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Psychomotor Education in Preschool Years: An Experimental Research

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Abstract

The purpose of this study is to present the results arrived at as a result of the implementation and evaluation of an experimental program of psychomotor education for preschool children. The research sample was 116 children aged 58 - 69 months old (M = 62.72, SD =3.41) who were attending public preschool classes in Iraklio and Rethymno during the school year 2001 - 2002. The children were split in two groups (experimental and control group). The research process was comprised by three phases: psychomotor skills testing at the beginning of the year, implementation of the psychomotor program in the experimental group (for 12 consecutive weeks), and further psychomotor testing which evaluated the effectiveness of the program. Data collection was carried through the 'checklist of psychomotor ability' which we have constructed ourselves. The research results showed that the experimental program of psychomotor education, which was followed for the experimental group, resulted in the improvement of psychomotor skills assessed by the checklist (those were body concepts and skills, space concepts, and time concepts) in comparison with the control group which followed a typical preschool class schedule. The overall progress of the experimental group was statistically significant ($t = 9.441$, $df = 114$, $p < .001$). The findings of this research showed that psychomotor education can play a decisive role in the development of fundamental concepts such as body, space, time which are also fundamental for cross thematic and interdisciplinary teaching in the preschool class.

Keywords: *Psychomotor education, holistic development, preschool education, interdisciplinarity, cross thematic teaching.*

Introduction

In this study we define psychomotor education as a type of education which uses body activity to achieve the holistic development of the child (bodily, mental, and socio-emotional development) (Zimmer, 2007; De Lievre, & Staes, 2006). This type of education, which promotes the contemporary needs for academic, social and athletic success, should have a primary place in preschool education, according to Bolduc (1997).

Through psychomotor education the children acquire and develop abilities and skills which give them the potentiality to physically and mentally adapt to various conditions and solve problems they come through during the exploration of the environment. Through this process, the mental image children develop for their body is going to function as a point of reference for movement in space. In this way, children learn to organize themselves in space in relation to objects and the others. The development of this movement awareness comes along with time awareness.

The body, space and time are, therefore, fundamental concepts which the children have to grasp and develop during their preschool years since those concepts comprise the basic components of people's psychomotor development. Ever more so, these fundamental concepts are used according to the 'Cross Thematic Curriculum Framework' for the Nursery (which is part of DEPPS, 2001) for the development of cross thematic and interdisciplinary teaching and function as the connective rings between preschool, primary and secondary curriculum.

Through the use of psychomotor activities, psychomotor education connects theory to practice and reinforces the experiential and active development of knowledge. It becomes a prime means for approaching and teaching about body, space and time. Furthermore, psychomotor activities which combine the fundamental concepts with their body ascription follow the basic principle of cross thematic teaching which is the concept–centered organization of school knowledge, according to Matsagouras (2004).

Based on the above theoretical basis we devised an experimental research which aimed at exploring the effect of a specially designed program of psychomotor education for the development of fundamental cross thematic concepts and skills in children of preschool age.

The main research hypothesis was that children following this program would achieve better performance in learning the body, space and time concepts than those which follow a typical preschool schedule.

Method

Participants

The research sample was 116 children aged 58 - 69 months old (M = 62.72, SD = 3.41) attending public nursery schools in Iraklio and Rethymno during the school year 2001 - 2002.

Instrument

We had constructed a 'checklist of psychomotor ability' for the data collection which is comprised by 90 items. This checklist included items that assessed the

development of body concepts and skills (recognition of body parts, movement execution following verbal descriptions, reproduction of a body posture and gesture following a

model, recognition and distinction of fingers), space concepts (up/down, front/back, behind, right/left, on the child's body, one upon the other, relations to objects with different space orientation etc), time concepts (movement execution in a specific order, reproduction of rhythm units). The checklist internal consistency was high according to Crombach Alpha coefficient ($\alpha = .891$).

Procedure

The participants were split in two groups (the experimental and the control group). There were 53 children in the experimental group and 63 in the control group (this difference was due to the different population of the physical education classes that took part, which was left unspoilt). Following that, we designed an experimental process in three phases. In the first phase, at the beginning of the school year, we did an assessment of psychomotor skills and abilities of all the children in both groups. Straight afterwards, we implemented the program in the classes that comprised the experimental group (45 minutes, twice a week, for 12 consecutive weeks), whilst the control group followed a typical nursery schedule. In the third phase there was a new assessment of all the children, which evaluated the effects of the experimental program.

Data Analysis

The statistical package SPSS was used for the analysis of the data. Inductive analysis which was carried out for the testing of the research hypothesis compared the two group performances before and after the implementation of the program. Thus, t-test was used for independent samples. We applied the Levene's test to check the homogeneity of the samples. The significance level was set at $p < .05$. The equivalence of the two groups in all the psychomotor items was also tested before the program implementation ($t = -.943$, $df = 114$, $p = .348$).

Results

Table 1 shows the means and standard deviations of the two groups (experimental and control group) in the items that measured the knowledge, understanding and awareness of body, space and time concepts, before and after the implementation of the program.

The analysis shows that there is statistically significant difference between the means of the experimental and control group after the implementation of the program.

More specifically, the experimental program of psychomotor education we implemented helped the experimental group to improve in the following: a) body concepts and skills ($t = 8.356$, $df = 114$, $p < .001$), b) space and space orientation concepts ($t = 6.921$, $df = 114$, $p < .001$) and c) time concepts ($t = 7.257$, $df = 114$, $p < .001$) in comparison with the control group which followed a typical nursery schedule. The overall improvement of the experimental group in the psychomotor items ability was statistically significant ($t = 9.441$, $df = 114$, $p < .001$).

Table 1. *Means and standard deviations of the performance for the two groups before and after the experimental program.*

Items	**Experimental group**		**Control Group**		**Experimental group**		**Control group**	
	Pre –test Mean	Pre-test SD	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Post-test Mean	Post-test SD
Body concepts and skills	33.28	5.924	34.51	7.284	46.42	4.276	37.37	7.223
Space and space orientation concepts	12.42	3.968	13,24	4.599	19.66	3.391	14.76	4.230
Time concepts	8.98	3.377	9.00	3.394	14.00	2.287	10.13	3.424
Total of psychomotor ability	54.679	10.681	56.746	12.601	80.075	7.822	62.54	12.319

Discussion – Conclusions

The results of the research showed that children who followed the experimental program of psychomotor education had better performance in the items which tested their knowledge, understanding and awareness of basic body, space and time concepts.

The findings of our research are in agreement with those of other experimental studies which used movement to achieve learning in preschool years (Goti, Derri, & Kioumourtzoglou, 2006; Riga, 2005; Zaragas 2005; Kampas, Proviadaki, Kelaraki, & Xanthi, 2003; Trouli 2003). The above research studies focused on learning different body, space and time concepts and skills in different manifestations as well as the use of movement to achieve reading and handwriting skills.

Current research regarding children's practice in psychomotor activities highlights that experience of body, space and time concepts through and within movement can help children improve their movement control, orientation skills, self-esteem, sense of security, and the children's confidence on their own mental skills, and enables the transfer of this knowledge in other areas (De Lièvre, & Staes, 2006; Weikart, 1987; Le Boulche 1984).

In our experimental program, movement became the means to the activation of children's thinking and learning of basic cross thematic concepts and skills.

The research findings, although of a limited validity and generalization due to the small size of the sample, showed that psychomotor education can play a vital role in the learning of fundamental concepts (body, space, time), which are also offered for cross thematic and interdisciplinary teaching in preschool education.

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