

## **STANDARDIZATION OF SON-R 2 ½- 7 IN SLOVAKIA**

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**Abstract:** Poster brings information from the Snijders-Oomen non-verbal intelligence test standardization process, administered to the population of Slovak children.

*SON - R 2 ½- 7 is a very convenient test for pre-school children and children attending the first grade of the primary school (2,5 – 7 yrs old). This technique can, besides the other assets, extend the diagnostic tools repertoire for mental handicap identification, recognize the mental efficiency of Roma children and children from socially disadvantaged settings.*

**Keywords:** *non-verbal intelligence test, standardization process, child development, IQ.*

The Research Institute for Child Psychology and Pathopsychology in Bratislava, from its very beginning has been involved in the research of formation of the child development and the research of social determination of this process, research of mental development of disabled children and of children with learning disabilities (special educative needs), children with behaviour disorders and so on.

This Institute is the only place in the Slovak Republic that deals with a complex research of psychological aspects of the child and youth development, conditions that determine its development and means for positive influencing of a child. Today the key areas of the research are: The mental development of healthy ("normal") children, specifications of mental development of disabled children, especially the integration of these children into normal schools, issues of social development of children and youth. The above-mentioned orientations overlap sometimes in concrete projects. All research activities have partially character of basic research, the results contribute to formulation of psychological theories of the research phenomena) and the character of applied research /the research takes place in real conditions and consequences for the psychological and pedagogic practice are deduced from it/.

In 2006 the team of researchers entered an international research Standardisation of SON- 2 ½ -7 in the Central Europe region. Population of Czech pre-school children was searched by the Institute of Educational-Psychological counselling in Prague,

the Slovak population was searched by the Research Institute for Child Psychology and Pathopsychology in Bratislava. The project was generously supported by the SON fund and supervised by Dr. Peter J. Tellegen from the University of Groningen, the Netherlands.

## Description of the SON-R 2 ½- 7

The SON-R 2 ½- 7 is a general intelligence test for young children. The test assesses a broad spectrum of cognitive abilities without involving the use of language. This makes it especially suitable for children who have problems or handicaps in language, speech or communication, for instance, children with a language, speech or hearing disorder, deaf children, autistic children, children with problems in social development, and immigrant children with a different native language.

A number of features make the test particularly suitable for less gifted children and children who are difficult to test. The materials are attractive, the tasks diverse. The child is given the chance to be active. Extensive examples are provided. Help is available on incorrect responses, and the discontinuation rules restrict the administration of items that are too difficult for the child.

The SON-R 2 ½- 7 differs in various aspects from the more traditional intelligence tests, in content as well as in manner of administration. Therefore, this test can well be administered as a second test in cases where important decisions have to be taken, on the basis of the outcome of a test, or if the validity of the first test is in doubt.

Although the reasoning tests in the SON-R 2 ½- 7 are an important addition to the typical performance tests, the nonverbal character of the SON tests limits the range of cognitive abilities that can be tested. Other tests will be required to gain an insight into verbal development and abilities. However, for those groups of children for whom the SON-R 2 ½- 7 has been specifically designed, a clear distinction must be made between intelligence and verbal development.

## The subtests of the SON-R 2 ½- 7

The SON-R 2 ½- 7 is composed of six subtests:

1. Mosaics, 2. Categories, 3. Puzzles, 4. Analogies, 5. Situations and 6. Patterns.

The subtests are administered in this sequence. The tests can be grouped into two types: reasoning tests (Categories, Analogies and Situations) and more spatial, performance tests (Mosaics, Puzzles and Patterns). The six subtests consist, on average, of 15 items of increasing difficulty. Each subtest consists of two parts that differ in materials and/or directions. In the first part the examples are included in the items. The second part of each subtest, except in the case of the Patterns subtest, is preceded by an example, and the subsequent items are completed independently.

*Note:*

*On the website [www.testresearch.nl](http://www.testresearch.nl) a lot of information on the SON-tests can be found. On the website are different sections in the English, German and Dutch language. The website can also be used to update the computer program that goes with the test.*

## **Standardization process of the SON-R 2 ½- 7 in Slovakia**

The group consisted of 252 children (126 boys and 126 girls), always 14 in each age group within the range of 2 1/2-7 years.

As in the standardization process, demographic principles should be accepted, some ethnic minorities were involved in the research sample, i.e. a certain number of Roma children and also other ethnic minorities were included in the research.

1. **Age:** – the whole collection was devided into 9 age groups with the 6 months span. There were 28 children in each group.
2. **Sex:** – the collection was composed of 126 boys and 126 girls, always 14 in each age group.
3. **Region** – Slovakia was devided into 4 ethnographic regions – West, South and East In each of these regions 63 children were evaluated (seven in each age group – 3 boys and 4 girls or vice versa.)
4. **Size of the settlement** – according to the last census, there were about 25% of people living in the municipalities with less than 1.500 inhabitants, next quarter is living in the small communities of 1.501–10.000 inhabitants, next 25% in towns with 10–50.000 inhabitants and the last quarter in the towns with more than 50.000 inhabitants,

These settlements were equally represented in the whole group (63children) but also in the particular age groups (consisting of 7 children).

According to statistical data, 91% of preschool age children are attending kindergartens. In our standardization sample it was 90%. In the youngest groups we had less of those children, because in the age from 2–4 years they do not attend the kindergarten so frequently. However, in the next seven groups (ages from 3;7 –7;0) the frequency varied between 92–100%.

## **Results**

- The performance of children raised up together with their age
- A size of the town/village in which children live, had an impact on their achievements
- Children attending the kindergarten achieved much better in all subtests of SON-R test than those who did not (t-test)
- The gender and ethnic origin had no significant influence with regard to the performance variance of children (ANOVA)

## **Some interesting findings**

### **1. Age and sex**

The impact of these selection criteria was verified by the statistical analysis. ANOVA confirmed the achievement dependance with regards to the children 's age at the highest level of statistical significance ( $p<0,001$ ). Rough score correlation of particular subtests but also three total scales in the Slovak standardised group vary from 0,74 – 0,87. Vice versa, the sex of children was not projected in the test achievements

(ANOVA, t-tests). Due to that the common norms were created both for boys and girls as it is current with intelligence tests.

(According to common norms, the IQ results our girls reached were about 1,5 point higher than boys'. In the Netherlands standardized group the difference was in favour of girls even 3,5 point IQ and it was statistically significant, nevertheless also in the Netherlands they work with common norms , regardless of sex.

## **2. Region and size of settlement**

Deficient size of particular age groups did not allow us that all combinations of used stratification criteria were taken into account. And this is why the towns with more than 50 thousand inhabitants from the West part of Slovakia, big communities (with 1,5–10 thousand inhabitants) from the North part of Slovakia, small communities (till 1.500 inhabitants) and towns with 10–50 thousand inhabitants partially from South and partially from East part of Slovakia were involved in our group collection. This distribution fits relatively well with the character of urbanisation of particular regions, although does not allow separately evaluate the impact of the size of settlement and regional differences to the children 's test achievements.

If the highest achievements of children were reached by children from west part of Slovakia, is difficult to say if there achievements were affected by the life in this region or by the life in the biggest Slovak towns. (However there were no differences between children from Nitra and Bratislava, who were involved in our sample.)

Some better achievements were found by statistical analysis (ANOVA), the other regional group did not differ from each other, although children from the North part of Slovakia (communities with 10–50 thousands inhabitants) reached somewhat higher scores than children from South and East of our country. Also no significant differences nor differences between achievements of children from towns (10–50 thousand inhabitants.) and small communities (till 1.500 inhabitants) were found in this two regions in the South and East part of Slovakia.

## **3. Notes to test materials**

The test is declared to be culturally and socially unbiased. Authors tried to include types of tasks and content representations into the test for to enable an application to children from different countries, cultures and social groups without any modifications of instructions.

It is known that these characteristics bring some specifics in family systems, educational styles, in information and experiences of their members. It is more obvious in young children because they have just few experiences and practices with events in different surrounding except for their own.

We followed an impact of these facts in the Slovak sample where children from several nationalities living in our territory were involved.

1. Important feed-back information: selected subtest types were accurately chosen  
– children accepted tasks very positively, the tasks attracted their interest and were done with a joy.

2. Some items made difficulties to most of children, i.e. these were not relevant to our socio-cultural characteristics regardless of family and educational surroundings of the children. This concerns especially two subtests.

### **Categories** (Reasoning Scale), fig. 1 and 2

A principle of the task is well known by children (sorting into groups). Though, visual displays of some things relate to the country of the test origin and they look differently in our settings. It is supposed that different depictions could enable correct answers also to further items because the dividing principle was clear to children.

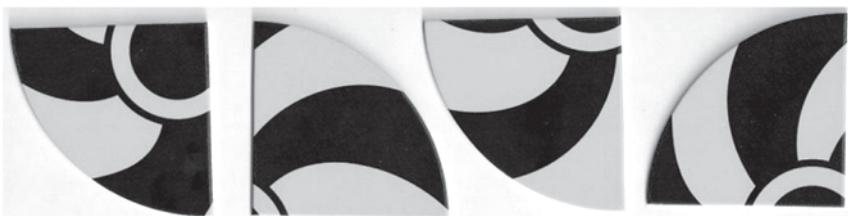


Figure 1: **Ball**



Figure 2: **Tent**

### **Puzzles** (Performance Scale), fig. 3 and 4

The task was very interesting to children and they were highly motivated. A part 2 of the subtest does not provide model pictures and thus children have to identify at first what they are to complete. It was sometimes difficult for them to recognize a whole figure of separate puzzle pieces: especially „a ball“ and „a tent“ are depicted unusually for our children and they had not met such forms in their lives ever. Despite of excellent task mastering, this caused a failure also in clever children.

Nevertheless the restriction mentioned above, children solved both subtests very well and Puzzles belong to the most reliable indicators of the developmental level of mental functions.

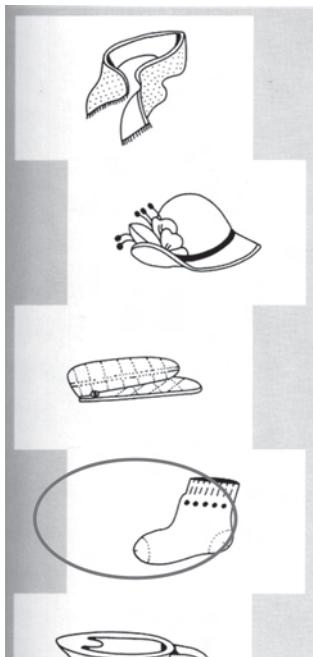


Figure 3: **Cap**  
(figures for choice)

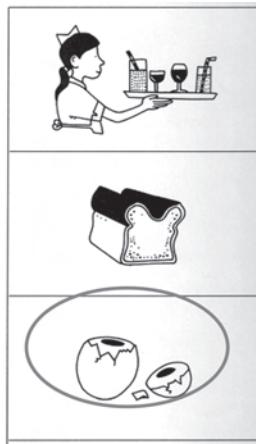


Figure 4: **Meal**  
(model figures of category)

## ŠTANDARDIZÁCIA SON-R 2½ - 7 NA SLOVENSKU

**Abstrakt:** Text prináša informácie o Snijders Oomen-non-verbálnom testu inteligencie a o štandardizačnom procese aplikácie na populáciu slovenských detí. SON - R 2 ½ - 7 je veľmi vhodný test inteligencie pre predškolské deti a deti, ktoré navštevujú prvý stupeň základnej školy (2,5–7 rokov). Táto technika môže okrem iných aktív, rozširovať repertoár diagnostických nástrojov pre identifikáciu mentálnych handicapov, rozpoznanie duševných schopností rómskych detí a detí zo sociálne znevýhodneného prostredia.

**Kľúčové slová:** non-verbálny test inteligencie, štandardizačný proces, vývoj dieťaťa, IQ.