogue	1,000	0,634
Conflict resolution Sister, brother, housemates	1,000	0,813
Conflict Resolution Teacher	1,000	0,611
Challenge, imagination Educator	1,000	0,699
Challenge, imagination Pedagogue	1,000	0,787
Challenge, imagination Sister, brother, housemates	1,000	0,680
Challenge, imagination Teacher	1,000	0,754

Table 4 shows the parallel and orthogonal projections on the obtained and isolated components, i.e. factors. It can be seen that the first isolated factor determines 7 variables related to: "Affiliation to an Out-of-School Group", "Affiliation to a Group in School", "Problem Solving - Educator", "Conflict Resolution - Educator", "Challenge, Imagination - Educator", "Happiness - Educator" and "School Achievement".

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Through insight into the structure of the obtained variables, i.e. the first isolated factor that significantly explains the cause-and-effect relationship of group affiliation and interpersonal trust, it can be concluded that respondents who are more oriented to affiliation to an out-of-school group and affiliation to a group in school, address to educators in order to solve problems and conflicts and additionally, achieve better school achievement. Based on the structure of isolated variables, the first factor can be called the *Factor of Group Affiliation and Trust in Educators*.

The second factor consists of the variables "Conflict Resolution - Sister, Brother and Housemates", "Problem Solving - Sister, Brother and Housemates", "Happiness - Sister, Brother and Housemates" and "Challenge, Imagination - Sister, Brother and Housemates". Insight into the structure of isolated variables, this factor can be called the *Sister / Brother / Housemates Trust Factor*.

The third factor consists of the variables "Happiness - Pedagogue", "Problem Solving - Pedagogue", "Challenge, Imagination - Pedagogue" and "Conflict Resolution - Pedagogue". Insight into the structure of isolated variables, this factor can be called the *Factor of Trust in the Pedagogue*.

The fourth factor consists of the variables "Happiness - Teacher", "Challenge, imagination - Teacher", "Conflict Resolution - Teacher" and "Problem Solving - Teacher". Insight into the structure of isolated variables and since these are negative parallel and orthogonal projections on the isolated factor, this factor can be called the *Factor of (Dis)Trust in the Teacher*.

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Table 4. Parallel and orthogonal projections

	I FACTOR		II FACTOR		III FACTOR		IV FACTOR	
	PAP	ORP	PAP	ORP	PAP	ORP	PAP	ORP
Affiliation to an Out of School Group	0,760	0,790						
Affiliation to a Group in School	0,743	0,772						
PS – Educator	0,692	0,749						
CR - Educator	0,675	0,726						
CI – Educator	0,597	0,707						
Happiness - Educator	0,556	0,648						
School Achievement	0,507	0,569						
CR - Sister, Brother and HM			0,917	0,896				
PS - Sister, Brother and HM			0,882	0,859				
Happiness - Sister, Brother and HM			0,868	0,830				
CI - Sister, Brother and HM			0,731	0,802				
Happiness - Pedagogue					0,929	0,917		
PS- Pedagogue					0,866	0,854		
CI – Pedagogue					0,791	0,852		
CR – Pedagogue					0,699	0,750		
Happiness – Teacher							– 0,918	– 0,899
CI – Teacher							– 0,866	– 0,865
CR – Teacher							– 0,593	– 0,742
PS – Teacher							– 0,585	– 0,698

Note: PAP – parallel projections; ORP – orthogonal projections; PS – Problem Solving; CR – Conflict Resolution; CI – Challenge, Imagination; HM – Housemates;

Table 5 shows the correlation of the obtained factors. It can be concluded that there is a relation (although insignificant) between the factors: Factor of Group Affiliation and the Factor of Trust in the Educator, Factor of Trust in Sister / Brother, Factor of Trust in the Pedagogue with the Factor of (Dis) Trust in the Teacher. In other words, children who are oriented towards group affiliation who accomplish greater achievement and have trust in educators, siblings, family members and pedagogues have less trust in teachers.

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Also, Table 5 shows an insignificant correlation between the first and second factors, i.e. respondents who are oriented towards group affiliation, who accomplish better achievement and have trust in educators, at the same time have trust in siblings and housemates.

Educators are very important to children without parental care, because they are a substitute for parents, especially if they are permanently settled in institutions with the children. Research on the relationship between school achievement and social skills showed that the most negative assessments of the quality of their own social skills have students who achieve good academic results and the most positive assessments have students who achieve excellent academic results, while students, who achieve very good academic results, keep pace with student who achieve excellent results, slightly deviating from their answers. Girls achieve better academic results than boys and therefore rate their social skills higher. Also, student who achieve very good and excellent academic results have a high threshold of tolerance for teasing, it is harder to provoke them, which indicates well-developed social skills of negotiation and conflict resolution (Buljubašić-Kuzmanović and Botić, 2012).

Children without parental care have a lot of trust in their siblings and housemates, because together with the educator they form a family.

Biological siblings have a prominent position in the social network of children and youth living in SOS Children's Villages. Thanks to the presence of biological siblings, the family they come from is always present. Memories of the family are constantly updated through shared experiences and memories. The bonds between siblings who are placed together in alternative care are close and based on trust. They represent each other as people, who can share and talk about problems - both emotional and intimate. Apart from biological siblings, other children in the village are also important, as they are considered good or even best friends (Sting, 2013).

So, children who address to a pedagogue for conflict resolution, also address to the pedagogue for problem solving, happiness, challenge and imagination. Pedagogues are permanent employees in institutions for the protection of children without parental care and children have the opportunity to always address to them for help or advice.

In order for a pedagogue to be an educator, he/she must act as a person with both what he/she says and what he/she does. The attitudes of pedagogues must reflect the faith in the creative powers of students (Hadžić-Suljkić, 2014). Pedagogues should be responsible and consistent, encourage teamwork and know the conditions of open stimulating communication (Šnidarić, 2009).

This research showed that children without parental care have the least trust in teachers.

Bezinović and Ristić-Dedić obtained similar results in 2004 in their research "School from the perspective of students". The collected data indicate very poor and insufficient working communication between teachers and students. Less than 1/3 of the respondents think that they discuss teaching and examining with teachers sufficiently.

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Cooperation of students and teachers on activities that are not directly related to teaching and communication outside of teaching are rare. According to the obtained data, teachers do not cooperate enough with students and thus do not fulfil their pedagogical role. Therefore, it is necessary to create working conditions and enrich educational programs in which teachers will have the opportunity to cooperate with students outside of class.

Table 5. Correlation between factors

Factors	1	2	3	4
1	1,000	0,234	0,176	– 0,331
2	0,234	1,000	0,145	– 0,326
3	0,176	0,145	1,000	– 0,318
4	– 0,331	– 0,326	– 0,318	1,000

CONCLUSION

Based on the obtained research results, four factors were obtained that determine the cause-and-effect relationships of interpersonal trust and group affiliation of children without parental care. Although we know that teachers are important personalities in the life of every child, this research has shown that children without parental care have the least trust in teachers (Factor of (Dis)Trust in Teachers).

The results obtained in this way indicate that more needs to be done to build trust between children without parental care and the teachers. Teachers can help children achieve better academic results, which will develop a sense of competence in children. It would be desirable to involve children in various extracurricular activities, so that communication between teachers and children would not be reduced to a minimum or be directly related only to teaching. Given the fact that the absence of parental care is a phenomenon that cannot be completely eradicated, teachers should show more sensitivity to the problems that children without parental care face in everyday life and thus gradually build trust.

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REPRESENTATION OF UNDESIRABLE BEHAVIORS IN BLIND AND PARTIALLY SIGHTED STUDENTS

ZASTUPLJENOST NEPOŽELJNIH OBLIKA PONAŠANJA KOD SLIJEPIH I SLABOVIDNIH UČENIKA

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ABSTRACT

The aim of this study was to examine the prevalence of undesirable behaviors in blind and partially sighted primary school students. The sample consisted of two groups of students: blind (N = 19), partially sighted (N = 44), obtained from the population of students from first to eighth grade of regular primary schools in the Tuzla Canton and the population of blind and visually impaired boarding students also from first to eighth grade at the Center for Blind and Visually Impaired Children and Youth Nedžarići in Sarajevo and the Center "Budućnost" in Derventa. Variables are divided into 2 groups: independent variables and variables for estimating the prevalence of undesirable behaviors. The obtained results were processed by descriptive analysis and analysis of variance. By analyzing the results on the variables for estimating the prevalence of undesirable forms of behavior, we can conclude that the two examined groups differ statistically significantly in most of the examined variables. Statistically significant differences in the prevalence of undesirable behaviors were shown in younger primary school age, while statistically significant differences in the prevalence of undesirable behaviors in blind and partially sighted students were not shown in older primary school age.

Key words: Blind students, partially sighted students, undesirable behaviors.

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SAŽETAK

Cilj ovog istraživanja je bio ispitati zastupljenost nepoželjnih oblika ponašanja kod slijepih i slabovidnih učenika osnovnoškolskog uzrasta. Uzorak ispitanika sačinjavale su dvije grupe učenika: slijepi (N=19), slabovidni (N=44), dobiveni iz populacije učenika od prvog do osmog razreda redovnih osnovnih škola na području Tuzlanskog kantona i populacije slijepih i slabovidnih učenika internatskog smještaja također od prvog do osmog razreda u Centrima za slijepu i slabovidnu djecu i omladinu Nedžarići u Sarajevu i Centru „Budućnost“ u Derventi. Varijable su podijeljene u 2 grupa: nezavisne varijable i varijable za procjenu zastupljenosti nepoželjnih oblika ponašanja. Dobiveni rezultati su obrađeni deskriptivnom analizom i analizom varijanse. Analizom rezultata na varijablama za procjenu zastupljenosti nepoželjnih oblika ponašanja možemo zaključiti da se dvije ispitivane grupe statistički značajno razlikuju kod većine ispitivanih varijabli. Statistiki značajne razlike u zastupljenosti nepoželjnih oblika ponašanja su se pokazale kod malađeg osnovnoškolskog uzrasta, dok se kod starijeg osnovnoškolskog uzrasta nisu pokazale statistički značajne razlike u zastupljenosti nepoželjnih oblika ponašanja kod slijepih i slabovidnih učenika.

Ključne riječi: slijepi učenici, slabovidni učenici, nepoželjni oblici ponašanja.

INTRODUCTION

Behavior involves complex and structural forms of an individual's reaction to stimuli and situations. It is determined by the interaction of biological factors, skills and achievements of the individual and his/her personal perception of relevant causal links between events and their consequences, and the perception of their own ability to cope (Šehović, 2000). Glasser (2000) points out that people choose their behavior and are responsible for the consequences of their behavior. Behavior is a series of actions by which we meet our needs and which over time become a habit (Sullo, 1995). Adaptive behavior is behavior defined as a way of meeting the natural and social requirements of the environment (Cattell, 1950; Babić, 2005). The adaptation of visually impaired people depends on their adaptive potential, as well as on the help and requirements of the social environment. Adverse behaviors may occur as a direct or indirect consequence of visual impairment. Namely, a visually impaired child can neither control its environment, nor adopt adequate forms of behavior by imitating others (Pinoza-Kukurin, 1989). Therefore, lack of eye contact, inability to visually monitor reactions to their nonverbal activity and its alignment with contextual requirements, peers of typical development can interpret as inadequate social behavior of a blind child (Vučinić et al., 2013). Among the causes of undesirable behaviors are factors on the side of the special educational institution. On the other hand, difficulties in establishing adequate contact with the environment and understanding the world around them can lead to the manifestation or intensification of behavioral and emotional problems (Gligorović and Buha, 2013).

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Stereotypical behaviors in blind children can reduce their personal effectiveness and opportunities for social integration (Salleh and Zainal, 2010).

In visually impaired children, behavioral problems can also be the result of fundamental insecurity and constant fear of rejection (Grbović, 2011). The high incidence of anxiety in visually impaired children can be attributed to environmental conditions and the risks they are exposed to due to the psychosocial effects of visual impairment (Bakla et al., 2011). Undesirable forms of behavior in the form of timidity, anxiety, reticence, aggression, hyperactivity, depression and reduced initiative and communication are often manifested in children with impaired vision (Poljan, 2007; Nenadić, 2007). The most common behavioral problems in visually impaired children are reticence, hyperactivity, irritability and aggression (Sharma et al., 2002). All forms of behavior, which the social environment perceives as conspicuous, unacceptable or as those that prevent or hinder the adoption of new habits and skills, and thus hinder their socialization, are understood as undesirable behavior (Teodorović, Frey, 1986). Eškirović (2002) points out that it is necessary to get to know in as much detail as possible all the biopsychosocial and educational problems that blind and visually impaired children face, and to point out the ways of reducing and eliminating them.

RESEARCH METHODS

Sample of respondents

The sample of respondents consisted of two groups of students: blind and partially sighted students. The sample of respondents included 63 students, of which 19 were blind students, of which 11 were male and 8 were female. There were 44 partially sighted students, of which 24 were males and 20 females. The sample was obtained from the population of blind and visually impaired children attending regular schools in the Tuzla Canton from the first to the eighth grade, and populations of blind and visually impaired children from first to eight grade, who attend education and rehabilitation at the "Center for Blind and Visually Impaired Children and Youth" Nedžarići in Sarajevo and the "Institute for the Blind and Visually Impaired Budućnost" in Derventa. The selection criteria were: children with visual impairment, without intellectual disabilities, both genders, aged 6 to 15.

Sample variables

For the collection of general data, the Anamnestic Journal was used, then the data from the document of findings and opinion, which is an integral part of the student file, were used. The standardized scale of adaptive behavior AAMD part II (Igrić, Fulgosi-Masnjak, 1991) was used to examine the prevalence of undesirable forms of behavior.

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Method of research conduction

Prior to the study, support was provided by the institutions where the study was conducted and the parents of the children who were included in the study. Ethical considerations were taken into account during the scientific research during the process of data collection and analysis of results. The scale is based on the recording of observed behaviors, so that data was collected from teachers and educators who are most in contact with the respondent.

Data processing methods

SPSS 17.0 for Windows software package was used for data processing. Several types of statistical tests were used in the procedure. In addition to calculating descriptive-statistical parameters, measures of central tendency and variability, the test on the difference between the arithmetic means of two or more basic sets and the analysis of variance were used as parametric tests.

RESULTS AND DISCUSSION

Table 1 shows the results of the test on the existence of a difference in the prevalence of undesirable forms of behavior between blind and partially sighted students from first to third grade. According to the obtained test results, we conclude that there are statistically significant differences between blind and partially sighted students in antisocial behavior where $p < 0.05$ and propensity to hyperactive behavior where p is also <0.05. Table 1 shows that the average value of non-social behavior is 41.00, with an average deviation of 29.70 in blind students where we see that those values are higher than in partially sighted students, where the average value was 22.69 with an average deviation of 7.25 . In the area "prone to hyperactive behavior", the blind also have a higher average value of 65.00 with an average deviation of 21.21, as opposed to the partially sighted who had slightly lower average values of 51.54, with an average deviation of 5.55. From the obtained results we can conclude that both forms of undesirable behaviors occur more often in blind than in partially sighted children of this age. Similar results were obtained by Pinoza-Kukurin (1989), who conducted research on undesirable behaviors in 16 blind and partially sighted students, from first to sixth grade of primary school at the Vinko Bek Center for Education in Zagreb. In this group of respondents, hyperactivity and resistance to authority were found to be the most pronounced forms of undesirable behavior. Also, Kaffemaniene (2000) conducted a study on 50 children with visual impairment aged 5 to 7, and came to results that show: mild emotional difficulties and mild behavioral deviations in 34% of children, a combination of mild emotional and moderate symptoms of behavioral problems in 26% of children, a combination of severe emotional and behavioral problems in 34% of children.

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Table 1. Prevalence of undesirable behaviors in blind and partially sighted students from 1st to 3rd grade

FORMS OF UNDESIRABLE BEHAVIOR	GROUP OF RESPONDENTS	M	SD	F	df1	df2	p
Propensity for violent behavior and destruction	Blind	30,00	0,00	0,14	1	13	0,710
	Partially sigthed	30,77	2,77				
Antisocial behavior	Blind	41,00	29,70	4,99	1	13	0,044
	Partially sighted	22,69	7,25				
Resistance to authority	Blind	35,00	35,36	3,13	1	13	0,100
	Partially sighted	13,62	13,04				
Irresponsible behavior	Blind	55,00	7,07	2,83	1	13	0,116
	Partially sighted	50,77	2,77				
Reticent behavior	Blind	20,00	0,00	0,35	1	13	0,561
	Partially sighted	30,38	0,00				
Stereotypical behavior and mannerisms	Blind	50,00	14,14	0,11	1	13	0,741
	Partially sighted	46,92	11,82				
Inappropriate habits in contact with others	Blind	40,00	0,00	0,14	1	0	0,710
	Partially sighted	40,77	2,77				
Unacceptable speaking habits	Blind	50,00	0,00	0,31	1	13	0,584
	Partially sighted	53,08	7,51				
Unacceptable and unusual habits	Blind	40,00	0,00				
	Partially sighted	40,00	0,00				
Behavior directed against oneself	Blind	70,00	0,00				
	Partially sighted	70,00	0,00				
Predisposition to hyperactive behavior	Blind	65,00	21,21	4,98	1	13	0,044
	Partially sighted	51,54	5,55				
Unacceptable sexual behavior	Blind	80,00	0,00				
	Partially sighted	80,00	0,00				
Mental disorders	Blind	10,00	0,00	1,44	1	13	0,250
	Partially sighted	24,62	16,64				
Use of drugs	Blind	60,00	0,00				
	Partially sighted	60,00	0,00				

Table 2 shows the results of the test on the existence of a difference in the prevalence of undesirable forms of behavior between blind and partially sighted students from fourth to fifth grade.

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According to the test results, since p> 0.05 is the level of significance, we conclude that there is no statistically significant difference in centile ranks between blind and partially sighted students of this age in any form of undesirable behavior. In undesirable forms such as irresponsible behavior, reticent behavior, behavior directed against oneself, unacceptable sexual behavior and drug use, the p-value was not calculated since the centile values are the same in both groups of students, i.e. the centile ranks are constant. Table 2 shows that for the variable antisocial behavior in this age group, the blind have a lower average value of 20.00, with an average deviation of 0.00 in the blind in the age group from fourth to fifth grade, while the partially sighted have a higher average value of 42.00, with an average deviation of 30.33. In the area of hyperactive behavior, the blind of older school age have a lower average value of 40.00, with an average deviation of 0.00, and the partially sighted have a higher average value of 57.00, with an average deviation of 23.35 in relation to lower grade students.

Table 2. Prevalence of undesirable behaviors in blind and partially sighted students from fourth to fifth grade

FORMS OF UNDESIRABLE BEHAVIOR	GROUP OF RESPONDENTS	M	SD	F	df1	df2	p
Propensity for violent behavior and destruction	Blind	30,00	0,00	2,66	1	8	0,141
	Partially sighted	42,00	16,43	7			
Antisocial behavior	Blind	20,00	0,00	2,63	1	8	0,143
	Partially sighted	42,00	30,33				
Resistance to authority	Blind	20,00	0,00	1,00	1	8	0,347
	Partially sighted	29,00	20,12				
Irresponsible behavior	Blind	40,00	0,00				
	Partially sighted	40,00	0,00				
Reticent behavior	Blind	30,00	0,00				
	Partially sighted	30,00	0,00				
Stereotypical behavior and mannerisms	Blind	62,00	17,89	0,12	1	8	0,733
	Partially sighted	58,00	17,89				
Inappropriate habits in contact with others	Blind	50,00	0,00	1,00	1	0	0,347
	Partially sighted	56,00	13,42				
Unacceptable speaking habits	Blind	50,00	0,00	2,57	1	8	0,147
	Partially	64,00	19,49				

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	sighted						
Unacceptable and unusual habits	Blind	44,00	8,94	0,31	1	8	0,593
	Partially sighted	50,00	22,36				
Behavior directed against oneself	Blind	70,00	0,00				
	Partially sighted	70,00	0,00				
Predisposition to hyperactive behavior	Blind	40,00	0,00	2,65	1	8	0,142
	Partially sighted	57,00	23,35				
Unacceptable sexual behavior	Blind	90,00	0,00				
	Partially sighted	90,00	0,00				
Mental disorders	Blind	18,00	10,95	0,59	1	8	0,463
	Partially sighted	28,00	26,83				
Use of drugs	Blind	70,00	0,00				
	Partially sighted	70,00	0,00				

Inspecting Table 3 according to the test results, since p> 0.05 of level of significance, we conclude that even within this age group of students in any form of undesirable behavior there is no statistically significant difference in centile ranks between blind and partially sighted students of this age . In several undesirable forms, the p-value was not calculated since the centile values are the same in both groups of students, i.e. the centile ranks are constant. The table shows that in this age group of students for the variable antisocial behavior the average value is 25.00, with an average deviation of 11.18 for blind students, while for the partially sighted students the average value was 29.29, with an average deviation of 15, 42. For the variable propensity to hyperactive behavior, the average value was 56.00, with an average deviation of 13.42 for blind students while the average value for partially sighted students was 57.86, with an average deviation of 13.11 for partially sighted students.

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Table 3. Prevalence of undesirable forms of behavior in blind and partially sighted students from sixth to seventh grade

FORMS OF UNDESIRABLE BEHAVIOR	GROUP OF RESPONDENTS	M	AS	F	df1	df2	p
Propensity for violent behavior and destruction	Blind	40,00	0,00	0,344	1	17	0,565
	Partially sighted	42,14	8,02				
Antisocial behavior	Blind	25,00	11,18	0,320	1	17	0,579
	Partially sighted	29,29	15,42				
Resistance to authority	Blind	32,00	4,47	0,31	1	17	0,584
	Partially sighted	34,64	10,09				
Irresponsible behavior	Blind	62,00	4,47	0,04	1	17	0,830
	Partially sighted	62,86	8,25				
Reticent behavior	Blind	50,00	0,00	2,08	1	17	0,167
	Partially sighted	57,50	0,00				
Stereotypical behavior and mannerisms	Blind	72,00	13,04	1,883	1	17	0,188
	Partially sighted	65,00	8,55				
Inappropriate habits in contact with others	Blind	60,00	0,00			0	
	Partially sighted	60,00	0,00				
Unacceptable speaking habits	Blind	50,00	0,00	0,66	1	17	0,428
	Partially sighted	52,14	5,79				
Unacceptable and unusual habits	Blind	50,00	0,00	0,34	1	17	0,565
	Partially sighted	51,43	5,35				
Behavior directed against oneself	Blind	40,00	0,00				
	Partially sighted	40,00	0,00				
Predisposition to hyperactive behavior	Blind	56,00	13,42	0,073	1	17	0,790
	Partially sighted	57,86	13,11				
Unacceptable sexual behavior	Blind	80,00	0,00				
	Partially sighted	80,00	0,00				
Mental disorders	Blind	28,00	13,04	0,485	1	17	0,496
	Partially sighted	33,93	17,23				
Use of drugs	Blind	80,00	0,00				
	Partially sighted	80,00	0,00				

According to the results in Table 4, since p> 0.05 of levels of significance, we conclude that within this age group of students in any form of undesirable behavior there is no statistically significant difference in centile ranks between blind and partially sighted students of this age.

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In several undesirable forms, the *p-value* was not calculated since the centile ranks of values in both mentioned groups of students, i.e. the centile ranks are constant.

Table 4. Prevalence of undesirable forms of behavior in blind and partially sighted students of eighth and ninth grade

FORMS OF UNDESIRABLE BEHAVIOR	GROUP OF RESPONDENTS	M	SD	F	df1	df2	p
Propensity for violent behavior and destruction	Blind	52,86	7,56	0,00	1	17	0,984
	Partially sighted	52,92	5,42				
Antisocial behavior	Blind	28,57	18,64	0,08	1	17	0,780
	Partially sighted	26,25	16,39				
Resistance to authority	Blind	25,00	13,23	0,48	1	17	0,496
	Partially sighted	31,25	21,33				
Irresponsible behavior	Blind	51,43	3,78	0,17	1	17	0,680
	Partially sighted	53,33	11,55				
Reticent behavior	Blind	39,29	17,42	0,97	1	17	0,337
	Partially sighted	47,50	0,00				
Stereotypical behavior and mannerisms	Blind	66,43	9,45	0,11	1	17	0,735
	Partially sighted	68,33	12,67				
Inappropriate habits in contact with others	Blind	60,00	0,00	0,56	1	0	0,461
	Partially sighted	60,83	2,89				
Unacceptable speaking habits	Blind	50,00	0,00	1,25	1	17	0,279
	Partially sighted	56,67	15,57				
Unacceptable and unusual habits	Blind	50,00	0,00				
	Partially sighted	50,00	0,00				
Behavior directed against oneself	Blind	80,00	0,00				
	Partially sighted	80,00	0,00				
Predisposition to hyperactive behavior	Blind	60,00	0,00	2,44	1	17	0,136
	Partially sighted	69,58	16,02				
Unacceptable sexual behavior	Blind	90,00	0,00				
	Partially sighted	90,00	0,00				
Mental disorders	Blind	15,00	6,45	0,43	1	17	0,521
	Partially sighted	18,75	14,16				
Use of drugs	Blind	70,00	0,00				
	Partially sighted	70,00	0,00				

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CONCLUSIONS

Based on the conducted research and analysis and interpretation of the obtained results, we came to the following conclusions: statistically significant differences in the prevalence of undesirable behaviors were shown in younger primary school age, while statistically significant differences in the prevalence of undesirable behaviors were not shown in older primary school age, in blind and partially sighted students. The presence of hyperactive behavior has been established, usually manifestations, motor restlessness, climbing on a table or on the window during a lesson or rehabilitation class, causing physical conflict with other children, inability to rest on a spot, interfering with other children, and generally infantile behavior that is at odds with the age of the child. Antisocial behavior was also present, which is certainly contributed by the social conditions in which the family develops, it primarily refers to the influence of the family in which the first social experiences are gained and certain behaviors are adopted. Rehabilitation work with blind and partially sighted students can have a positive effect on reducing the prevalence of undesirable forms of behavior and on the educational process, social and professional integration of this population.

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RESEARCH IN EDUCATION AND REHABILITATION

AIM & SCOPE

Journal **„Research in Education and Rehabilitation“ (RER, ISSN 2637-2037)** is a multidisciplinary peer reviewed international journal edited by Faculty of Education and Rehabilitation University of Tuzla. The aim of the journal is to share and disseminate knowledge and good practices in the field of education and rehabilitation and related disciplines. The journal was published under the title "Defectology" by 2017., but the development of scientific theory and practice resulted, among other things, by changing the name "Defectology" to the name of Education and Rehabilitation Science. Thus, the Jornal "Defektologija", which has been continuously published for 23 years, is terminologically aligned with the name of science which theoretical and practical results are being investigated. **Journal "Research in Education and Rehabilitation"** is published twice a year, containing original scientific papers, expert and review papers, case studies, books, doctoral and magisterial theses and information in the area of special education and rehabilitation, medicine, psychology, pedagogy and other related disciplines.

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ARTICLE PREPARATION

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Articles are submitted in DOC ili DOCX (A4) format (Size 21cm x 29,7cm), typed in spacing 1.15 lines, margins 2,5 (Left, Right, Top, Bottom), font Times New Roman 12. All titles and subheadings in the work must be bold.

Article includes the following sections listed in identical order: title page, abstract, introduction, materials and methods, results and discussion, reference.

RESEARCH IN EDUCATION AND REHABILITATION

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ABSTRACT

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INTRODUCTION

The introductory part of the article should generally consist of three parts: the first part should describe the research area, the second part should state the results of research by other authors who have dealt with a similar topic, and the third part of the introduction should define the aim of the research**.**

MATERIAL AND METHODS

The materials and methods should be described in the following obligatory sub-headings: "Participants", "Design and Procedures", "Measures" and "Statistical Analysis". The Methods section cannot contain figures or tables.

RESULTS AND DISCUSSION

In this section the author should describe the main findings in the text as well as the particular statistical significance of the data, and direct the reader to the tables and figures, implying that details are shown there. The discussion is combined with results and should discuss the study findings, and interpret them in the context of other trials reported in the literature providing evidence or counterevidence.

CONCLUSION

The Conclusion section contains an overview of the most important results, in which the main conclusions of the work are summarized. Also, the conclusion may include any suggestions for further research, as well as any possible shortcomings in the work.

LITERATURE

Journal uses APA reference citation. Literature may contain only the authors cited in the text. References in the text should be quoted in the following manner: (Bratovčić, 2018) or (Bratovčić and Mehmedinović, 2018) or if there are more than two authors, (Bratovčić et al., 2018). The references should be listed alphabetically at the end of the paper. If references to the same author have the same year, they should be differentiated using 2018a and 2018b etc.

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