Study of the psychomotor level development of children with a mental disability. Implications on their social and professional integration

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Abstract

The psychomotor education of children with a mental disability has an important place in educational therapy, the mental deficiency being generally associated with motor dysfunctions. As a consequence, the disorders that may occur in the psychomotor field are more pronounced as the degree of deficiency is more profound.

We believe that the most important issue here is the objective knowledge of the mental deficiency level, concerning psychomotor aspects which will improve new recovery methods and strategies, leading finally to the development of a very effective therapeutic program.

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1. Introduction

Psychomotor behavior is a complex function that integrates and subsumes motor and mental (psychic) manifestations which entail the adjustment of individual behavior, including the participation of various mental (psychic) processes and functions to ensure the reception of information as well as the proper execution of the response act, (Albu & Albu, 2006).

Psychomotor behavior of each individual evolves according to his endowment to aptitude, his level of physical and intellectual progress and the educational influences which has undergone throughout his...
childhood. Psychomotor level development is a primary consideration in organizing the educational recovery process for all ages and types of deficiencies, as well as for the average person, (Fauche, 1994).

The motor activity of the mental disabilities is the result of (both) the nervous system maturation and the level of physical development. To some extent, mentally deficient child is equally to a deficient motor, but as the mental organization is structurally and functionally different from that of a normal child, the motor and psychic plans are also different, (Cordun, 1999).The disturbances which may occur in the psychomotor level are therefore more pronounced as the deficiency level is more profound, (Taflan, 2007).

Initiation of any educational therapy program must be preceded by an assessment of the psycho-motor acquisitions available to each child at a certain time, making thus possible a comparison between the existing ones and those they are supposed to have, (Radu, 2001).

2. Motivation of study

We believe that it is necessary to acquire objective and realistic knowledge of the psychomotor development level of the mentally deficient person, in close relationship with the biological age and the level of mental deficiency, (Verza, 2004). Such knowledge would allow for a judicious selection of all action means and methods of action, targeted as precisely as possible to the final goal: social and professional integration, (Vrasmas & Musu, 2001).

2.1. Purpose of Study

The aim of the study is to outline, through a battery of tests, the psychomotor profile of the children with a mental disability, as a guide in choosing of the means used in adapted physical activity lessons in skill and manual activities occupational therapy, (Neagu, 2010). Applying the test of comparison between the results obtained lead to significant differences between the three groups of mental deficiency. The premise from which we started was that more precise knowledge of the psychomotor level of the children with a mental disability, that will lead to the selection of the appropriate means and methods of action to ameliorate the deficit.

2.2. Hypothesis

We try to outline a psychomotor profile of the mentally deficient person starting from these considerations:

- the existence of a direct link (connection) between mental deficiency and motility disorders;
- knowing of psychomotor development level that will lead to the choice of designed procedures to improve the deficit.

2.3. Task

The chosen subjects from the Centre of Inclusive Education of Tîrgu Mures have been divided into three groups taking into account the level of mental deficiency: low, moderate and severe. The tests applied were chosen according to the mental deficiency and applied in identical conditions in order to obtain the most accurate results.
3. Research Methods

The research methods used were: the ascertaining experiment, test method and statistical processing of data. The five tests were individually applied. The tests where: Matorin, kinesthetic hand control, repetition hand speed (Tapping), spatial perception and balance test:

- **Matorin test** consist in making separation of the body with its rotation in the air, after a jump, in the direction chosen by the subject. The size of the rotation is measured into degrees, see Fig. 1.
- **Kinesthetic hand control test.** Controls the subject, blindfolded, sitting in front of a desk on which there is a graded ruler, holding his arm at the 0 (zero) grading level. The researcher shall lead his hand right up to about 50 cms. away (passive action from the subject), pointing him to reposition his middle finger back to the initial level, respectively to “0”, (Epuran, 2005). The deviations from this point are to be measured with the “+” sign for the exceeded centimeters by the subject (from the ‘’0’’ zero point), and with the “-” sign for the remaining centimeters up to that point, see Fig. 2.
- **Repetition rate –Tapping test.** Measure the execution speed of a movement in a given time (6 sec.).
- **The space perception test.** Estimating the distance—the subject standing blindfolded in front of a point situated 12 m away should cover that distance and stop the moment he considers that he reached the point marked on the soil. The distance covered up to or over that point is to be measured with ‘’±’, see Fig. 3.
- **Balance test.** The test is carried out at the same time and same conditions as the test of “spatial perception”, with the only difference that we measure the deviations of the subject (to the right or to the left) from the reference point, see Fig. 4.
Statistical and mathematical method allowed us to work out the various data obtained after carrying out the above tests. In order of the data interpretation the following parameters have been calculated:

- the arithmetic mean ($\bar{x}$) represents the ratio between the sum of individual values and their number;
- simple deviation ($x_i - \bar{x}$), represents the deviation of each value of the characteristic from average value of the respective characteristic;
- the sum of squares formula $\sum (x_i - \bar{x})^2$ helps us calculate the standard deviation;
- standard deviation (S):

$$S = \pm \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}$$

In order to make the statistic comparisons among the three groups, we use the comparison Student’s "t" Test, while for establishing the probability coefficient and the level of significance we apply Fisher’s table (level of significance $p<0.05$):

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{S_1^2 + S_2^2}{n_1 + n_2}}}$$
4. Results of study

Our results, following the investigation, are presented in a synoptic table, see Table 1.

Table 1. Results centralization of investigation.

<table>
<thead>
<tr>
<th>Mental deficiency level</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical index</td>
<td>UM</td>
<td>S</td>
<td>t</td>
</tr>
<tr>
<td>Test</td>
<td>↓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Matorin”</td>
<td>Degrees</td>
<td>±28.60</td>
<td>2.44</td>
</tr>
<tr>
<td>Kinaesthetic hand control</td>
<td>Centimetres</td>
<td>±3.49</td>
<td>2.31</td>
</tr>
<tr>
<td>Tapping</td>
<td>Executions</td>
<td>±4.00</td>
<td>2.59</td>
</tr>
<tr>
<td>Spatial perception</td>
<td>Centimetres</td>
<td>±115</td>
<td>2.70</td>
</tr>
<tr>
<td>Balance</td>
<td>Centimetres</td>
<td>±16.38</td>
<td>2.23</td>
</tr>
</tbody>
</table>

Following this information we came with this results:

- within groups of subjects is found statistically significant trends, where the intellectual element has a share dominance which shows a deficiency of a qualitative nature
- the groups of subjects is characterized by a high level of heterogeneity, with standard deviations often with similar values and there are several differences between the subjects within the same group;
- average performances of the subjects are below the limits of”good”, the majority of results being ”satisfactory” and ”unsatisfactory”.

5. Conclusion

As the degree of mental deficiency is higher, the statistical differences are more pronounced. Between the degree of mental deficiency and motor deficit there is a direct relationship. Efficient motor deficiency is one of the main parameter on which the building work and thereby preparing for professional and social integration.

References