Оценка символической функции у мексиканских детей дошкольного возраста

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Развитие символической функции является важным психологическим нововведением дошкольного возраста, оно отражает возможность использования знаков и символов на сознательном уровне. Оценка символической функции может быть использована как один из индикаторов готовности к школе. Цель настоящего исследования – охарактеризовать уровень развития символической функции у мексиканских детей дошкольного возраста. В исследовании принимали 59 детей в возрасте от 5 до 6 лет, все дети обучались в пригородных дошкольных учреждениях. Все 59 детей принимали участие в исследовании первый раз. Тестирование состояло из специфических заданий с символическими значениями на материализованном, перцептивном и вербальном уровнях. Каждый ребенок был протестирован индивидуально. Результаты показали недостаточное развитие символической функции у всех протестированных детей. Более 78% детей показали сложности во время выполнения задач; их рисунки были недифференцированные и имели несколько основных характеристик. Полученные результаты указывают на необходимость реализации развивающих стратегий в целях обеспечения формирования способности постоянного сознательного оперирования символическими средствами к концу дошкольного возраста.

Ключевые слова: символическая функция, дошкольный возраст, готовность к школе, психологическое новообразование.

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Assessment of symbolic function in Mexican preschool children

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Development of symbolic function is an important psychological formation of pre-school age and reflects the possibility of the child to use signs and symbols in a conscious way. Assessment of symbolic function can be used as one of preparation for school indicators. The objective of the present study is to characterize the level of symbolic function development in Mexican pre-school children. 59 children were included in the study. The ages of the children were between 5 and 6 years and all of them belonged to sub-urban pre-school institution. All 59 children participated in this study for the first time. Our assessment consisted of specific tasks with symbolic means on materialized, perceptive and verbal levels. Each child was tested individually. Results showed an insufficient development of the symbolic function in all evaluated children. More than 78% of the children showed difficulties during performance in the tasks of assessment; their drawings were undifferentiated and had few essential characteristics. The obtained results show the necessity to implement developmental strategies in order to guarantee the formation of the ability of constant conscious sage of symbolic means at the end of pre-school age.

Keywords: symbolic function, preschool age, preparation for school, psychological formation.

Introduction

Currently in Mexico learning difficulties are an issue of vital importance. The results in tests applied by educational organizations has not been favorable at the basic level, as no significant (INNE, 2010). For this reason several programs have been implemented such as the National Agreement for the Modernization of Basic Education (ANMEB). These programs aim at transforming basic education by promoting the academic performance of students, but despite all efforts they have not achieved the expected results.

Consequently, the academic programs at the preschool level need to be oriented towards the development of psychological skills, through the creation of appropriate conditions for the facilitation of student learning.

In this context, the theoretical model of psychological development cultural-historical perspective becomes very relevant because it suggests that the development of higher

mental functions of the child are complex forms of mental activity which are the result of the influence of the social environment and mainly with active interaction with the adult (Vygotsky, 1995). These psychological functions help us to promote learning in children.

The preschool period is one of the most important stages in the psychological, cognitive and personality of the child. The appropriate preparation of the child at this age largely ensures their intellectual development, as it gives the child the possibility of using signs, numbers, letters, and perform basic operations to represent on paper (Vigotsky, 1929; Bozhovich, 1987; Salmina, 2010).

The preschool is one of the most important stages in cognitive and psychological development of the child (Talizina, 2000). During this stage new psychological formations arise, which allow the child to experience changes in their cognitive development, personality and the type of social relationships they will have (Vigotsky, 1995, 1996; Leontiev, 1987; Zaporozhets, 1986; Petrovski, 1985). It is also important to consider that that the most important acquisition of children's early language comprehension is the people around them and their active language proficiency.

Preschool age is considered as period in which both processes of qualitative and quantitative changes occur, in which one is able to handle the languages and ideas. During this developmental change children form their view of the world, the use of symbols in thoughts and actions. They also begin to handle various concepts like reciprocal correspondence, conservation, comparison, measurement, etc. These so called readiness skills for primary school allows for the acquisition of new content at later stages as the reading, writing and arithmetic (Linguido y Zorraindo, 1981; Piaget, 1984).

The presence of these skills shows us those important features that characterize the transition from preschool to school age. If some of these specific skills are formed incorrectly, not only will they not help the child, but they will become obstacles.

Salmina (2010) considers that at the time the child enters school, she or he must have master the ability to use symbols and signs. Petrovski (1985) includes necessarily a certain level of communication, which is essential to every child's mental development. It is generated during this process the ability to enforce rules and geared towards social norms.

Therefore, it is important to note as saying Vygotsky (2006) that education should be directed towards tomorrow, waking those developmental processes that are, at this time, in the zone of proximal development of the child, whereby children access to the intellectual life of those around them.

The development of the symbolic function allows us to externalize a thought and communicate to others through symbols. Consequently, the symbols and signs are an inherent part of the culture and without them, it would not be possible to transmit information (Rivière, 1994, 2001).

Ruiz and Abad (2011) say that the symbolic or semiotic function is the ability to imagine objects, remember situations and to replicate those objects or actions at a later time. These allows them to store this information to be use at a later time when needed. As a result, the symbolic function is the ability to use symbols to represent something, is the mental representation to a person assigned a meaning (Piaget, 1961; DeLoache, 1991, 1995;

Lotman, 1993; Salsa, 2004; Rodriguez, 2006; Turner, 2008). Therefore the ability to substitute one object for another is an acquisition that has to ensure in the future the domain of social signals.

One of the most important elements of preparation for school is development of symbolic function (Salmina, 2010). The level of development of this function is reflected in the child's ability to substitute one object for another and to represent, using signs and symbols in a conscious way, according to their age psychological and sociocultural environment. The types and levels of activity with symbols and signs, which must be trained before entering school are: substitution, coding, outlining and usage of models for diverse cognitive operations (Salmina, 2000).

And so, the proper development of the symbolic function is essential in the preschool child to ensure success in later schooling, which will benefit the acquisition of reading, writing and arithmetic.

Objective

The goal of this study is to characterize the level of development of symbolic function in Mexican preschool children of suburban origin.

Method

Participants

The participants were 59 preschool children from suburban region of the State of Tlaxcala (Central Mexico). All children were assisting pre-school official institution one year before entering school level of formal education. The table 1 represents general distribution of children by gender, laterality and age.

Table 1. Characteristics of children evaluated for gender, average age and handedness.

3 º Government preschool	**Gender**		**Averange age years/months**	**Laterality**	
	Boys	**Girls**		**Right handed**	**Left handed**
59 children	**26**	**33**	**5/5**	**57**	**2**

Materials

"Protocol of the symbolic function evaluation in preschool children" was applied for evaluation of the level of development of symbolic function in children. The protocol includes items which assesses the presence and development of symbolic functioning levels: a) materialized, b) concrete perceptual, c) Schematic perceptive, and d) verbal (Solovieva, in print). These instruments are based on historical-cultural perspective (Vygotsky, 1995; Luria, 1975; Salmina and Filimonova, 2001; Salmina, 2010; Talizina, 2000, Galperin, 2009).

The tasks included in the protocol are described below:

1. The child is asked to propose any game with an object (pen). The child is asked to create new function for the object "pen".

2. The child is asked to propose another variant of a play with a "pen".

3. The child is tolled that there are no traffic signs in the streets of the city and the cars cannot circulate. Then the child is asked to solve this problem, in other words to propose some "sings" for traffic regulation.

4. At the beginning at the session, the child is given a "button" while the adult asks him/her to remember that the "button" will serve us to remember that we have to tell something to each other. At the end of the session the adult presents the "button" and asks if the child remembers what it was for.

5. The child has to find special "signs" in order to mark different places in the city.

6. The child is asked to draw something in order to remember four different words (illness, a joyous festival, development and patience). This tasks is a kind of a tasks with pictograms.

7. The child is asked to make a letter (without any writing), just with pictures, for his mother. The letter has to let hoer know what would the child like to eat on Sunday.

8. The child is asked to draw the path from his/her house to the nearest store. This task requires to represent three elements: house, store and the path between this tow points.

9. The child is asked to draw the places he/she knows (or wants) in the city.

10. The child is asked a question: "How can we know which sentence is longer than the other?" The tow sentences are: 1) We live in Puebla and 2) Our country is Mexico.

11. The child is asked a question: "How can we determine which word is longer than the other?" The tow words are: 1) Train and 2) Automobile.

12. The child is asked a question: "How can we know when one table is longer than another one?"

13. The child is asked a question en relation to the previous one: “What is another way to know which table is longer?”

14. The child is asked a question: “Do you know the story of Red Hat?” Tell me this story as if you were girl with Red Hat.

Procedure

The instrument was administered to all children individually in approximately 1 session of 40 minutes. The results were analyzed according to values of the tasks evaluated: 1) correct execution and no help from the adult, 2) correct execution after help from the adult, 3) improper execution instead of the help.

Results

Our results have shown that the majority of preschool children have showed insufficient development of symbolic function at all levels. The Table 2 shows general results of the study by frequencies of children for each kind of answer (1, 2 or 3).

Table 2. General results of performance in the tasks.

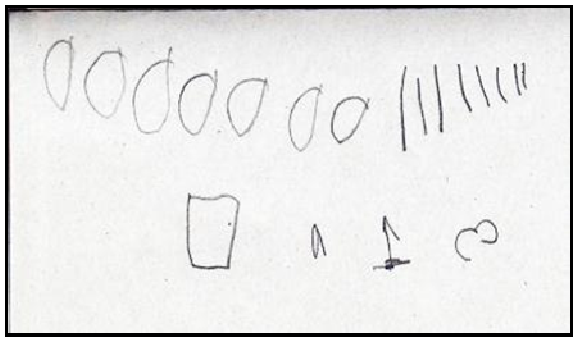
Levels	Tasks	Rates	Perfomances (f)	Percentage
Materialized Level	Task 1.	Correct	12	20.34
		Correct with help	1	1.69
		Incorrect	46	77.97
	Task 2.	Correct	11	18.64
		Correct with help	1	1.69
		Incorrect	47	79.66
	Task 3.	Correct	15	25.42

		Correct with help	**0**	**0.00**
		Incorrect	**44**	**74.58**
	Task 4.	**Correct**	**29**	**49.15**
		Correct with help	**1**	**1.69**
		Incorrect	**29**	**49.15**
	Task 5.	**Correct**	**25**	**42.37**
		Correct with help	**0**	**0.00**
		Incorrect	**34**	**57.63**
Perceptive Concrete Level	**Task 6.**	**Correct**	**3**	**5.08**
		Correct with help	**0**	**0.00**
		Incorrect	**56**	**94.92**
	Task 7.	**Correct**	**50**	**84.75**
		Correct with help	**2**	**3.39**
		Incorrect	**7**	**11.86**
Perceptive Outlined	**Task 8.**	**Correct**	**31**	**52.54**
		Correct with help	**8**	**13.56**

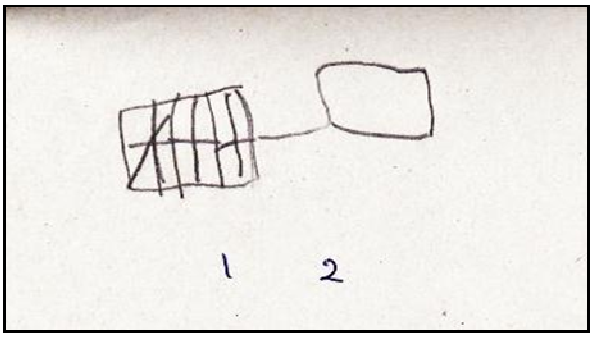
Complex Level		**Incorrect**	**20**	**33.9**
	Task 9.	**Correct**	**24**	**40.68**
		Correct with help	**3**	**5.08**
		Incorrect	**32**	**54.24**
	Task 10.	**Correct**	**1**	**1.69**
		Correct with help	**0**	**0.00**
		Incorrect	**58**	**98.31**
	Task 11.	**Correct**	**0**	**0.00**
		Correct with help	**0**	**0.00**
		Incorrect	**59**	**100.00**
	Task 12.	**Correct**	**1**	**1.69**
		Correct with help	**1**	**1.69**
		Incorrect	**57**	**96.61**
	Task 13.	**Correct**	**2**	**3.39**
		Correct with help	**0**	**0.00**
		Incorrect	**57**	**96.61**

Verbal Level	**Task 14.**	**Correct**	**1**	**1.69**
		Correct with help	**0**	**0.00**
		Incorrect	**58**	**98.31**

According to the results it is possible to notice that more than 78% of children showed strong difficulties in execution of the tasks on concrete, perceptive and verbal levels (Figure 1). In general, children managed to fulfill better some of the tasks on perceptual level. Additional analysis of conformation of graphic activity pointed out poor level of drawing of objects and situations: lack of essential features ob objects, absence of spatial orientation and lack of correspondence between image and word (Pictures 1, 2, 3, 4, 5, 6, and 7).

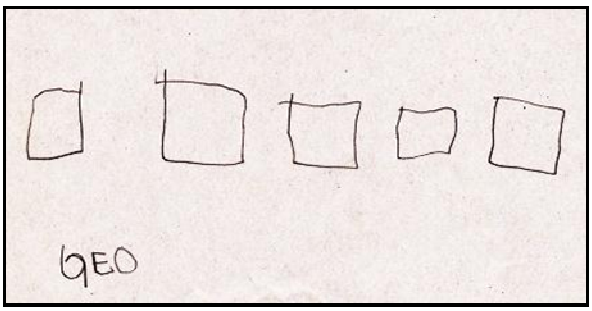


Picture 1. Execution of a girl in Task 6 of preparing a letter with the picture of the foods you like to eat. The girl drew "spaghetti, beans and alphabet soup."



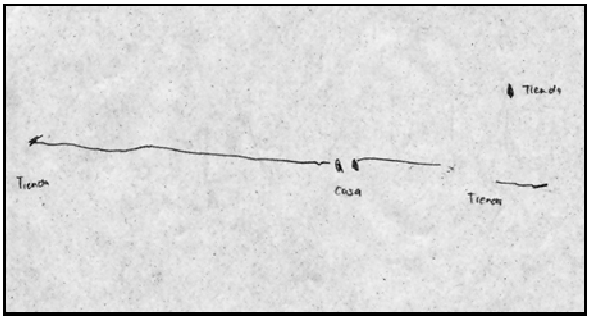
Picture 2. Execution of a girl in the task 8 of drawing the route from home (number 1) to the nearest store (number 2). Note: The numbers were assigned by the evaluator.

Picture 3. Execution of a child in the task (9) of drawing the places in the city. The boy says he has drawn "cars".

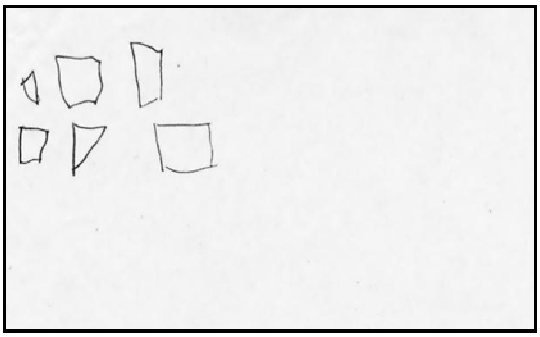


Picture 4. Execution of a child in the task (9) of drawing the places in the city. The boy says he has drawn "houses".

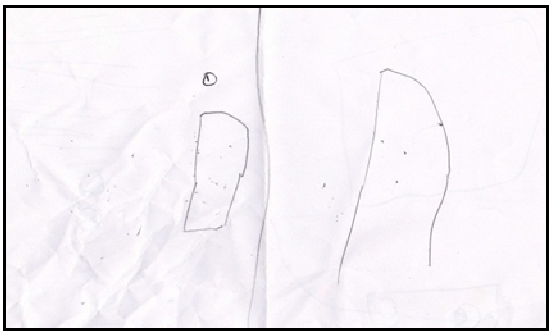
Picture 5. Execution of a child in the task of drawing four words (illness, a joyous festival, development and patience). The child only made a circle and does not respond to questions from the evaluator.



Picture 6. Execution of a child in the task of drawing the route home. The child says "Here is my house, there is a shop here, here's another store and another store here and here's another, and here." Note: Names were written by the evaluator.

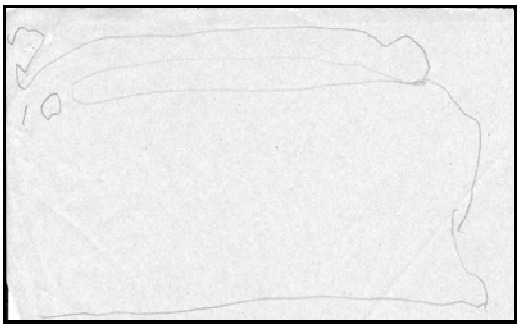


Picture 7. Execution of a girl in the task of drawing the places of the city. The girl drew a house, tamales and corn. Note: The number was written by the evaluator.



Picture 8. Execution of a girl in the task of drawing the route home. She has drawn her house, the shop and the road.

Picture 9. Execution of a child in the task of preparing a letter to the drawing of the foods you like to eat. The child has drawn: "Beans with broth, then go to the store, ranch beans, chile deveined, and crushes it does as little water for sauces, then people add onion and salt."



Picture 10. Execution of a child in the task of drawing the places of the city. The child says he has drawn the streets and a gate where it enters and lives there.

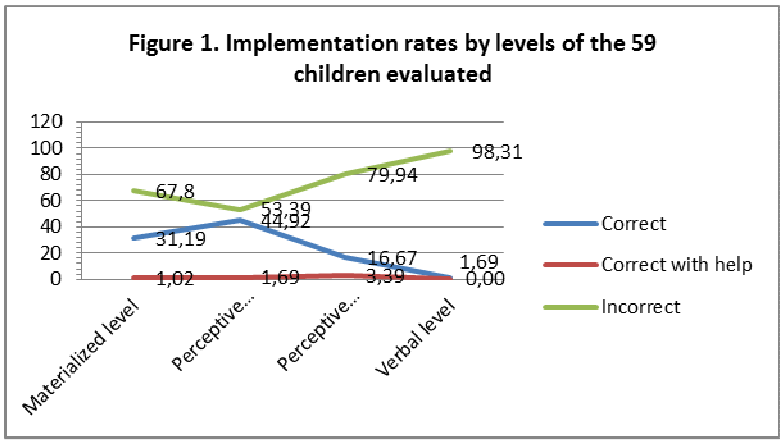
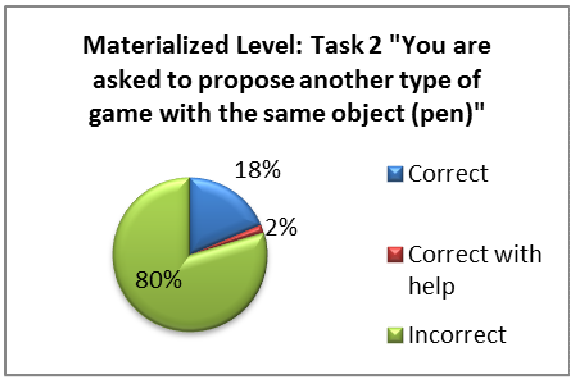


Figure 1. Rates by levels

In the materialized level in Task 2, the children had difficulty to propose a game with a specific object (pen). Only 18% of them answered correctly and 2% agreed with the help of the evaluator (Figure 2). The results show that in tasks one and two children with improper execution did not propose any kind of game with the object "pen", their

performance was limited to the particular use or function of the object itself without using it to replace an absent object to play in a new way. For example, most of the proposed children's game were just to "write / draw" with the pen. As for task 5, 42% responses were correct and 58% were wrong (Figure 3). In this task the children were able to propose reflectively "special signs" to indicate various parts of the city with the material proposed by the assessor, such as cars, chips and cardboard boxes, the remaining children were unable to perform this task.

Materialized level



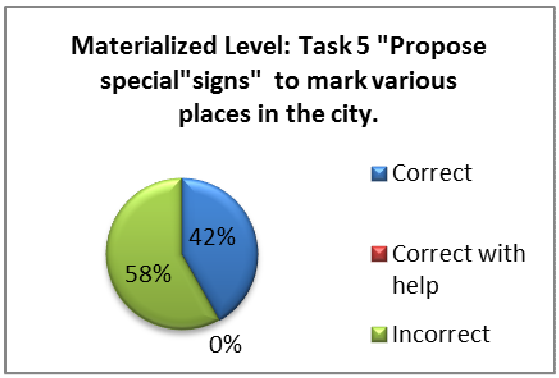
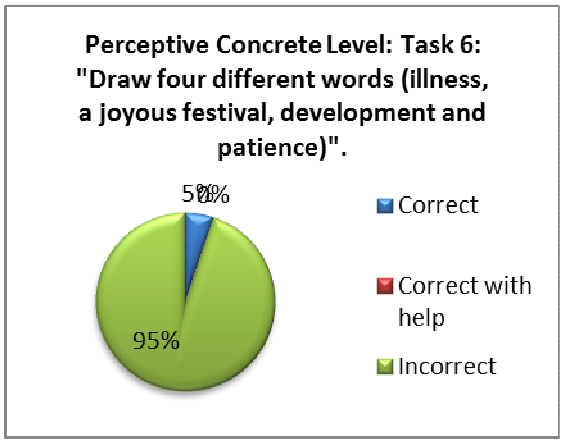


Figure 2. **Figure 3.**

As for perceptive task 7 (Figure 4), 85% of executions were correct, however, in the task 6 (Figure 5) only 5% of correct executions were correct. This means that the majority of drawings made by the children show very few features of the image, or they do not correspond to the word given in the instruction of the task at all.

Perceptive Concrete Level



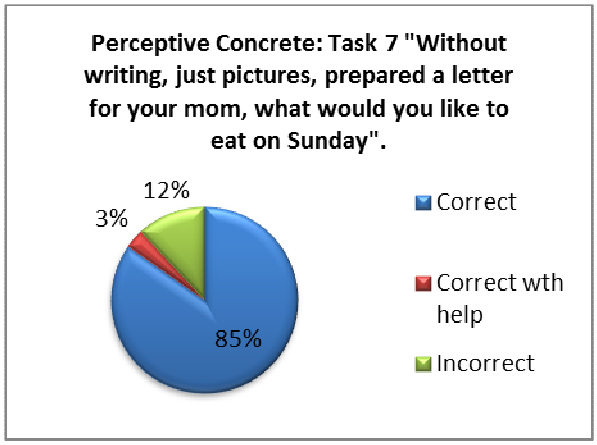


Figure 4. **Figure 5.**

On perceptive outlined complex level, the task 11 showed (Figure 6) the highest percentage of incorrect executions (100%), so that no child could answer correctly. That is, their

responses were not reflective most children answered impulsively, not argued their responses, or only referred to the object of greater visual proportions (train). Example: "The train is bigger because it is bigger than the automobile". In the task 8 (Figure 7) 52% of children managed to answer correctly. The children were able to represent the starting point (home), the route and the point of arrival (store). However the remaining children were not able to make the task of reflectively, as their drawings did not correspond to any purpose or they drew only the house or only the store and no route between these tow points.

Perceptive Outlined Level

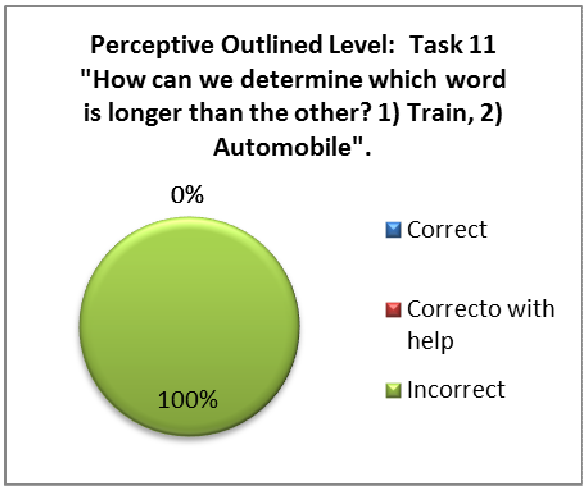


Figure 6.

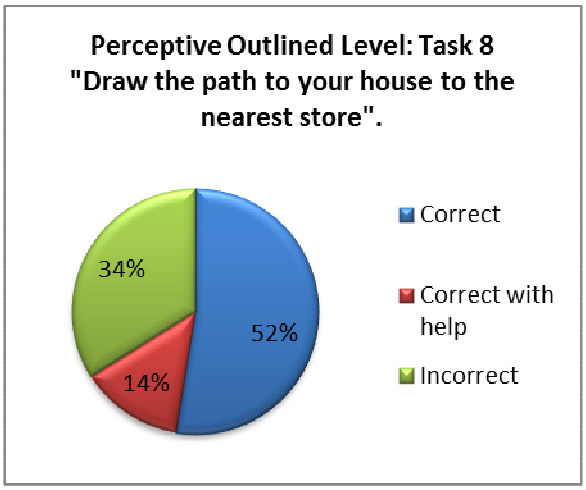


Figure 7.

The verbal level consisted of a single task number 14 (last task of the protocol) (Figure 8). In this case 98% failed to answer. In this task the children reported some events in the story but without assuming the role of the personage of the story (tale). Other children tried to mention their own personal life and experiences with no connection to the story. Other possibility was production of simple and incoherent stories on other topics. Some children even have refused to tell anything. Children did not respond to the assistance of the evaluator, constant motivation and repetition of the instruction with some examples. The help of the adult was not effective for this task.

Verbal Level

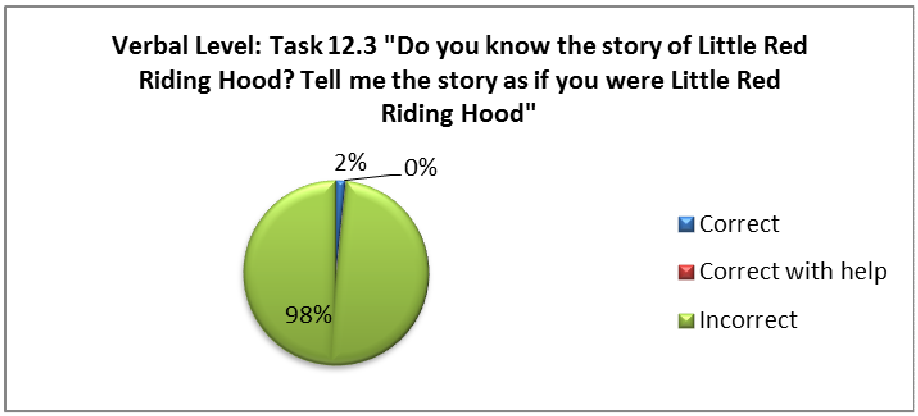


Figure 8

Discussion and conclusions

The poor development of symbolic function was observed in the inadequate symbolic appropriation of the means proposed by the adult in play activity. The children needed assistance during execution. The absence of possibility to work on verbal level with symbolic operations was found in the study. This demonstrates the absence of joint action of language and thought, which does not allow stabilization, restructuring and consistency of his thought (Vygotsky, 1995). Another poor aspect of children's development detected in the study is their graphic activity, their draws showed lack of essential features and differentiators, which affects the ability to use written signs and therefore the acquisition of reading and writing (Salmina, 2000, 2010).

Furthermore the insufficient development of regulation function of language does not permit the optimal formation of concrete images. The insufficient domain of tools, signs and symbols show poor level of preparation for school in assessed population.

Our results show the necessity of implementation of new strategies in preschool institutions. Such strategies should include rich activities with symbolic function in the preschool years. The formation of graphic activity in a particular way should also be included in preschool institutions. Teaching should not only be directed towards the acquisition of formal knowledge, but also to essential psychological formation of the age which will determine later success in school learning.

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