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INTELLECTUAL ABILITIES OF BLIND AND PARTIALLY SIGHTED CHILDREN

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INTRODUCTION

Insight into a child's level and structure of intelligence provides information about the nature of learning difficulties, cognitive strengths and special needs. From a theoretical point of view, it reveals the role of vision in the development of different cognitive abilities and provides knowledge about the alternative developmental pathways. It is well known that a child's visual capacities cannot explain all the individual variation in intellectual abilities of visually impaired children, environmental factors such as quality of experience, parental expectations must be taken into consideration (Warren, 1994). Therefore, this study is an attempt to understand the nature of visual impairment: to what extent it can be considered sensory disability and to what extent cognitive or social.

Despite the research in the field of intelligence of visually impaired, there is still no theory on cognitive functioning of visually impaired. Several studies have provided some data, about visually impaired children's level of Verbal intelligence compared to the sighted (Groenveld, Jan, 1992; Warren, 1994) and superior short term memory of congenitally blind children (Hull, Mason, 1995), but less agreement is on the development of conceptual reasoning. Very little is known about haptic intelligence of blind children.

Studies of intelligence in the visually impaired population are important from the methodological standpoint of test construction and adaptation. It is agreed that tests designed for the sighted are not suitable for the assessment of visually impaired children's intelligence (Sattler, 2002; Tobin, 1994; Loftin, 1997) and psychologists need guidelines for test selection and modifications to perform a fair and objective assessment of a handicapped child (Hishinuma, 1985). Tests for the visually impaired are very difficult to construct because of many methodological reasons, such as small but heterogenic population. Several tests have been developed, some of them are old while most of them are unavailable. Lithuanian psychologists use WISC-III (We Intelligence scale for children) for the assessment of intelligence of visually impaired children. There are no studies of the performance of Lithuanian visually impaired children on WISC-III subtests which leads psychologists to subjective test administration and result interpretation decisions. It is not uncommon finding a report of learning disabilities

based on observations of poor performance on visual items or inadequate computation of Full scale IQ.

Intelligence of blind children is assessed by practitioners using only WISC-III Verbal IQ which leaves an important part of intelligence unreported. There is also a risk to perform a biased assessment if a child belongs to a cultural minority group and his native language is not Lithuanian. When ITVIC (Intelligence Test for Visually Impaired Children) was available in our country, it became possible to assess all important aspects of intelligence of blind children. In order to use this possibility test adaptation for Lithuania must be performed.

Intellectual development depends to great extent on the environment of an individual. Different countries vary in principles of education and rehabilitation of visually impaired people, therefore cross-cultural studies are an important aspect of intelligence research. This study compared intelligence structure of Lithuanian and Dutch visually impaired children. Although the ITVIC test has been constructed more than 10 years ago, there are no published studies on blind children's intelligence or possibilities of the test other than by authors. We couldn't find any publications on the intelligence of visually impaired measured by WISC-III.

The aim of the study – analyze the peculiarities and factors of intellectual performance of blind and partially sighted children.

Objectives:

1) Adapt the ITVIC test for the assessment of intelligence of blind children.
2) Evaluate the possibilities of WISC-III for the assessment of intelligence of blind and partially sighted children.
3) Describe the intelligence structure of blind and partially sighted children in comparison with normally sighted children:
    - compare intellectual abilities of blind, partially sighted and normally sighted children;
    - define intellectual strengths and weaknesses of blind and partially sighted children.
4) Establish the role of visual acuity, parental education level and place of residence factors in intellectual functioning of blind and partially sighted children.

5) Establish the role of intelligence on adaptive behavior and academic achievement (reading skills and school grades).

Scientific novelty. To this day, there are a very small number of studies in the field of intellectual abilities of visually impaired children in Lithuania. Most of them have been carried out in the 80's using not standardized tests, moreover, publications are hardly accessible. This study is the first in Lithuania to evaluate intelligence of blind and partially sighted children with WISC-III and ITVIC tests, therefore it deals with the problems of test adaptation for the special population. This study is also one of the few to measure intelligence of visually impaired children from the cross-cultural standpoint. The English translation of the ITVIC test has been published more than 20 years ago, but there are no published studies about test adaptation and intelligence of Braille educated students in other countries. We could not find studies of intelligence of blind and partially sighted children using WISC-III.

Practical implications. Results of the study give guidelines for reliable and valid psychological assessment of intelligence of blind and visually impaired children in educational and clinical setting. Following practical recommendations based on the results, psychologists will choose the assessment procedures and interpret test results with more precision. Practitioners are provided with the scientifically sound assessment instrument, adapted for Lithuanian blind and partially sighted children.

Defended statements

- Different experience results in intelligence structure differences of blind and partially sighted children despite the comparable Verbal abilities.
- Differently from sighted, not only visual acuity and amount of useful vision has influence on intelligence of blind and partially sighted children, but parental education level and place of residence (boarding school or home) as well. The importance of environmental influence on the intellectual abilities is similar to the one established in the studies of sighted population.
- Both visual acuity and intelligence of blind and partially sighted children are important factors for their academic achievement and acquisition of adaptive behavior skills. Amount of vision is the most important predictor of adaptive

behavior of blind children, whereas intelligence is the most important predictor of adaptive behavior of partially sighted children.

METHOD

Participants. Meeting the official criteria for visually impaired children, 42 blind (best corrected visual acuity < 0.04) Braille educated and 28 partially sighted (acuity 0.3-0.05) children participated in the study, 6 teachers and 62 parents. 29 of Blind children have usable vision, 13 – don't. Mean age of blind children – 12.45, partially sighted – 12.32. Other characteristics: children were also classified by parental education level (secondary, higher and University) and place of residence (a child lives in residential school during the week or with his parents). Blind group is representative of Braille educated children in the country (4/5 from this population participated).

Measures.

1) WISC-III LT (Wechsler Intelligence Scale for Children, 3rd edition). All Verbal and Performance subtests were used: Information, Arithmetic, Similarities, Vocabulary, Comprehension, Digit Span, Picture Completion, Coding, Picture Arrangement, Block Design, Object Assembly and Symbol Search.

2) Intelligence Test for Visually impaired Children (ITVIC). Constcucted and standardized in the Netherlands and Dutch speaking Belgium (Dekker, 1993; Dekker and Koole, 1992; Dekker et al., 1991) the test measures Verbal and haptic (requires active tactual perception) intelligence of Braille educated children of 6-16 years. The test is based on The Primary Factor Theory of Thurstone; both Verbal and Haptic subtests were constructed or taken from existing intelligence test batteries, for the seven Thurstone intelligence factors: Verbal comprehension, Memory, Numerical fluency, Reasoning, Perceptual speed and Spacial ability. The test contains 5 Verbal (two from WISC) and 8 Haptic subtests. The childs performance on the subtests can be compared to two types of age norms: for all Braille educated children and separate age norms for two vision groups.

The ITVIC battery contains a screening subtest to determine whether the children have any usable vision: The Dot test. If children cannot indicate how many dots (cross section 0,5mm) are printed on each of 10 cards, they are classified as having no usable vision. If they indicate the correct number on one or more cards, they have usable vision.

The ITVIC has 12 subtests: 5 Verbal (two from WISC) and 8 haptic subtests; one additional for younger children (which was not used in the study).

Verbal scale:

Digit Span. This subtest is part of the WISC-R intelligence test (WISC-III digit Span test was used for Lithuanian version of ITVIC). A child must repeat series of numbers both forwards and backwards. The test calls upon memory.

Learning Names. 14 wooden objects, each is given a name. The series is then given to a child 2 times and he is asked to say the name. Test calls upon associative memory.

Fluency. Made up of 5 questions. The child has one minute to give as many answers as he can in response to the question. This measures ideational fluency.

Verbal Analogies. A word must be chosen from 4 alternatives that forms the same relationship in the second pair as that is presented in the first word pair (A:B=C:?). This measures inductive reasoning.

Vocabulary. WISC-III. The child must give the meaning of words. This measures word knowledge and ability to express himself.

Haptic scale:

Perception of Figures. Child must choose the one object out of four alternatives that is identical to the example. This demands accurate perception.(and also calls upon memory).

Figural Analogies. Child must choose the figure which would be a correct solution to the problem A:B═C:?. This shows inductive reasoning.

Block Design. Children must duplicate 14 designs using flat square blocks. 8 items make use of 4 and 6 items of 9 blocks. This measures spatial perception, motor skills are important, memory.

Exclusion. Child must choose the one line figure of four tactile figures which does not belong there. Involves finding correct classification rule.

Map Questions. 34 questions concerning 3 map situations (magnetic objects are put on the metal board). Questions are static (about object positions) or dynamic (after an object is moved a child must relate the new position to the unchanged positions of other objects. This calls upon spatial perception, ability to manipulate mental representations and memory.

House Plan Questions. Questions about a plan of a house. Calls upon spatial perception, ability to Verbalize spatial representations, memory.

Rectangle Puzzles. A number of puzzle pieces (2, 3, 4 or 5) form a rectangle. The score is determined by the time it takes a child to make the puzzles. Measures spatial perception, motor skills as well as speed and accuracy play a role.

Perception of objects. Was not used in the analysis because of a small number of participant of this age.

3) Oral reading test. It was developed by the author and consists of 2 stories (187 words each) and 12 comprehension questions. 3 indicators of reading effectiveness were computed: speed (characters per second), accuracy (percentage or correctly read words) and comprehension (sum of points for correctly answered questions)

4) Lithuanian Adaptive Behavior Scales. Scales were developed in Vilnius University (Černiauskaitė, 2000) to measure adaptive behavior of children between 2 and 11 years. It is filled by parents or teachers. Scores of adaptive behavior in 9 domains can be derived: Communication, Self help, Domestic, Social skills, Leisure, Community, Self regulation, Academic, Health.

Procedure. As part of study, ITVIC adaptation process was carried on. Adaptation process consisted of the following stages:

- Agreement for ITVIC translation and adaptation between Bartimeus and Vilnius University was signed.
- Test instructions and items were translated into Lithuanian (several modifications were maid in Learning Names and Verbal Analogies subtests were slightly modified taking into account Lithuanian language and cultural peculiarities).
- Modified items were tested with partially and normally sighted children.

The main part of the study involved intelligence testing with WISC-III and ITVIC. Blind children were first given ITVIC and the remaining subtests of WISC-III (Information, Arithmetic, Similarities and Comprehension). Partially sighted children were given all WISC-III subtests. After intelligence testing, all children were given reading tasks. Parents or teachers filled the Lithuanian Adaptive Behavior Scales.

RESULTS

ITVIC reliability and validity.

The first objective of the study was to Adapt ITVIC Test for the assessment of Blind children's intelligence. Psychometric qualities Lithuanian ITVIC were established and compared to the Dutch ones. Reliability coefficients are presented in Table 1.

Table 1 Reliability coefficients for the ITVIC subtests

Subtest	Split half	Cronbach alph	
		Lithuanian sample (N=41)	Dutch sample (N=155)
Perception of Figures	.89	.86	.82
Digit Span	.85	.81	.84
Figural Analogies	.93	.93	.85
Learning Names	.86	.84	.82
Block Design	.96	.94	.91
Fluency	.87	.86	.84
Exclusion	.88	.9	.84
Map Questions	.87	.83	.92
House Plan Questions	.58	.56	.76
Verbal Analogies	.86	.89	.92
Rectangle Puzzles	.93	.94	.90
Vocabulary	.91	.91	.88
Median	.88	.88	.86

Chronbach alpha reliability coefficients range from .56 (House Plan Questions) to ,94 (Rectangle Puzzles), with the median .88. These coefficients show reliability levels comparable with in Dutch. All ITVIC subtests seem to be reliable except House Plan Questions. Lithuanian ITVIC subtests reliability coefficients are similar to the Dutch ITVIC subtests; Reliability of House Plan Questions is also lowest in Dutch version although it is higher than in Lithuanian.

Other results are summarized:

- Item difficulty: median p values range from .45 (Block Design) to .7 (Verbal Analogies);
- Item discrimination: median discrimination indexes .22 (Learning Names) – .9 (Block Design);
- Mean item-total (subtest) correlations .27-.77;

- Correlations between the ITVIC and WISC-III subtest scores show evidence of the criterion validity.
- The inter correlations of ITVIC subtests show adequate convergent and divergent validity.

Because of the small number of children, Lithuanian age norms cannot be derived. Therefore the possibility of using Dutch norms was evaluated by comparing the mean subtest scores of Lithuanian and Dutch children (One sample t test). The group without useful vision older than 13.5 was chosen for the comparison (it was the largest age group in our study, N=15). Digit Span and Vocabulary scores were compared to Lithuanian normative sample. Results indicate, that Lithuanian children perform lower than Dutch on 3 subtests: Learning Names, Map Questions and House Plan Questions. Dutch norms of the other subtests can be used for Lithuanian children.

Factor analysis did not confirm ITVIC factorial structure obtained in Dutch sample: Orientation, Reasoning, Spatial and Verbal factors (confirmatory factor analysis was performed; χ^2 (69) = 122, 43; GFI = .73 CFI = .83; RMSEA = .14). Exploratory factor analysis showed 3 factor structure for Lithuanian children: Haptic (all Haptic subtests contribute to this factor), Memory (Digit Span, Learning Names and Verbal Analogies which tend to measure memory for stimulus words for Lithanian children because of the relatively small item difficulties) and Verbal (Vocabulary and Fluency). All Haptic subtests measure similar abilities of Lithuanian blind children. Results have to be interpreted with caution because of the small sample size and the group heterogeneity (both vision groups were included in the analysis). Despite of the differences, it is clear that Haptic and Verbal abilities as separate ability groups (factors) describe the intelligence structure of Lithuanian blind children.

Intelligence structure of blind and visually impaired children.

To obtain evidence about the validity of WISC-III Verbal scale IQ for both visually impaired groups, mean Verbal scale IQs of blind and partially sighted children were compared to the Lithuanian standardization sample. One sample t test was used for comparison. The mean Verbal scale IQs in both visually impaired groups were slightly

lower (M (blind) = 95.79, SD = 13.77; M (partially sighted) = 94.50, SD = 14.4) than average of 100, but differences were not significant (p>.05), Verbal scale IQs are slightly skewed toward the lower abilities of results, more so for the partially sighted.

In order to obtain data about the validity of Verbal Comprehension and Freedom from Distractability indexes, exploratory and confirmatory factor analysis was performed. Results do not support two factor structure for the blind group, Arithmetic subtest does not correlate significantly with Digit Span. Results are not clear for the partially sighted group. Two factors can be extracted, but Freedom from Distractability explains only 14 percent of variance.

For the description of the intelligence structure of blind and visually impaired children, mean scaled scores of WISC-III Verbal subtests were compared to the means of Lithuanian standardization sample. Results of blind children are presented in Figure 1.

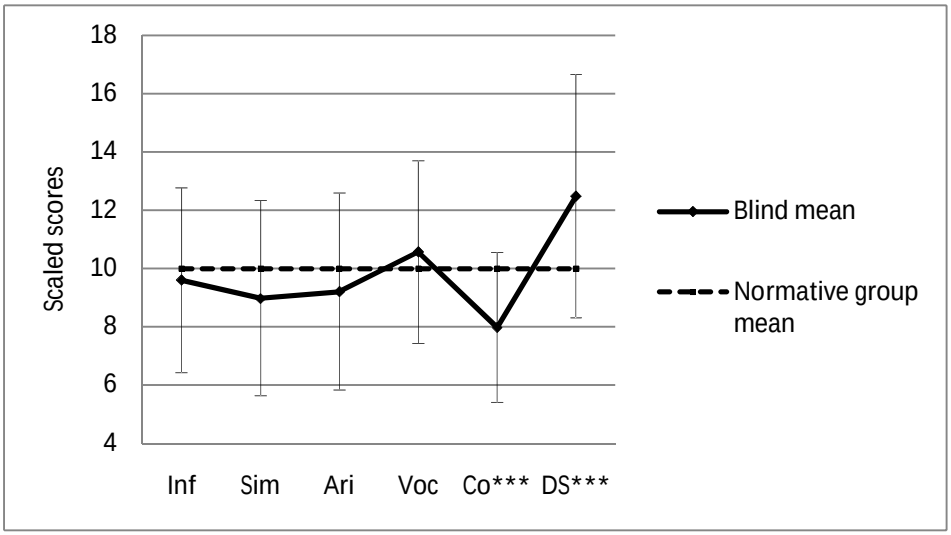

Figure 1 Mean scaled scores of blind children on WISC-III Verbal subtests
Inf-Information, Sim-Similarities, Ari-Arithmetic, Voc-Vocabulary, Co-Comprehension, DS-Digit Span.
***significant difference, p< .000.

Figure 1 shows that blind children perform significantly below normative sample on Comprehension (effect size: -.67) and above on Digit Span (effect size: .83). Mean Vocabulary score is the closest to normative group. Comprehension which is found in some studies to be below sighted did not differ significantly from the normative group subtest mean. Performance of blind children on Digit Span was not significantly different between totally blind and blind with some amount of vision. Blind children

showed better performance on Digit Span and poorer on Comprehension compared to partially sighted as well. The differences between the performance of blind and sighted children on Comprehension show the need to interpret Verbal IQ with caution, because the subtest has visual items and might measure experience limitations in blind children rather than intellectual abilities.

The same analysis was performed for partially sighted group. Results are presented in Figure 2.

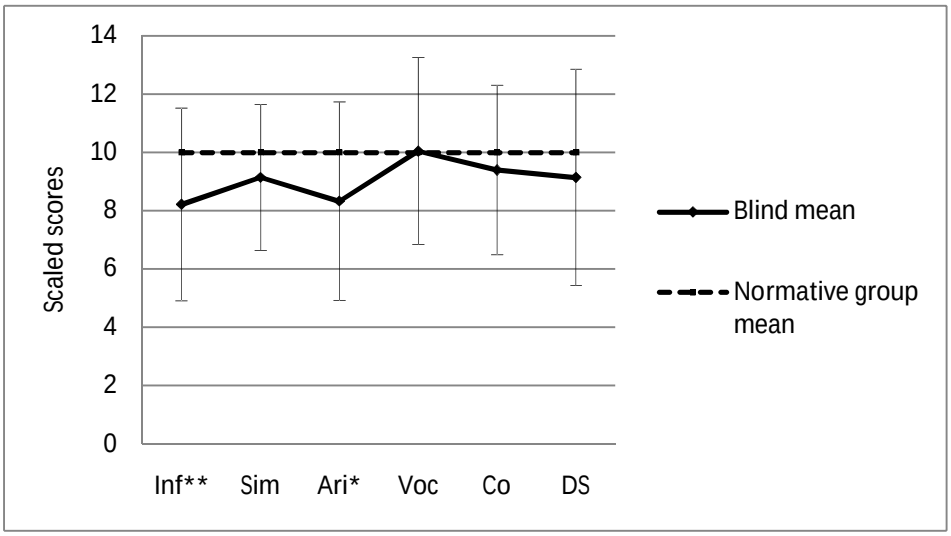

Figure 2 Mean scaled scores of partially sighted children on WISC-III Verbal subtests

Inf-Information, Sim-Similarities, Ari-Arithmetic, Voc-Vocabulary, Co-Comprehension, DS-Digit Span.
*significant difference, p< .05, *significant difference, p< .01.

Results in Figure 1 show, that significant differences between the performance of partially sighted children and standardization sample on Information and Arithmetic subtests were found. As the difference between blind children and standardization sample was not fount, it is possible that performance of partially sighted children on these subtests is not determined by their visual disability. We have also shown that more parents of blind than partially sighted children have university degree (χ^2 (2)=7.722, p=.021), more partially sighted children come from rural areas (χ^2 (2)=8.174, p<.05) and more of them live in residential school (χ^2=9.534, p=.002). Arithmetic and Information measure abilities that depend much on the environmental factors.

Partially sighted children who use vision in everyday tasks, were given the WISC-III Performance subtests. Their performance on these subtests as compared (independent t test) with the performance of the standardization group is presented in Table 2.

Table 2 Mean scaled scores of the partially sighted on the WISC-III Performance subtests

WISC-III subtest	Mean	Standard deviation	t	p	Effect size
Picture Completion	5.86	3.34	-6.561	.000	-1.38
Coding	4.57	3.13	-9.172	.000	-1.81
Picture Arrangement	5.5	3.09	-7.718	.000	-1.5
Block Design	8.82	3.27	-1.909	.067	-0.39
Object Assembly	7.07	3.63	-4.269	.000	-0.98
Symbol Search	5.93	3.58	-6.019	.000	-1.36

The results indicate, that Lithuanian norms cannot be used for interpretation of the scores in partially sighted group. Performance on Block Design is the best among other subtests, which shows that reduced vision doesn't impaire performance on these tasks. Subtests that require speed and have small details in the stimulus material are performed the worst. It is obvious, that if given WISC-III performance subtests as measures of intelligence, partially impaired children will show their visual acuity to the stronger extent than intelligence. The same pattern of performance of visually impaired children on WISC-III Performance scale subtests was shown in the study by Groenveld and Jan (1992) with WISC-R.

Environmental and vision factors predicting Verbal intelligence scores

Correlational analysis of the relationship between Verbal subtests, visual and environmental (parent education and place of residence) factors in both groups shows that Verbal intelligence of both, blind and partially sighted children, is more related to environmental factors than to their visual acuity. In the Blind group, vision group (based on visual acuity) correlated significantly only with Similarities scores (.31, $p<.05$), visual acuity of the partially sighted – with Vocabulary and Digit Span (.4 and .43 respectively, $p<.05$). In the blind as well as partially sighted group, place of residence correlated negatively with all Verbal subtests (not with all signifficanlty). For partially sighted, parental education variable correlated with all subtests significantly. Conclusions can be drawn that children who live in residential schools have lower Verbal intelligence.

In order to establish factors than can best predict Verbal intelligence of blind and partially sighted children, multiple linear regression (stepwise) was performed. Parental

education, place of residence and visual acuity (3 vision groups were used for the blind) were entered into regression analysis as predictors and WISC-III Verbal subtests together with VIQ were entered as dependent variables. Results of the analysis are summarized in Figure 3.

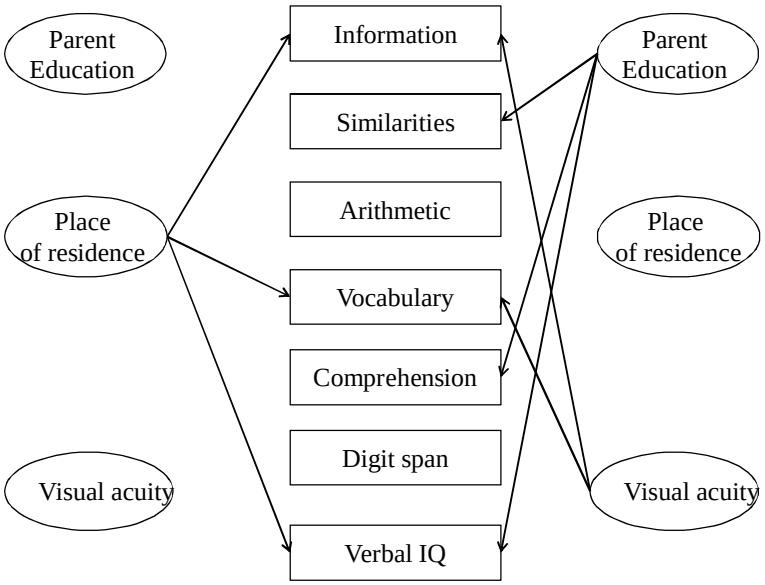

Figure 3 Predictors of Verbal intelligence scores of blind (left) and partially sighted (right) children

Separate analysis was performed for the blind children with the amount of usable vision (measured by The Dot Test) as visual factor, but it made no difference in predictions

We can see from Figure 3 that visual acuity does not predict Verbal intelligence scores of blind children. But it is an important predictor of Verbal abilities measured by two subtests – Vocabulary and Information – in partially sighted group. Those two subtests are the most influenced by environmental factors. Place of residence is the best predictor of Verbal intelligence scores for blind children (it relates with Verbal abilities negatively) and parent education level (higher or University) is the best predictor of Verbal intelligence scores for partially sighted children.

Environmental and vision factors predicting performance on haptic and visual tasks

Multiple linear regression was also performed to determine the relationship between verbal intelligence, visual, environmental factors and haptic performance. All haptic ITVIC scores were entered into the analysis as dependent variables. In addition, age of the children weas entered as thr predictor. Results are summarized in Figure 4.

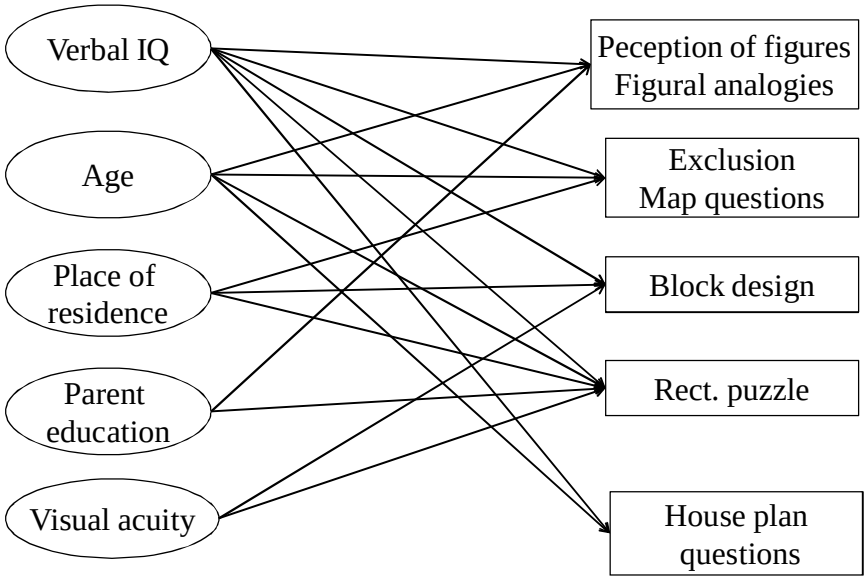

Figure 4 Predictors of Haptic performance scores for blind children

As we can see from the results in figure 4, all variables predict haptic scores. Haptic perception accuracy (Perception of Figures) and spacial reasoning (Block Design and Rectangle Puzzles) can be predicted by visual acuity, but Verbal intelligence, parent education and place of residence are better predictors. Verbal intelligence is an important predictor for all haptic performance scores. It is interesting to note, that although very small and not significant, correlations between haptic performance and place of residence are positive which shows the tendency for children who live in residential schools to perform better on haptic tasks. Although living in residential school affects their Verbal intelligence negatively, it is possible that residential schools stimulate development of haptic abilities better that home environment.

Finally, we examined the relationship of visual, environmental and factors with visual performance (measured by WISC-III Performance subtests). Correlational analysis showed no significant relations between visual acuity and visual performance, most significant correlations were found with parental education level and Verbal IQ. We also performed a regression analysis to discover the best predictors of visual performance by partially sighted children. These results are summarized in Figure 5.

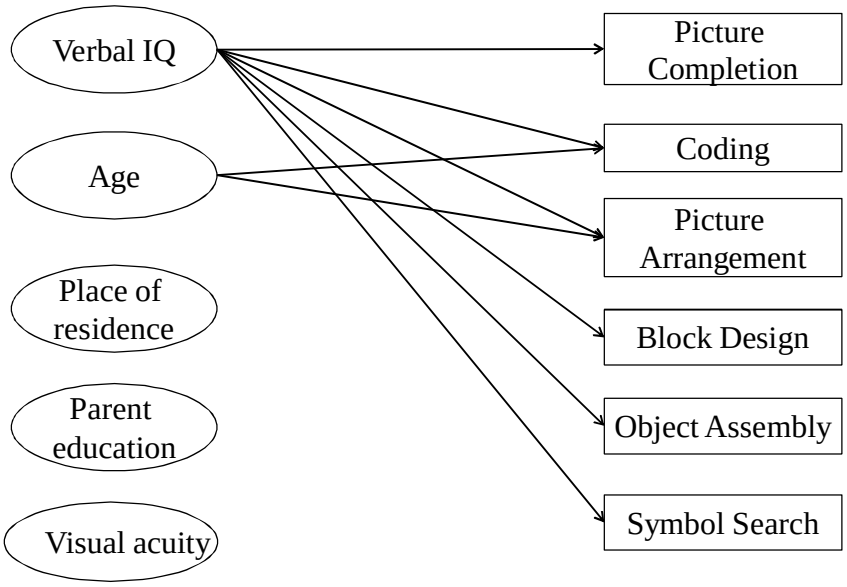

Figure 5 Predictors of performance on visual tasks for partially sighted

Results show, that there are two factors which can be entered into the regression equations: Verbal scale IQ and age. Visual acuity does not predict Verbal intelligence scores of blind and partially sighted children. The best predictor is Verbal intelligence.

Relationship of intelligence with academic achievement and adaptive behavior

We found strong and significant correlations between Verbal intelligence, haptic performance scores and school grades. This shows that intellectual abilities are an important factor for academic success of blind and visually impaired children.

Another indicator of academic success are reading skills. Verbal intelligence was found to be an important factor for successful reading for both groups. For the blind,

Verbal intelligence wa related almost only to reading comprehension, for the partially sighted – Verbal intelligence was related to all indicators of reading skills: speed, accuracy and comprehension.

Regression analysis showed that some domains of adaptive behavior (Self help, Domestic, Community and Academic) vision is the only predictor of adaptive behavior. Social skills, Leisure skills and Self regulation can only be predicted by Verbal intelligence. It seems true, that vision is important for blind children to develop adaptive skills, especially in the domains related to housekeeping and relating to others in the community, it limits possibilities to learn important daily activities. For partially sighted children, all but two domains of adaptive behavior can be predicted only by Verbal intelligence. Vision does not interfere with possibilities to learn important behavior.

CONCLUSIONS

1. Lithuanian version of ITVIC is a reliable and valid instrument for intelligence assessment of visually impaired children in practice and for scientific research: evidence of reliability, content and criterion validity was gained.
2. The difference of Verbal intelligence of blind and partially sighted children is not significant, therefore WISC-III Verbal scale is a valid measure of their intelligence.
3. Following conclusions can be made about intelligence structure of blind and visually impaired children:
    - Auditory short term memory of blind children is significantly superior compared to partially and normally sighted, but reasoning about practical situations measured by Similarities subtest is significantly worse.
    - Haptic abilities (especially accuracy of haptic perception, spatial analysis and speed) are the most important abilities in blind children's intelligence structure.
    - Significant differences of Verbal intelligence of partially sighted and normally sighted children were not found.

4. Visual acuity is not enough to predict Verbal intelligence scores of blind and partially sighted children. Parental education and place of residency are the most important predictors of their Verbal abilities.
5. Most important predictors of blind children's haptic sores are:
    - Haptic perception accuracy and spacial reasoning can be predicted by visual acuity, but Verbal intelligence, parental education and place of residence are better predictors.
    - Verbal intelligence is the best predictor of the other haptic performance.
6. Visual acuity is not the best predictor of visual performance of partially sighted children. Environmental factors are related with visual performance scores, but visual performance of partially sighted children can be best predicted by Verbal intelligence.
7. Verbal intelligence of blind and partially sighted can predict their academic achievement and adaptive behavior. Adaptive behavior of partially sighted can be best predicted by Verbal intelligence. Adaptive behavior of blind children can be predicted by visual acuity and Verbal intelligence.
8. Great variation of Verbal intelligence of blind and partially sighted was found. Factors of individual differences are intellectual giftedness, additional learning disability and later onset of visual disability.

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RESUME

ĮVADAS

Darbo aktualumas. Vaikų intelektinių gebėjimų įvertinimas suteikia galimybę suprasti mokyklinės programos įsisavinimo galimybes ar kasdieninio gyvenimo sunkumų priežastis bei vaiko galias, nustatyti specialiuosius ugdymo (si) poreikius, neįgalumo dydį.

Aklųjų ir silpnaregių intelekto struktūros pažinimas rodo vizualinės patirties svarbą atskiriems kognityviniams gebėjimams, kartu teikia žinių apie vaikų galimybes pasiekti svarbių raidos uždavinių alternatyviais keliais, pasinaudojant išlikusiais jutimais, mąstymo gebėjimais ir pagalba iš aplinkos. Žinoma, kad regos likučio dydis nepakankamai paaiškina individualius aklųjų ir silpnaregių kognityvinių gebėjimų skirtumus, būtina įvertinti patirties turtingumą, artimiausios aplinkos lūkesčius (Warren, 1994). Šis tyrimas padeda atsakyti į klausimą, kiek ir kokiose veiklos srityse aklumas ir silpnaregystė yra labiau sensorinė negalia, kokiose – labiau kognityvinė ar socialinė-psichologinė.

Nėra vieningo teorinio modelio, paaiškinančio aklųjų ir silpnaregių vaikų kognityvinio funkcionavimo ypatumus, nors aklųjų ir silpnaregių intelektinės veiklos tyrimai pasaulyje atliekami jau seniai. kol kas nesurinkta pakankamai duomenų apie įvairių amžiaus grupių, skirtingų regėjimo galimybių vaikų įvairias kognityvinio funkcionavimo sritis. Tokios informacijos trūkumą sąlygoja įvairūs metodologiniai sunkumai, Tačiau intelekto tyrimai yra aktualūs siekiant numatyti skirtingų regos galimybių vaikų funkcionavimą kasdieninėje bei mokymosi aplinkoje, o taip pat padeda tobulinti jų ugdymo(si) programas.

Intelekto ir jo matavimų studijos ir diskusijos svarbios aklųjų ir silpnaregių psichologijai ir metodologiniu testų pasirinkimo ar sukūrimo šios grupės intelektinių gebėjimų įvertinimui aspektu. Jau kurį laiką pripažįstama, kad sutrikusio regėjimo vaikų testavimas regintiesiems skirtais instrumentais yra netinkama praktika Testų akliesiems kūrimas yra apsunkintas įvairių metodologinių ribotumų, o ir sukurti testai nepaplinta, nes neatliekama pakankamai jų validumą ir patikimumą patvirtinančių tyrimų. Lietuvoje nėra išanalizuotos WISC-III (Wechslerio intelekto skalė vaikams, trečias leidimas)

panaudojimo galimybės aklųjų ir silpnaregių vaikų intelektinių gebėjimų įvertinimui, todėl psichologai priima subjektyvius sprendimus dėl subtestų pateikimo, modifikavimo bei rezultatų interpretacijos ir aprašymo.

Šiuo metu Lietuvoje paplitusi praktika Brailio raštu skaitančių ir rašančių vaikų intelektinius gebėjimus įvertinti tik remiantis Verbalinės WISC-III dalies rezultatais. Tačiau taip aklų vaikų, ypač tų, kurių gimtoji kalba yra ne lietuvių, intelektiniai gebėjimai įvertinami neobjektyviai ir nepilnai. Kai Lietuvoje tapo prieinama Intelekto skalė sutrikusios regos vaikams (ITVIC), atsirado galimybė įvairiapusiškiau įvertinti aklųjų vaikų intelektinius gebėjimus. Tačiau siekiant ją realizuoti, būtina testą adaptuoti Lietuvos sutrikusios regos vaikų tyrimui.

Kitas svarbus intelekto tyrimų aspektas yra intelektinių gebėjimų raiška skirtingose kultūrose, leidžianti įvertinti kognityvinių gebėjimų raidą skirtingų kultūrinių reikalavimų sąlygomis. Šiame darbe panaudotas ITVIC testas suteikia galimybę įvertinti aklųjų vaikų intelekto struktūros panašumus ir skirtumus mūsų šalyje ir Olandijoje. Ne mažiau svarbu pažinti mūsų šalies aklųjų ir silpnaregių gebėjimų raišką bei sąsajas su aplinkos veiksniais lyginant juos su reginčiais bendraamžiais. Dėl negalės ir su ja susijusių patirties, ugdymo, veiklos skirtumų, jų artimiausios aplinkos ypatumai skiriasi nors visi šie vaikai gyvena toje pačioje kultūrinėje aplinkoje.

Tyrimo tikslas – nustatyti aklųjų ir silpnaregių vaikų intelektinės veiklos ypatumus ir jos efektyvumo veiksnius.

Uždaviniai:

1. Adaptuoti ITVIC Lietuvos aklųjų vaikų intelekto gebėjimų įvertinimui.
2. Nustatyti WISC-III panaudojimo galimybes aklųjų ir silpnaregių vaikų intelektinių gebėjimų įvertinimui.
3. Aprašyti aklųjų ir silpnaregių vaikų intelektinės veiklos ypatumus:
    - Palyginti aklųjų, silpnaregių ir normaliai reginčių vaikų intelektinių gebėjimus.
    - Išskirti aklųjų ir silpnaregių kognityvines galias ir sunkumus.
4. Nustatyti aklųjų ir silpnaregių vaikų intelektinių gebėjimų sąsajas su regos, gyvenamosios aplinkos ir tėvų išsilavinimo veiksniais.

5. Nustatyti aklųjų haptinės ir silpnaregių vizualinės veiklos sąsajas su regos, gyvenamosios aplinkos, tėvų išsilavinimo, amžiaus kintamaisiais.
6. Nustatyti aklųjų ir silpnaregių vaikų intelektinių gebėjimų sąsajas su mokyklinių pasiekimų, skaitymo įgūdžių ir adaptyvaus elgesio rodikliais.

Mokslinis naujumas. Ši studija papildo negausias aklųjų ir silpnaregių kognityvinių gebėjimų tyrimų Lietuvoje gretas. Mūsų šalies psichologai yra gilinęsi į aklųjų ir silpnaregių intelekto ypatumus, tačiau dauguma tyrimų atlikti su neadaptuotais testais ir gana seniai, jų duomenys dabar jau sunkiai prieinami. Šiame tyrime pirmą kartą Lietuvoje įvertinti aklųjų ir silpnaregių intelektiniai gebėjimai naudojant WISC-III ir ITVIC testus. Be to, šis darbas yra vienas pirmųjų tarpkultūrinių tyrimų aklųjų psichologijos srityje, o taip pat suteikia galimybę panagrinėti testo adaptavimo problemas ne vien kalbiniu bei kultūriniu, bet ir ypatingos tiriamųjų grupės požiūriu. Nors ITVIC testas sukurtas daugiau nei prieš dešimtmetį, iki šiol kitų šalių tyrėjai tokio pobūdžio tyrimų nėra atlikę. Nėra publikuotų tyrimų ir apie tai, kaip aklieji ir silpnaregiai vaikai atlieka WISC-III testą kitose šalyse.

Praktinė vertė. Tyrimo rezultatai sudaro galimybes psichologams, dirbantiems pedagoginėje ir klinikinėje praktikoje, objektyviai įvertinti aklųjų ir silpnaregių intelektinius gebėjimus. Vadovaujantis darbe pateiktomis rekomendacijomis dėl WISC-III panaudojimo šios vaikų grupės tyrimui, psichologams, atliekantiems intelekto įvertinimą bus lengviau išvengti testų pateikimo ir rezultatų interpretacijos netikslumų. Dar daugiau, praktikai pateikiamas moksliškai pagrįstas, adaptuotas Lietuvių aklųjų vaikų intelekto tyrimui psichologinio įvertnimo instrumentas.

Disertaciniame darbe gauti rezultatai suteiks žinių mokytojams apie aklųjų ir silpnaregių intelektinių gebėjimų ypatumus išskiriant jų galias ir sunkumus, o taip pat apie šių vaikų intelektinių gebėjimų veiksnius. Mokymosi ypatumų ir intelektinių gebėjimų bei adaptyvios veiklos sąsajų analizė padės geriau suvokti vaikų poreikius, sudaryti individualias sutrikusio regėjimų vaikų ugdymo programas. Kitaip sakant, tai psichologinio įvertinimo įnašas į pedagoginio darbo būdų ir krypčių mokslinį pagrindimą.

Ginamieji teiginiai

- Skirtinga aklųjų ir reginčiųjų vaikų patirtis lemia aklųjų vaikų intelekto struktūros skirtumus, nors Verbaliniai reginčiųjų ir regėjimo negalią turinčių vaikų gebėjimai yra iš esmės panašūs.
- Skirtingai nei reginčiųjų, aklųjų ir silpnaregių intelektinių gebėjimų lygį sąlygoja ne vien regos aštrumas ir regos panaudojimo galimybės, bet ir jų tėvų išsilavinimo ir gyvenamosios aplinkos veiksniai. Šių veiksnių įtaka yra panaši aklųjų, silpnaregių ir reginčiųjų grupėse.
- Tiek aklųjų ir silpnaregių regos aštrumas, tiek intelektiniai gebėjimai yra svarbus jų mokymosi pasiekimų ir adaptyvaus elgesio veiksnys. Akliesiems rega yra svarbiausias veiksnys įgyjant adaptyvaus elgesio įgūdžius, tuo tarpu aukštesni silpnaregių intelektiniai gebėjimai padeda įgyti svarbius adaptyvaus elgesio įgūdžius.

TYRIMO METODIKA

Tiriamieji. Tyrime dalyvavo Tyrime dalyvavo 70 vaikų, 62 jų tėvai, 6 vaikų auklėtojos. Tyrime dalyvavo mokiniai, besimokantys Lietuvos aklųjų ir silpnaregių ugdymo centre Vilniuje ir Kauno apskrities aklųjų ir silpnaregių ugdymo centre. 42 aklieji (regėjimo aštrumas geriau matančia akimi su korekcija 0,04 ir mažiau) , 28 silpnaregiai (regėjimo aštrumas geriau matančia akimi su korekcija 0,3-0,05).

Tyrime naudotos metodikos: WISC-III (Wechslerio intelekto skalė vaikams). ITVIC (intelekto testas sutrikusios regos vaikams), sukurtas ir standartizuotas Olandijoje ir skirtas aklųjų Brailio raštu besimokančių vaikų Verbaliniams ir haptiniams gebėjimams vertinti. Skaitymo efektyvumo įvertinimo užduotys bei Lietuviškos adaptyvaus elgesio skalės (Černiauskaitė, 2000).

Tyrimo eiga. Pirmiausia buvo atliekamas ITVIC testo užduočių ir instrukcijų vertimas, kai kurių užduočių keitimai ir jų išbandymas. Antru etapu buvo atliktas aklųjų ir silpnaregių intelektinių gebėjimų įvertinimas, skaitymo efektyvumo įvertinimas ir adaptyvaus elgesio įvertinimas. Akli tiriamieji atliko ITVIC subtestus ir Verbalinės WISC-III skalės subtestus. Silpnaregiai – visus WISC-III subtestus pagal standartinę procedūrą.

REZULTATAI

ITVIC adaptacinio tyrimo rezultatai prodė, kad ITVIC testo lietuviška versija gali būti naudojama aklųjų ir silpnaregių intelektinių gebėjimų įvertinimui praktiniais ir moksliniais tikslais. Patikimumo analizė vidinio suderinamumo ir dalinimo pusiau metodais patvirtino gerą (Chronbacho alfa nuo 0,81 iki 0,94) visų subtestų patikimumą. Išimtį sudaro Klausimų pagal namo planą patikimumas (0,56). Visi ITVIC subtestai pasižymi gana geru turinio validumu (užduočių sunkumas (p vertės): 0,45-0,7; skiriamosios galios: 0,22-0,9; užduoties-subtesto koreliacijos: 0,27-0,77). Nustatytas statistiškai reikšmingas ITVIC subtestų rezultatų ryšys su WISC-III Verbalinės skalės subtestų įverčiais bei mokomųjų dalykų pažymiais rodo adekvatų testo kriterinį validumą. Dėl mažos tiriamųjų grupės nesant galimybių sudaryti lietuviškas testo normas, nustatyta, kad 13metų 6mėn ir vyresnių nenaudojančių regos (aklųjų grupėje) vaikų rezultatus galime interpretuoti naudojant Figūrų suvokimo, Kalbos sklandumo, Figūros atmetimo, Stačiakampio dėlionių, Kubelių kompozicijų, Verbalinių analogijų bei Figūrų analogijų olandiškas normas.

Aklųjų ir silpnaregių grupių Verbaliniai intelektiniai gebėjimai statistiškai reikšmingai nesiskiria nuo reginčiųjų standartizacinės imties, todėl jų intelektiniams gebėjimams įvertinti rekomenduotina naudoti WISC-III Verbalinės skalės Lietuvos standartizacinės imties normas.

Nustatyti tokie aklųjų ir silpnaregių intelektinių gebėjimų ypatumai:

- Aklųjų Verbalinio intelekto struktūroje girdimoji trumpalaikė atmintis yra ženkliai geresnė nei reginčių ar silpnaregių, tai yra jų galia, tačiau aklieji ženkliai atsilieka nuo pastarųjų grupių spręsdami praktines situacijas, pateikiamas Supratingumo subteste.
- Svarbiausi aklųjų intelekto struktūroje yra haptiniai gebėjimai (kuriuos geriausiai aprašo erdvinių ryšių analizės, motorinio greičio bei suvokimo tikslumo gebėjimai). Erdvinių ryšių analizė ir atkūrimas yra labai sunki kognityvinė veikla neturintiems regos likučio akliesiems.
- Silpnaregių Verbalinio intelekto struktūra reikšmingai nesiskiria nuo reginčiųjų.

Prognostinių Verbalinio intelekto veiksnių analizė parodė, kad remiantis vien vaikų regos aštrumu, negalima numatyti nei aklųjų, nei silpnaregių Verbalinių gebėjimų lygio. Ir aklųjų, ir silpnaregių grupių svarbiausi Verbalinių gebėjimų prognostiniai veiksniai yra jų tėvų išsilavinimas ir gyvenamoji aplinka (gyvenimas internate). Svarbiausias veiksnys, leidžiantis prognozuoti aklųjų haptinės veiklos efektyvumą yra jų Verbalinis intelektas. Haptinio suvokimo tikslumui ir erdvinei veiklai gana svarbus regos aštrumo veiksnys, tačiau Verbalinis intelektas, gyvenamoji aplinka ir tėvų išsilavinimas šios veiklos efektyvumą prognozuoja geriau.

Silpnaregių vizualinės veiklos rezultatus apsprendžia ne tiek regos aštrumas, kiek aplinkos ir Verbalinių gebėjimų veiksniai. Silpnaregystė labiausiai sumažina smulkių detalių turinčios informacijos suvokimo tikslumą ir apdorojimo greitį. Svarbiausias veiksnys, leidžiantis prognozuoti silpnaregių vizualinės veiklos efektyvumą yra jų Verbalinis intelektas.

Remiantis aklųjų ir silpnaregių vaikų Verbaliniais gebėjimais, galima numatyti jų mokyklinius pasiekimus, skaitymo įgūdžius bei adaptyvų elgesį. Jei silpnaregių adaptyvų elgesį prognozuoja tik jų Verbaliniai gebėjimai, tai aklųjų adaptyvus elgesys priklauso ir nuo turimo regos likučio dydžio.

Aklųjų ir silpnaregių intelektiniams gebėjimams bei haptinei ir vizualinei veiklai būdingi dideli individualūs skirtumai. Jų veiksniai gali būti įvairūs, tarp jų intelektiniai gabumai, gretutinės mokymosi negalės buvimas, vėlesnis regos sutrikimo laikas. Žemi intelektiniai gebėjimai apriboja vizualinės veiklos efektyvumą, nors vaikas ir geriau mato.

STRAIPSNIAI DISERTACIJOS TEMA

Gabrialavičiūtė I. Sutrikusio regėjimo vaikų intelektinių gebėjimų įvertinimo galimybės // Psichologija: mokslo darbai, 2007, vol. 36, p.74-87.

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Ingrida Gabrialavičiūtė has been studying psychology in Vilnius University since 1996. She got Bachelor‘s degree in Psychology in 2000 and Master‘s degree in Educational Psychology in 2002. From 2000 to 2009 she was a doctoral student of Vilnius University Department of General Psychology.

From 2002 to 2004 she worked as a lecturer in Vilnius Pedagogical University and Vilnius university. Since 2002 she works in Lithuanian Training Centre for the Blind and Visually impaired.

The scientific interests include psychology of visual impairment, intelligence testing, assessment of people with special needs.

TRUMPOS ŽINIOS APIE DOKTORANTĘ

Ingrida Gabrialavičiūtė Vilniaus universitete studijavo psichologiją nuo 1996 m. 2000m įgijo psichologijos bakalauro, o 2002 – pedagoginės psichologijos magistro laipsnį. 2003-2009 m. Vilniaus universiteto Bendrosios psichologijos katedros doktorantė.

2003-2004 Dėstė Vilniaus pedagoginiame universitete ir Vilniaus universitete. Nuo 2002 m. dirba Lietuvos aklųjų ir silpnaregių ugdymo centre.

Mokslinių interesų sritys – aklųjų ir silpnaregių psichologija, intelektinių gebėjimų testavimas, specialiųjų poreikių asmenų įvertinimas.