

Psychomotor Assessment in Teaching and Educational Research

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The early identification of motor difficulties through psychomotor assessment is fundamental for the planning of individualized and differentiated educational programs. In the field of motor activity, observation plays a crucial role. This is characterized by the knowledge of the level of psychomotor and auxiological development, the definition of aims and methodology, and the allocation of timing required for observation. Therefore, psychomotor assessment not only measures performance, but it also analyzes an array of aspects linked to it in a multidisciplinary view. In this study, a qualitative assessment of the motor performance of 379 preschool children residing in the province of Salerno was carried out using the Movement ABC checklist. In particular, the data obtained from observations on the motor behavior of the child was analyzed, in reference to the relationship between the body and the environment for the first four sections. The results showed a discontinuity in relation to the linear progression in terms of difficulty of motor tasks, as presented in the checklist. This highlighted features of everyday life and classroom activity that could help in guiding teaching for the recovery, development and enhancement of psychomotor skills.

Keywords: movement abc checklist, psychomotor assessment, psychomotor skills, teaching and educational research.

Introduction

The structuring of individualized teaching and learning paths depends of the early identification of psychomotor problems in childhood.

The planning and achievement of each educational project must take its inspiration from refined skills and difficulties assessment systems in the various groups of motor, cognitive and behavioral skills (Graham, Holt/Hale & Parker, 1998). The observation in the motor field is based on a careful analysis of the child, which is achieved by using specific techniques and adequate tools of observation. In the motor field, observation is a complex process that is not based on scientific traditions established in schools, where the docimology has mainly looked to other disciplines.

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The observation in the psychomotor field must include three elements (Sibilio, 2003):

1. Knowledge of the auxological and psychomotor development phases. This refers to the need to link the child's age to the characteristics of the child, in order to examine the morphological aspects, attitudes and bodily behaviors in relation to auxological and psychomotor development phases.
2. The predefinition of the purposes and ways of observation: what, how, when, where, with what.
3. The definition of the times and the specific stages of observations, in relation to the educational project.

The Purposes and Ways of Observation

Referring to the purposes and ways of observation, it's essential to give importance to specific descriptors; in particular:

- *What* to observe: in relation to the potential and attitudes that affect the motor behavior of each student. The interests and the motivations referred to specific moods of the moment in which the observation takes place: the non-verbal communication skills (an essential component in the teaching-learning process), the spatio-temporal organization (which represents one of the most important functional prerequisites of the movement), the evolution of the graphic sign (that concerns psychomotor components indicative of the skills development process).
- *How* to observe: it presupposes avoid attitudes that can affect the behavior of the child and, at the same time, help to avoid the development of the capacity for self-observation. Especially in childhood, in fact, the incomplete structure of the body schema could provide incorrect information on the performance of a specific motor task.
- *When* to observe: it can identify the correct time to carry out the observation and it requires the need to take account of the qualitative level (through descriptive procedures) and of that quantitative (according to precise stages and using structured instruments).
- *Where* to observe: it identifies in the learning environment, in the context made up of places, things, people, and relationships.
- *With what* to observe: it refers to the tools used to make the observation, such as validated grids for standardized observation procedures, or structured or semi-structured boards, in relation to the type of observation to be made.

It is essential to define and meet the general criteria for the use of data derived from the activity of observation, defining the following parameters:

- The context of the situation to be observed;
- The conscious intention of neutrality of the observer's behavior and its evaluation;
- The need to understand the subjective aspects of motor behavior.

Therefore, psychomotor observation does not only provide a measure of performance, but analyzes the plurality of aspects linked, in a multidisciplinary view and in a dynamic perspective.

Psychomotor observation requires a coordinated action between protocols, approaches and methodologies established in the motor field, which accord with the traditions and constraints of educational research. In childhood, the educator is called to work jointly on different subject areas; accordingly they require soft skills and a wealth of knowledge, skills and general and specific resources that significantly characterize his professionalism (D'Elia, 2014).

The versatile and dynamic nature of psychomotor observation presupposes a careful analysis of the variables that may affect the action. In particular, the surroundings in which the child moves becomes the object of interest from teachers.

According to the National Guidelines for the curriculum in preschool and in primary school, physical education promotes knowledge of oneself and of the potential in constant relationship with the surroundings, with others and with objects. The child motor skills, in fact, assume a constant relationship with the surrounding environment. This relationship contributes to the formation of the personality of students, through knowledge and awareness of one's physical identity, as well as the ongoing need for constant movement as personal care and well-being (MIUR, 2012).

Psychomotor observation, therefore, organized with the necessary settings, and built taking into account the contextual circumstances, aims to early identification of motor difficulties in view of an educational program. It's individualized for each student. In this sense, it is necessary to consider certain parameters that allow an effective assessment of the potential and the difficulties in the psychomotor field.

The Body Conception for Psychomotor Assessment

The psychomotor observation cannot ignore the parts of the body in motion, which include:

- The corporeality of the child, as a means of communication and relationship with others;
- The surroundings, that includes the space in which the child makes new experiences and the objects with which the child develops and exerts his ego;
- The world of the other, which helps to delineate the psychomotor profile of the child as it provides a framework of autonomy and dependency for the satisfaction of vital and emotional needs.

When these three elements are intertwined with each other to provide a positive support, the child's psychomotor development is running smoothly, ensuring the child world's knowledge, exploration and adaptation in a serene atmosphere.

Even the autonomy field, therefore, plays a key role in the relationship between the corporeal and the surrounding environment.

The level of autonomy reached by the child gradually improves with the development of the body schema. The conquest of autonomy modifies the relationship with the adult who, by the dependency ratio, becomes a source of cooperation and participation of responsibility. Educating the different psychomotor behavior in relation to the outside world data can reach the autonomy consolidation. It allows the teacher to conduct actions always less invasive, in order to produce an evolution of motor deliveries to be provided to the child, that by simple exercises to be played become problems to solve.

The psychomotor education will always be an important component for reaching a progressive autonomy of the child in relation to the world of others (Vayer, 1992).

Given the complexity psychomotor observation in teaching and educational field, the problem of choosing the most appropriate method of valuation arises. In particular, there are questions on whether to give priority to forms of systematic evaluation or observation in situation. In the first case, it ensures the characteristics of scientific and objectivity, although phenomena of artificiality can occur. In the second case, instead, although it poses the risk of incurring the prejudice and in the Pygmalion effect (Rosenthal & Jacobson, 1968), it meets the need for an ecological approach (Cottini, 2003).

Among the motor test, the Movement Abc is an ideal tool for administration in more than one location, thanks to the integration of the Checklist with the performance test. Additionally, it configures as a tool of quality and quantity measures that can analyze several aspects of the motor behavior put into practice: the formal procedure, in fact, was joined a style of observation less formal, which allows teachers to provide more guidance.

This allows not only the evaluation of the quantitative and qualitative aspects of motor performance of the child, but also of the emotional and behavioral factors that could affect the success of the motor task required (Sudgen & Henderson, 1999).

Objective

The purpose of this study was to analyze the possible relationship between the body and the surroundings in school contexts through structured observation grids.

Material and Methods

Participants

The sample consisted of 379 children, aged between three and six - year-old, attending preschool and primary schools in the province of Salerno.

Measures and Procedures

The tool used is the Movement ABC Checklist (Assessment Battery for Children), which allows the evaluation of coordination during childhood, designed to be completed by an adult who knows well the motor activities of the child in everyday life. The Movement ABC has been validated and standardized in many countries. The validity, reliability and standardization of motor tests are essential characteristics because therapists and teachers can use these tools' evaluation to identify children with motor difficulties, and to ensure the effectiveness of intervention designed (Priori, Berchicci, & Bertollo, 2009).

In this study, the checklist was administered by class teachers, previously subjected to targeted training, to obtain accurate observations of the activity of the child. Therefore, the teacher will gather information and provide an accurate picture of the strengths and weaknesses of the child.

The evaluation procedures were as part of accurate observations of the daily activities of the child, in the school environment, family and cozy.

The checklist consists of five parts, four of which (which were the subject of this study) regarding the increasingly complex interactions between the child and their surroundings:

1. stationary child/stable surrounding (dressing, undressing, static balance exercises, cutting, distinguish the parts of the body);
2. child in motion/stable surrounding (walking and running while avoiding objects and people standing, jumping obstacles, throw an object);
3. stationary child/changing surrounding (grab a ball, stationary dribble, keep a rhythm clapping their hands or feet);
4. child moving/changing surrounding (go on the swings, ride a bike, kicking, grab and throw a ball in motion);

For each of the 48 items, the score on the motor performance implementation by the child varies from 0 to 3:

0. very well;
1. just enough;
2. almost succeeded;
3. inadequate.

First, it is necessary to understand if the child is able or not to carry out the

test. Second, if it is able to perform it, it is necessary to investigate the mode (inadequate, adequate, very well, etc ...) (Sudgen & Henderson, 1999). The observations are carried out by teachers who know the motor skills that the child acts on a daily basis.

Data Analysis

In this study an observation of motor performance was carried out using the first four sections of the Movement ABC checklist (the fifth section, relating to behavioral aspects, was not taken into consideration for this study). In particular, data derived from observations on the motor behavior of the child that were analyzed, referred to the relationship between the body and the surrounding in the first four sections.

For each section, and according to the gender of the baby, the average and the sum of scores achieved were calculated, with the aim of providing an interpretation of the non linear situation found. The scores go against the element of continuity of the sections of the Checklist (from the easier section 1 to the harder section 4). They show results entirely irreconcilable with the linear progression proposal. In the structuring of the Checklist, therefore, one would expect that the child who was trouble in the first section, have difficulty even in subsequent sections (because there are different difficulty levels of each section) (Piek & Edwards, 1997), but in this study it isn't so.

As shown in Table 1, in three years old children (for both males and females), taking into consideration the average of the results obtained for each section, the first section of the Checklist is one where children have more difficulties, while the section of the Checklist in which children are shown more competences is the number 2. However, for both sexes, the difficulties encountered in each section have a similar trend: there is a mismatch between the scores obtained. This is evident by putting the scores in descending order. However the order of the sections is altered.

In the group of four year old children, the scores are more coherent with the progression of the sections. The section of the Checklist in which the children showed more competent is, also in this case, the number 2.

In the group of five years old children, there is a correlation between the scores obtained by boys and girls, and the progression is less discontinuous. Once again, the section of the Checklist in which children are shown more relevant is the number 2, while the one in which they having more difficulties is the number 3.

In the group of six year old children, the section in which children having more difficulties is, again, the number 3, while section 1 is finally the one in which children show more competent. Therefore, the scores don't reflect the continuity of the sections, as presented in the Movement Abc Checklist (Table 2 and 3).

Table 1. Movement Abc Checklist Scores

Check list	3 Years Old				4 Years Old				5 Years Old				6 Years Old			
	<i>M</i>		<i>F</i>		<i>M</i>		<i>F</i>		<i>M</i>		<i>F</i>		<i>M</i>		<i>F</i>	
	Aver.	Sum	Aver.	Sum	Aver.	Sum	Aver.	Sum	Aver.	Sum	Aver.	Sum	Aver.	Sum	Aver.	Sum
1	31,5	156	32,6	196	20,43	1471	20,15	1149	16,67	1768	14,48	1202	16,19	340	12,61	265
2	22,2	111	28	168	19,16	1380	18,68	1065	16,02	1699	14,21	1180	16,76	352	13,95	293
3	26,6	133	31,3	188	21,65	1559	21	1197	19,49	2066	18,28	1518	18,71	393	16,95	356
4	25,2	126	30,5	183	21,33	1536	21,08	1202	17,68	1875	16,92	1405	16,9	355	15,23	320

Table 2. Descending Order of Ranking: Average and Checklist Sections

3 Years Old				4 Years Old				5 Years Old				6 Years Old			
<i>M</i>		<i>F</i>		<i>M</i>		<i>F</i>		<i>M</i>		<i>F</i>		<i>M</i>		<i>F</i>	
Aver.	C.S.	Aver.	C.S.	Aver.	C.S.	Aver.	C.S.	Aver.	C.S.	Aver.	C.S.	Aver.	C.S.	Aver.	C.S.
31,5	1	32,6	1	21,65	3	21,08	4	19,49	3	18,28	3	18,71	3	16,95	3
26,6	3	31,3	3	21,33	4	21	3	17,68	4	16,92	4	16,9	4	15,23	4
25,2	4	30,5	4	20,43	1	20,15	1	16,67	1	14,48	1	16,76	2	13,95	2
22,2	2	28	2	19,16	2	18,68	2	16,02	2	14,21	2	16,19	1	12,61	1

Table 3. The Total Score for Each Section of the Checklist

Total			
1	2	3	4
6602	6344	7543	7056

Discussion and Conclusions

The data collected of this study shows a discontinuity of results in relation to the linear progression, in terms of difficulties and motor tasks as presented in the Checklist.

In the group of children of three year olds, for both males and females, the section 1 is one in which children having the greatest difficulties, because the score is higher. In other age groups, however, the checklist shows results which go against the element of the continuity of the sessions, showing results entirely irreconcilable with the linear progression proposal. In groups of three, four and five years old, section 2 is one in which children perform motor tasks in a better way.

Only in the group of six year old children (the only sample attending the first grade of primary school) section 1 is one in which they have less difficulty, because the scores are lower. However, the progression of motor performance still not exactly reflects the evolution of the Checklist sections (from the easier section number 1 to the harder number 4), although with the simple inversion of section 3 and 4 of the Checklist in the children's group of six year olds. This suggests that the autonomy of children is rare in the period of preschool and it greatly increases at the entrance into primary school, so the child is more autonomous.

The items of the checklist, in fact, reveal the everyday situations that reflect every motor possibility. The Checklist is progressive and presents increasingly complex tests between the child and its surroundings (Peters & Wright, 1999). Generally it occurs that a child has specific difficulties in one or more sections of the Checklist, but that he is adequate in the other; for example the motor competence is developed properly in reference to the tasks required by section 1, but decreases in the following sections. Children with these characteristics have difficulties with tests in which one's own body or the surroundings are on the move (Schmidt & Wrisberg, 2008). Therefore, the open of the skills category is still not well established, in relation to the skill performed in an environment that is unpredictable or in motion and requires performers to adapt their movements in response to dynamic properties of the environment.

Frequently the child is able to manage a motor behavior in predictable situations, in which not intervene space-time variables, such as Checklist section which provide a still environment (number 1 and 2).

In the structuring of the Checklist, therefore, one would expect that the children who were troubled in the first section, have difficulty even in subsequent sections. In the groups of children at which the Checklist was administered to the test validation, for example, there was not even a child who showed difficulty in section 1 and it was rather competent in the 3 or 4 sections (Sudgen & Henderson, 1999).

This study, however, has an alteration of the linear progression of the results. These findings show a lack of motor skills that are conducted through the autonomy of each child.

This condition suggests the characteristics of daily life and class that should guide the teaching plan for the recovery, the development and enhancement of psychomotor skills (Oermann, 1990).

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