CONTROVERSIAS PIAGET-VYGOTSKI EN PSICOLOGÍA DEL DESARROLLO

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Resumen

En este artículo de reflexión se analizan tres controversias originadas a partir de la psicología lógica operatoria de Piaget y de la psicología histórico-cultural de Vygotski, sobre: el lenguaje egocéntrico y el lenguaje para sí en el niño preescolar; el simbolismo y la situación imaginaria en el juego infantil; el desarrollo cognitivo real y el desarrollo cognitivo potencial. Se analizan las controversias a partir de "la unidad de análisis": *la lógica de la acción o de la operación,* y *la equilibración*, en Piaget; y *la acción mediada por instrumentos* materiales, semióticos y humanos, en Vygotski. El trabajo se orienta hacia la posición de Vygotski y presenta investigaciones neo-vygotskianas relacionadas con: 1. El lenguaje egocéntrico como instrumento planificador y regulador de la acción intelectual, en el preescolar. 2. El juego infantil, en el cual el niño aprende a definir su conducta *por el sentido de la situación imaginaria creada*. 3. El desarrollo cognitivo potencial define el aprendizaje; y el aprendizaje organizado es fuente de desarrollo. Los objetivos del trabajo van orientados a: 1. Analizar las diferencias conceptuales y metodológicas entre la psicología de Piaget y la de Vygotski. 2. Precisar la investigación neo-vygotskiana en psicología del desarrollo.
Palabras clave: Piaget-Vygotski, neo-vigotskianos, lenguaje egocéntrico, juego infantil, desarrollo cognitivo.

PIAGET-VYGOTSKY CONTROVERSIES IN DEVELOPMENTAL PSYCHOLOGY

Abstract

This review article analyzes three controversies originating from the Piaget's logical operational psychology and Vygotsky's cultural-historical psychology on: the egocentric speech and the self-talk in the pre-school child; the symbolism and imaginary situations during children's play; the real cognitive development and the potential cognitive development. The controversies are analyzed from the "unit of analysis": *the logic of the action or the operation,* and *equilibration,* in Piaget; and *the action mediated by* material semiotic and human *instruments,* in Vygotski. This paper leans towards Vygotsky's position and presents neo-Vygotskian research related to 1.The egocentric speech as a planning and regulating instrument of intellectual action in the preschooler. 2. Children`s play where the youngsters learn to define their behavior *with the created imaginary situation.* 3. The potential cognitive development defines learning; and the organized learning is a source of development. The objectives of this research are oriented to: 1. Analyze the conceptual methodological differences between the psychology of Piaget and that of Vygotski. 2. Clearly state the neo-Vygotskian research in developmental psychology.
Key words: Piaget-Vygotski, neo-Vygotskians, egocentric speech, children's play, cognitive development.

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CONTROVÉRSIAS PIAGET-VYGOTSKI EM PSICOLOGIA DO DESENVOLVIMENTO

Resumo

Neste artigo de reflexão, analisam-se três controvérsias originadas a partir da psicologia lógica operatória de Piaget e da psicologia histórico-cultural de Vygotski sobre: a linguagem egocêntrica e a linguagem para si na criança pré-escolar; o simbolismo e a situação imaginária no jogo infantil; o desenvolvimento cognitivo real e o desenvolvimento cognitivo potencial. Analisam-se as controvérsias a partir da "unidade de análise": *a lógica da ação ou da operação, e do equilibração em* Piaget; e a ação *mediada por instrumentos* materiais, semióticos e humanos, em Vygotski. Este trabalho está orientado ao posicionamento de Vygotski e apresenta pesquisas neovygotskianas relacionadas com: 1) a linguagem egocêntrica como instrumento planejador e regulador da ação intelectual na criança pré-escolar; 2) o jogo infantil, em que a criança aprende a definir seu comportamento *pelo sentido da situação imaginária criada*; 3) o desenvolvimento cognitivo potencial define a aprendizagem; a aprendizagem organizada é fonte de desenvolvimento. Os objetivos deste trabalho vão orientados a: analisar as diferenças conceituais e metodológicas entre a psicologia de Piaget e a de Vygotski; precisar a pesquisa neovygotskiana em psicologia do desenvolvimento.
Palavras-chave: Piaget-Vygotski, neovigotskianos, linguagem egocêntrica, jogo infantil, desenvolvimento cognitivo.

INTRODUCTION

The year 2016 marks the 120th anniversary of the birth of Jean Piaget (1896-1980) and also of Lev Semiónovich Vygotsky (1896-1934). Although both of these psychology theoreticians and researchers began their scientific production at the same time, they did not exchange ideas nor did they debate their findings with one another due to the political circumstances that surrounded Vygotsky's life and work. However, their theoretical premises in developmental psychology are intertwined and have given rise to a series of debates in respect to language, children's play and cognitive development. Vygotsky in his book *Thought and Language* published in 1934 (Vygotsky, 1934/1993) comments and critiques Piaget's works of 1923 and 1924 (Piaget, 1923/1983; 1924/1973) on egocentricism, referring to the initial inability of the child to decenter. Piaget (1959/1985) writes twenty-five years later the text *Commentaires sur les remarques critiques de Vygotsky*, after he gets familiar with the observations of Vygotsky in "Thought and Language" where he recaps some moments of his understanding of egocentric speech. He tries to see if Vygotsky's remarks are justifiable in light of his last works. Thus, Piaget points out that by "egocentrism" one understands "the initial inability of the child to decenter himself, to change the given cognitive perspective", which by no means is connected with the hypertrophy of the consciousness of "self". Egocentrism gives way to the decentralization or the breaking-out process of one's mental position.

Upon analyzing the psychological development of the human being in Piaget's *logical operational psychology* and in Vygotsky's *cultural-historical psychology,* in these conceptions it becomes necessary to determine the *units of analysis* that guide their research and methodological aspects. *The units of analyses in Piaget's logical operational psychology are: the logic of action and operation, along with equilibration.*

For Piaget (1956/1967; 1972/1980; 1964/1981) cognitive development is related with the *logic of actions, and the execution and coordination of such actions, with the logic of concrete and formal operations, and with the logic of meanings.*

Piaget and Inhelder (1969/2007), in the book *The Psychology of the Child,* considered that mental development is a succession of three great constructions: a) the construction of the sensorial-motor action schemas; b) the construction of semiotic relationships, which reconstruct the previous action schemas in a new level of representation, and formalize a set of concrete operations and the structures of cooperation; and finally, c) the construction of formal thought, which reconstructs the concrete operations subordinating them to new structures; this construction takes place during adolescence and continues throughout life.

This division of development into great periods or stages complies with the following criteria: a) a constant succession order, although the average age may vary depending on the level of intelligence and the social environment; b) an overall structure that characterizes each stage and c) to the integration of the overall structures which do not substitute each other: each structure derives from the previous one and sets up the next one.

On the other hand, Piaget, (1972/1980; 1964/1981; 1975/2012) analyzes *the process of equilibration of the cognitive structures* in the human being. He considers equilibration as the core problematic of development and proposes the "model of equilibrium by compensation" between the external disturbances and the activities of the individual. In the human being the external disturbances

are an obstacle for the achievement of the goal, for the processes of assimilation or incorporation of an external element (object, event, etc.) in a sensorial-motor or conceptual schema. By employing the notion of equilibration, in the analysis of cognitive development, he explains the genesis of mental structures and the transit from the preoperational regulations to the operational ones as such.

For Piaget (1975/2012), in the human being the progressive equilibration of the cognitive structures is a process whose manifestations are modified in every stage of the cognitive development of the individual, in the sense of a better equilibrium, in the qualitative structure as well as in the field of application.

The unit of analysis in the cultural-historical psychology of L.S. Vygotsky: action mediated by instruments (instrumental mediation)

When developing his cultural-historical approach in psychology (1924-1934), Vygotsky applied *instrumental mediation* to the study of cognitive processes and sociocultural analysis. A material instrument, a signal (*semiotic or psychological instrument*), and a human being, lead to new composition of behavior and to a reconstruction of the structure of the psychic process. In the solution of a task, the procedure is orientated by the instrument, and the psychic processes proceed according to this, forming determined instrumental acts that lead to the development of Superior Psychic Functions (SPF).

Vygotsky (1931/1983; 1930/1984; 1930/1991) considers it necessary that the human being in order to organize, dominate and reconstruct a psychic operation or any other superior psychic function (productive and discursive thought, logical memory, significant language, etc.) must include signals or cultural instruments (linguistic signals; mnemotechnic signals; material and psychological instruments; writing and numbering systems of schemas and diagrams, etc.) that serve as an auxiliary means in the solutions of any task to assimilate, remember, recognize, communicate, compare, select, evaluate and ponder something.

Vygotsky (1931/1983; 1934/1993), while studying ontogenetic development, laid out the genetic law of cultural development: every psychic function appears on the scene twice on two planes, first social and then psychological; first among people in an interpsychic manner, and then in the interior of the subject, in an intrapsychic way. Under this psychogenetic law, to develop different types of actions (intellectual, communicative) it is indispensible first to achieve interpsychic control (interaction with another) and later, intrapsychic control (internal management of actions). The external action becomes mental representation, where the signal and its use have been determinant. The signal is initially a means of social relationship, influence on others and later, a way to influence over oneself. The signal mediates the relationship of a human being with another and with oneself. Signals interpose between any natural psychic function of the human being and his object, radically changing the properties of such function.

In summary, in cultural-historical psychology, *the unit of analysis is the action mediated by instruments*: materials, semiotic (signals) and human (by an adult or significant other) that leads to broaden the behavior of the subject in his interactions with the environment, others and himself (Zínchenko, 1993; Wertsch, 1985/1988).

Taking into account the above mentioned, the objectives of this article are the following: 1. analyze the conceptual and methodological differences between the logical operational psychology of J. Piaget and the cultural-historical psychology of L.S. Vygotsky; 2. to exactly define, from the theoretical conceptualization and the unit of analysis of Vygotskian psychology, the course of research action in the study of language, play and cognitive development.

PIAGET-VYGOTSKY CONTROVERSIES

The well-known "Vygotsky-Piaget Debate" about the "egocentric speech" phenomenon (Piaget, 1923/1983; 1924/1973) and "inner speech" (Vygotsky, 1934/1993), at the beginning of the 1930s is presented first. Secondly, the "controversy over children's play" is dealt with by introducing Piaget`s position on the symbolism in play; and that of Vygotsky, concerning make-believe play. Thirdly, the "controversy over cognitive development" lays out Piaget's position that "the actual level of cognitive development determines learning", and Vygotsky's position that "the potential cognitive development defines the course of learning".

Vygotsky-Piaget debate on egocentric speech in the child

Piaget (1923/1983; 1924/1973) considers egocentric speech as one of the symptoms of egocentric thought of the preschool-age child: when talking, the child does not try to understand the point of view of the listener. The youngster sees reality through his own perspective, without realizing it. His own vision appears as absolute. Piaget concludes that the child is "a prisoner of his mental position". Opposed to egocentric speech is socialized speech. Piaget considers that egocentric speech occurs genetically before socialized speech.

For Piaget, egocentric speech or "speech from one's point of view" occurs due to insufficient socialization of language, initially individual. As the child grows, egocentric speech diminishes and is replaced by socialized speech

and finally disappears. In the child the speech becomes socialized and communicative only at the age of seven or eight when logical operational action arises (Montealegre, 1990; 1991/1994; 1998).

Piaget (1932/1977) asserts that the principal consequence of child egocentrism is syncretism. The child does not worry about the objective links in favor of his own subjective ones. Syncretism penetrates all the thought of a child, hindering the objective analysis of phenomena and deductive reasoning.

For Piaget (1936/1969), another consequence of egocentrism is *the insensibility of the child to contradictions*; for example, he may initially affirm that wooden boats sail because they are light, and some minutes later, argue that big boats do not sink because they are heavy. The insensibility to contradictions occurs because the preschool-age child reasons with *transductions* (transpositions), when the child's thoughts move here and there without a logical necessity, without support of exact definitions.

In brief, the Piagetian theory emphasizes the roots of intellectual egocentrism in the asocial character of the child and in the idiosyncratic character of his practical activity. Egocentrism in child thought is considered in this theory the result of altering the social forms of thought.

Some authors have narrowed the debate since this phenomenon was given a label; in this respect, Flavell et al (1968), Kohlberg et al (1968), proposed the term *private speech* to designate the children's undirected expressions which are not addressed to any listener. In the Vygotsky-Piaget debate there has been research about the dependency of *private speech* in respect to the age, sex, nationality, intellectual quotient, difficulty of the task, and the regulating role of adults in the solution of the child's tasks.

Contrary to Piaget, Vygotsky (1934/1993) postulates the hypothesis of the *initially social character of language and the surge of egocentric speech as the result of insufficient individualization of the language.* In the child, the primary social language becomes more individual, addressed to oneself. In other words, for Vygotsky as toddlers grow they talk to themselves and use for themselves the speech they hear in their social environment. At the age of three the difference between egocentric speech and socialized speech is equal to zero; at the age of seven we have the speech that for its structure and functionality does not resemble the social language. What occurs here is the differentiation of the two verbal functions: the communicative one and the intellectual one (Montealegre, 1991/1994).

Summarizing, Vygotsky affirms that t*he egocentric speech is social by nature*; it has emerged from social speech, but still has not been separated from it. It is a special form- speech for oneself. According to Vygotsky, the primary function of language is for communication, for social binding, for influencing the social circle of adults as well as children. Egocentric language appears as a transitional stage between the external speech (social) and inner speech. The inner speech is the foundation where logical thought is developed. Besides, Vygotsky considers that *egocentric speech fulfills the intellectual function of planning and makes the action intelligible*. Egocentric speech becomes more frequent and displayed when the child faces difficulties that require a conscious approach and a reflection. (Montealegre, 1990, 1998).

The research carried out by Montealegre (1990, 1998) concerning the *role of language in preschool children for the solution of spatial tasks,* following the cultural-historical psychology of Vygotsky, makes possible the development of self-talk as planner and regulator of the action in preschool children, by facilitating them the indispensable and accessible symbolic means and material support for solving the task. Due to planning language being a superior psychic function, it should be mediated instrumentally. In the child's spontaneous experience this is achieved thanks to the interrelation between language and drawing. It has been observed that the child first draws and then talks about what is drawn; at an older age he talks while drawing; at the end of the pre-school age it is possible to have planning of the drawing and the accompaniment of its realization. Thus, speech that is conveyed from the end to the beginning of the action constitutes the instrument of intellectual planning and regulation of the action.

Montealegre structures the research of the planning function of speech with the help of the genetic-modulator experimental method or formative experiment method of Galperin (1959; 1969; 1969/1987), which brings together the genetic and instrumental method of the cultural-historical psychology of Vygotsky.

The experiment was carried out in four stages (children 4-7 years old). In all of them a tri-dimensional scaled model of a house was placed before them, and apart the furniture. During the first stage -of a previous orientation of the task- the child got familiarized with each site of the model and realized its use. In the second stage of the experiment, the child worked with pieces that replaced the furniture and with previously prepared house blueprints. The child was asked to take the square carton pieces representing the objects (that were going to be placed in the different rooms), and then move them to where they correspond in the house blueprints. Here, when the child was locating the pieces, the child should say what object the piece represents and in what room it belongs. In the third stage the child was asked

to draw the plan of the house and mark the furniture in it with dots. All the process action carried out was accompanied with speech. Finally, in the fourth stage, the child takes the furniture in his hands and places it in the rooms, previously telling the experimenter what he was going to do. After the *formation* experiment was finished, a controlled session took place in which children, on a sketch of a house with demarcated spaces such as living room, dining room, bedroom, bathroom etc., have the task of organizing the different adhesive shapes of people (father, mother, children) and accessories (furniture, curtains, lamps, etc.) The task was evaluated taking into account the number of objects, the accuracy in the placement, and the perspective. The fundamental *outcome* of the research was that planning speech was observed in all the participants of the experiment. As any other superior psychic function in formation, planning speech should be mediated instrumentally. The genetic-modulator method used in the experiment made clear what conditions necessarily facilitate that language acquires the planning function during the solution of spatial tasks.

Sánchez Medina (1999) researched in preschoolers ages 4 and 5 the actions and the course of egocentric speech in the solving of a categorical classification task. In the tasks 23 cards were used to organize into four groups (means of transportation, animals, food and buildings) made up of 5 cards for each one; the 3 remaining cards could not be included in any group. While performing this task the children were divided into pairs. The experimenter handed out the mixed up cards to the kids so they could order them; later on the experimenter identified the performed actions by each child and analyzed whether they were accompanied or not by verbal production. The utterances of the children were coded observing the following features: a) purpose of the emission: it refers to the communicative intention of the emission (social or egocentric); and b) referential perspective: it refers to the way children categorize the objects and events implied in the task.

In this research the effectiveness of the resolution of the task was calculated, awarding one point for every action that concluded with the correct placement of the card. The results provided evidence of the social origin of egocentric speech and showed its role in the transformation of the actions. One of the most important results of the research is to have eye witnessed the course of egocentric speech in the radical transformation of the actions of the subjects. It analyzes, following Vygotsky's theory, the radical transformation of the individuals' course of actions from an interpsychic or social level to an intrapsychic or individual level. This step shows the progressive genesis of the intellectual function of the signal. This function arises when children direct signals at themselves that in previous stages they directed at their social world with communicative intentions. In addition, it shows in egocentric speech the use of concepts as instruments of thought. Finally, in the research it is concluded that the preschool age child, while learning to categorize the stimuli of the surroundings and use them by directing them towards himself through egocentric speech, is endowing himself with the powerful instrument of action regulation.

Piaget-Vygotsky controversy about children's play

Shuare and Montealegre (1997) present in their article (The Imaginary Situation, the Role and the Symbolism in Children's Play) the Piaget–Vygotsky controversy about children's play, approached by Piaget from *symbolism*, and by Vygotsky from the *make-believe situation.*

Piaget and the symbolism in play

Piaget started to write about play in the 1930s and 1940s; he also dealt with the topic in "The Language and Thought of the Child" (1923/1983); in "The Moral Judgment of the Child" (1932/1977), where he dedicates the first chapter to the development of "The Rules of Play" studying the game of marbles in "The Origins of Intelligence in Children" (1936/1969) where he presents a series of observations about play in the period of sensorimotor intelligence. Piaget specifies his approach on play in his work "The Formation of Symbolism in the Child" (1959/1996), in the second part entitled "Play"; and in the publication written with Inhelder "Psychology of The Child" (1969/2007) he emphasizes *symbolic play*. Piaget says that symbolic play is the best form of children's play.

For Piaget, stage 6 of the sensorimotor period is where symbolic play begins. In this stage 6 there is a transformation of the rituals in the child of the sensorimotor action schemas in *symbolic play.* The symbolic schema of a playful order, developed in this stage 6 is not an adaptation to the real, rather a *deforming assimilation* (*subjective assimilation, egocentric assimilation*). The first ludic symbols arise when the children start talking, that is to say, they are contemporary of the first verbal signals. As opposed to the signal that presumes a social relationship, *the symbol is a product of individual thinking*. The symbol is based on the resemblance between the actual object that plays the role of "*signifier*" and the absent object "signified". The symbol implies a representation of a not given situation, one which is mentally evoked. *The symbol, when presenting a resemblance with its signified, is a motivated signifier.*

The classification and evolution of symbolic play, according to the logical operational psychology of Piaget (1959/1996) is the following: Stage 1, it starts with the projection of symbolic schemas and imitation schemas on

new objects. The second sub-stage of Stage I is characterized by; a) simple assimilation of one object to another; b) assimilation of the child's body to any object; thus, originating an "imitation play". In this second sub-stage, there is the intervention at the same time of imitation and symbolic assimilation. The third sub-stage of Stage 1 is made up by; a) varied symbolic combinations: games manifested in the building of complete scenes (an example of this is doll play); b) compensatory combinations: games originated by fears, jealousy, anger, etc.; c) eliminatory combinations: play consisting of eliminating a disagreeable situation; d) anticipatory symbolic combinations: games comprised of accepting an order, some advice, etc. The end of this sub-stage leads to stage 2, which occurs approximately between age four and age seven; the symbol becomes more and more real and "collective symbolism" begins with the assumption of roles or characters. However, at this time the socialization is very fragile and collective play is still related with childhood symbolism.

Piaget emphasizes symbolic combinations; a) the imaginative symbol, means of expression and extension, and not an end in itself; and b) make-believe play, which reproduces all that is experienced by means of symbolic representations. Piaget always shows in development how the individual is able to dominate more and more the equilibration processes of his cognitive structures.

Vygotsky and the Imaginary Situation in Play.

Shuare and Montealegre (1997), in respect to Vygotsky's theory "Play and its Role in the Mental Development of the Child" (written in 1993, and published in the Russian Journal "Questions of Psychology", 1966), narrowed down the central idea of this theory; *play is the imaginary, illusory realization of desires, tendencies, needs, impulses, interests, etc. that cannot be immediately satisfied.*

For Vygotsky, the neo-formation of the imagination represents a specific human form of the activity of the conscience, and as all its functions, initially emerges in action. Vygotsky points out that in the explanation of play one should keep in mind *the necessities* (which understood in a broad sense arise from impulses to diverse types of interests) and *the motives of the activity.*

According to Vygotsky, in the generalized affective impulse that play incorporates, the causes of the symbolic are not found, but rather those of the imaginary situation (since they deal with impulses, needs, etc. that cannot be fulfilled in an immediate way). In the activity of playing, the child is liberated from the restraints of the real situation; that is to say, the child begins to act according to motives and impulses that do not come from the material world, but from within.

The pre-school child acts in play according to norms or rules (instrumental mediators) adequate for the imaginary situation; and learns to determine his behavior *by the sense of the conceived situation* (semiotic mediator).

At the pre-school age is when the separation begins between objects, language, and thought; and between the real visible field and the field of sense. When the child "rides horseback" using a wooden stick as if it were a horse, this stick is the pivot that will permit a separation of the word horse from the real animal; at this moment, the relationship between the object and the meaning is inverted and the meaning is converted into the dominant. However, it is still not dominant in an absolute form: the stick, for the pre-schooler, cannot be substituted by any other object, as an adult would be able to do when deciding that a box of matches conventionally represents the horse. The child operates with the meanings still connected with a real action "x" and a certain real object.

Vygotsky considers preschool-age play as a *guiding activity* because in it the child acts as he is not able to act in life, being subject to the implicit rules of the make-believe situation while not yet being able to follow the norms of real life, and play is a guiding activity because it *determines the development of the child:* during play the child is always above his age, above his habitual daily behavior.

For Vygotsky, play is a source of development and creates *a zone of proximal development (ZPD)*: a) in play the child is always above his age and his habitual daily behavior; **in play the child surpasses his age, gets ahead of himself**; b) in play, action happens: in an imaginary field, in a fictitious situation, in the creation of a voluntary intention, in the formation of a life plan and of voluntary motives; and c) in play, the imaginary situation is the path that leads to the development of abstract thought, to the acceptance of the norms implicit in it and to the development of actions on whose foundation it will later be possible to make differentiation and division between study and play, which is observed in the school age (Shuare and Montealegre, 1997).

Vygotsky, in April of 1933, writes to D.B. Elkonin (1978/1980), his disciple, and asks him to come up with experiments in relation to the rule of play, *adding imitation* to be tied with the fictitious situation; he emphasizes that all play with rules is a fictitious situation.

Shuare and Montealegre (1997) expound on Dannil B. Elkonin's contributions about play. In contrast to Vygotsky, for Elkonin *the unit of analysis of child play,* at the preschool age, is the role or character that the child assumes and the actions connected to that role. Elkonin, differentiates between the theme and the content in role play: the theme is that aspect of reality that is reprodu-

ced by the children at play; the content is what the child reproduces with quality in the central and characteristic moment of the activity and in the relationships with adults in the real social life. The themes of play are extremely diverse; however, the content is the same: adult activity and the relationships that arise among persons. Elkonin highlights that roleplaying for the child is a privileged modeler of the relationships that adults establish among themselves in their social life, and in this sense, a complex organizing activity.

Bodrova, Germeroth, Leong (2013) show the causal relationship between play and child development, especially in the areas of creativity, reasoning, executive function and regulation of emotions. Starting from Vygotskian and post-Vygotskian theoretical aspects, they set forth the difference between immaturity and maturity in play. They consider that fantasy or make-believe play is an appropriate instrument for determining in children the level of maturity of the play and its self-regulation.

They describe the play activity performed in the classroom between children and teacher according to the level of maturity. They measure: a) the children's utilization of accessories of their own creation; b) children's participation to meet the goal of the game; c) roles in play (specific roles); d) their use of language; e) the nature of the children's interactions in the game. In order to measure the specific function of speech the researchers notice the number of words related to the topic and the phrases that describe the particular role of the child or the roles of his peers (e.g. "I will be the doctor and you will be the nurses"); they also notice the phrases related to the actions ("I'm fixing the car"), and the phrases that describe the meaning of an object. The assessment of the level of maturity in the play comprises the teacher's knowledge (instrumental mediator). When setting up the game with the teacher the researchers measure: a) teachers' management and involvement in the game; b) the time teachers assign to the activity; c) facilitators' modeling of the different scenarios of the game.

Summing up, the authors show the correlation among the levels of maturity of the game and the child's self-regulation. They consider that in the evaluation of the game one should take into account: a) the characteristics of the maturity level of the game; and b) the self-regulatory behavior of the child.

Furthermore, Hakkarainen and Bredikyte (2008), in the study of imaginative pre-school role-play demonstrate how important the help of an adult is. In the course of a fictional activity performance based on Finnish folk tales they observed adult intervention in the make-believe function of the child. In one of the tales presented the culmination point is an incident where the wolf is transformed into a prince. The tale was told to children using puppets. The turning point was presented so that the wolf puppet is lifted up and the prince appears under the cloak. A young girl takes the puppets after the drama presentation, hands them to the teacher and demands that the appearance of the prince should be explained to her. In the group diverse tales were dramatized. After the performance children were waiting for whatever kind of play activity would be proposed, but a gradual change took place at this point. The children did not wait for a proposed activity, but rather announced what activity they would like to start playing. An example is the initiative in "The Ship Game": they proposed the theme, described what roles were necessary, what props were needed and how to build the ship. The play must have a simple plot and children should play alone or in pairs. In these preschool-age groups there is a specific challenge about how to enrich the play and enhance children's participation in a joint activity.

The authors conclude: a) in role-playing, the child acts in a make-believe situation when listening to tales that require imaginary situations and actions; b) an adult's help is important in empirical research on role-playing. In the preschool-age child, acting out with the help of the adult leads to the development of a social situation and qualitative changes due to this intervention. In this way, play in the preschooler defines *a zone of proximal development* (ZPD).

The authors, however, emphasize that the adult's help must not be so obvious when children are able to perform elemental roles in dramatization and even more when adults keep the position of power in relation to the youngsters.

Considering the shared activity among the children important, the authors approached the play from the methodological angle of Vygotsky's *zone of proximal development* (ZPD). In order to study the creativity in play and ZPD they worked with children between the ages 4 and 8 on the play "The Court of Surmundia". The plot of the play is the following: Princess Alexandra has escaped and Rumpelstiltskin is chasing her; the parents of the royal family are worried and send valets and guards on horseback in search of the princess. The characters change at times, but the basic story line continues being the same. The roles were negotiated and even discussed, but the whole group participated in the drama and no one was left out at any time.

Recapping, the authors in this experiment of play, starting from Vygotsky's approach about the zone of proximal development (ZPD), developed in the children their creative facets.

Piaget- Vygotsky controversy on cognitive development
The real level of cognitive development determines learning, according to Piaget.

Piaget and Inhelder (1969/2007) assigned four factors to mental or cognitive development; a) maturity plays a role during all mental growth, but it should be accompanied by a functional exercise and a minimum of experience; b) the experience acquired in the action applied on objects; physical experience exists, which consists of acting on objects in order to abstract their properties; and the logical-mathematical experience, which acts on objects in order to know the result of the coordination of actions; c) social interactions and transmissions; social life determines the interactions between the individual that grows up and the world that surrounds him, but social action is inefficient without an active assimilation of the subject, which supposes adequate operational instruments; and d) equilibration as a process of self-regulation or active compensations to the external perturbations that are an obstacle for an assimilation, to arrive to an objective; and as a process of retroactive and anticipatory regulation (feedback). Here Piaget, based on cybernetics, concludes that equilibrating by self-regulation constitutes the shaping process of cognitive structures.

In Piagetian psychology the level of cognitive development determines learning; it is impossible to accelerate such evolution through learning, therefore, it is necessary to define the cognitive level before any learning.

Piaget (1972/1980), critiquing his collaborator, the Norwegian psychologist Jan Smedslund for wanting to advance the notion of the conservation of weight through learning by external force, explains how the studied individuals achieved a knowledge of the result and were limited only to this, but they did not form an instrument of reasoning, a necessary logic for the construction of the result. Piaget concludes that development time is necessary, as duration and succession order.

Inhelder, Sinclair and Bovet (1974/1975), while researching the elaboration processes of determined conservation notions (numerical, physical and spatial amounts) in situations of experimentally controlled learning conclude that: *the contributions of the surroundings may favor and accelerate the genesis* (a result different from the interpretation of maturation) the improvements are always function of the initial level of development of the individual; the matters learned are inserted into the general mechanisms of development, the obstacles found in the child, in the course of notion elaboration, are inherent to child thought; thanks to the elaboration processes in controlled experimental learning situations one can determine the epistemological nature of the notions and their structural relationships; *to learn is to proceed to an indefinitely renovated synthesis between continuity and novelty*.

For the authors, *experimental learning* permitted them to examine the interaction modes between the activity of the learner and the contributions or resistance that the real world provides. In the interpretation of the facts, they sided with Piaget's point of view on the delimitation of the levels of cognitive construction stemming from the structural aspects of notion and subjacent operations.

Piaget (1974/1975), in the prologue of Inhelder, Sinclair, and Bovet's book states three `problems about 'learning experiences as modification of development': First, if the established acquisitions are stable or if, as so much school knowledge, they fade after a certain time; second, if the accelerations, apparent or real or even the stable ones, are not accompanied with deviations when these have not been obtained through the utilization of spontaneous development factors; third, if the acquisitions obtained independently of development can serve as a point of departure for new but spontaneous constructions. It is evident for Piaget, that development cannot just be reduced to learning; and that the notions of "levels" and "competition" are imposed as previous conditions.

Potential cognitive development defines the course of learning, according to Vygotsky.

Vygotsky (1935/1989), contrary to Piaget, considers that the genuine level of cognitive development characterizes the mental development retrospectively, while the potential cognitive development (proximal development) characterizes the development prospectively.

Vygotsky (1934/1979; 1935/1989) points out two levels of development: The first is *the genuine development level*, determined by the capacity of independently resolving a problem without the help of others. This development is measured by tests that measure the *mental age*.

On the level of real development, when not being able to establish the cognitive development stage of a child in a complete way, it is necessary to give the children ulterior tests with guided-questions, examples and demonstrations, and thus will arise the differences between them; for example, a child can easily resolve the *tests*, advancing two years his development level, while another child achieves resolving the *tests* in a way that only advances his real development by half of a year.

Thus, one arrives to the second level, that of the *potential development (proximal development)*, determined by the capacity of resolving a problem under adult guidance or with the collaboration of another more capable companion, who acts as a mediatory instrument.

Vygotsky establishes, the *Zone of Proximal Development (ZPD)*, *conceived as the distance between the true development level and the potential development level*. The zone defines those functions that still have not matured, but are found during the maturation process. In order to determine this zone, the mediation of one or more persons is necessary. The interaction between these persons found in the same Zone is internalized, converting itself into a new function of the individual. In the ZPD takes place the appropriation of cultural instruments such as language, reading and writing, calculus, social skills, among others.

The conception of the ZPD leads to a new evaluation of the *role of imitation* in learning, imitation not understood in a mechanical sense, rather in relation to abstract thinking. For Vygotsky, through imitation, children are capable of carrying out more tasks collectively or under adult guidance.

In addition, according to Vygotsky, language acquisition provides a paradigm for the problem of the relationship between development and learning. The Vygotskian schema of language development in ontogeny is: social speech – egocentric speech – inner speech. Language is social from the start because it is a means of communication between the child and the surrounding people; then when being internalized, the social speech is transformed into inner speech, in an internal mental function that contributes to organizing the thinking of the child. Inner speech and reflective thought arise from the *interactions* between the child and the persons that surround him; these interactions are the source of cognitive development.

In respect to learning, Vygotsky (1934/1979; 1935/1989) considers: a) learning is not equivalent to development; notwithstanding, organized learning is converted into mental development; b) there exists a unit, not an identity, between the internal development processes and the learning processes; c) every type of learning that the child encounters in school always has a previous history; and d) learning presupposes a specific social nature and a process through which children get access to the intellectual life of those who surround them.

For Vygotsky, the child's learning begins much earlier than formal school learning. All of the child's learning in school has a prehistory. The author presents the following examples: a) written language: before beginning formal education there exists a prehistory of written language, manifesting itself in the appearance of a series of psychological instruments: *gestures*, writing in the air; *scribbling,* in which the child is not drawing the object per se, rather he is putting down on paper the gestures with which he himself represents that object; the representation of objects in *symbolic play*; and b) arithmetic: before the learning arithmetic at school, the child already has a pre-knowledge of arithmetic, acquiring certain experience in reference to quantity and a familiarity with simple and complex operations of addition and division.

Logically, this learning process that is produced before the child goes to school differs in an essential way from the experiences that are acquired during the school education. School learning provides something completely new to the course of development. Also, following the cultural-historical psychology, learning should be planned on the basis of the potential cognitive development and the use of mediatory instruments.

Montealegre (2011, 2013), setting out from the cultural-historical psychology related to cognitive development, carried out a procedure and an experimental situation with psychology students from the first, fourth and fifth semesters with the main objective of developing the *Superior Psychological Function (SPF) for Cognitive Problem Solving (CPS)* through the realization of cognitive tasks concerning: productive (creative) thinking; *games and mathematical puzzles; and socio-cognitive conflicts,* originated in the analysis of facts and social situations.

Other objectives of the research were: a) build mental actions *mediated by instruments:* materials, semiotics (language) and human being carriers of meanings in social interaction (zone of proximal development); and b) apply instrumental techniques, strategies or heuristic procedures (fallible but trustworthy) and social interaction situations in the execution of *cognitive tasks.*

The experimental part of the research consisted of six (6) intervention sessions of three (3) consecutive hours each, during which the mentioned *cognitive tasks* were performed: a) under the guidance of a person (a professor or a competent peer) that directed the experiment; b) in small groups (15 people maximum) divided into groups of three people, which made it possible to be orientated in the realization of the cognitive tasks. In total there were 18 hours of intervention.

The method of *the formative experiment of cultural-historical psychology* was used for the cognitive development in the Productive Thinking Intervention Sessions; and in Games and Mathematical Puzzles. The method was based on the theory (model) of the *planned formation of mental actions* (Galperin,1959;1969;1969/1987), and comprises the following steps: a) *Orienting Action Basis:* the individuals are asked for a diagram of the conditions of the problem and a diagram of the initial and final stage of the problem; b) *Tasks with the Support of Material Objects;* individuals are prompted to diagram the intermediate stages in the execution of the task and follow a series of instructions

and steps in order to reach a final solution of the task; c) *Presentation of the Tasks in Group;* the participants explain their answers keeping in mind the mediatory instruments.

In addition, there were some intervention sessions on social cognitive conflict based on the conceptualizations concerning the *structuring* or creative *conflict* of a cognitive activity of *Social-Cognitive Psychology*, derived from Piaget's psychology; and from the *Zone of Proximal Development (ZPD)* of Vygotsky's cultural- historical psychology. Students are encouraged to master concepts and social situations related to circumstances of social, gender, and sex discrimination. The participants have to construct solution and analysis procedures in a consensual manner.

In the research it was concluded that there is the need to develop, in psychology students and in university students in general, cognitive processes through which one can achieve more assimilation and learning of the cognitive tasks indispensable in academic activity (Montealegre, 2011, 2013).

Hedegaard and Chaiklin (2005), starting from the Vygotskian thesis on "organized learning is the source of mental development", carried out a program of *radical-local teaching and learning (culturally locally relevant),* as an afterschool activity, with a group of Puerto Rican primary school children from East Harlem in New York City. Culturally locally relevant refers to exploring the historical and cultural conditions of the community of origin and the community where the children live. Drawing from the cultural-historical psychology of Vygotsky, they consider: a) the interaction between mental development and learning (the learning processes provide the starting point for the development of psychological processes); b) the experimental teaching of the knowledge of the topics from a theoretical practical perspective that aims for the learning of concepts in a theoretical dialectical manner based on the cultural- historical development of humanity (general or local); c) the interaction between quotidian concepts (concepts given in daily life) and the scientific concepts (those learned in formalized instruction). Teaching was geared towards developing the ability of relating the everyday concepts with the scientific concepts, and to utilize the content of the acquired materials in the analysis of the local community activities. The objective of this research of *radical-local teaching and learning* is to develop in children a theoretical dialectic understanding of the knowledge about the social sciences (history and social studies) taken from the relevant issues of the daily life of these same children and of the local community (the vicinity, neighbors). The goal is to show how to manage the teaching of a subject that simultaneously follows the historical situation of the participant and at the same time contributes to his own mental development. The radical-local teaching (mediating instrument) was carried out in 37 sessions and began with a series of questions about the origins of the local community: What are our roots? What are the characteristics of the society in which we live today? How do we relate with this society as members of the Puerto Rican community? Afterwards, we carried out a series of sessions where the children had to investigate family life and the conditions of life at the beginning of the 20th Century in Puerto Rico and New York. Then, they had to research about the history of their current city, New York, before proceeding to research about their own locality. Each session was recorded by a participant observer, who also took field notes on what happened. It was observed in the *teaching experiment* how the children began to be able to work with all the relationships and concepts of the central model (community, life conditions, family and resources) and began to understand the real problems concerning their local community (immediate area, neighbors). Emphasized in the research is the need to establish three aspects or perspectives of a practical educational institution: 1. the social, which reflects the historical development of interests and traditions in a determined society that are formulized by laws and regulations: 2. the general, which orientates the theoretical aspect (level of abstraction and generalization) of institutional activities; 3. the individual, which emphasizes the shared activities of the individuals in specific institutions. Each aspect, (social, general, and individual) is a condition for the others. The researchers consider that the three aspects are present in any genuine cultural practice. By formalizing the data obtained, they came to the conclusion that development of children embraces three forms of knowledge: empirical-pragmatic, narrative-dialectic, and theoretical-dialectic.

DISCUSSION

In this paper a series of theoretical and investigative reflections are presented on Piaget's logical operational psychology and Vygotsky's cultural-historical psychology, in respect to egocentric speech, children's play and cognitive development. The debate sets out from "the unit of analysis": operational logic and equilibration in Piaget; and mediated action by instruments in Vygotskyi.

The debate between these two psychologies makes it possible to determine the course of action in the development of the human being: 1. In Piagetian psychology the *operational logic of action* in the interpretation of the psychic processes; and the explanation of the *equilibration*

factor in development, based on the active compensations carried out by the individual as a reaction to external modifications. In Piagetian psychology, action develops from the individual to the social; the social develops from the coordination of individual actions. 2. In Vygotskian psychology, the cultural-historical action in the development of the *superior psychic functions* (SPF). In the overall Vygotskian theory the axis as a dialectic spiral that organizes all the other concepts is historicism. Shuare and Shuránova (1996) analyze in Vygotskian work three conceptualizations from historicism: human time is history, in both the individual and social aspects; the historical development of the psychic phenomena maintains a relationship of dependence with the social activity; and the superior psychic functions are the product of the complex interaction of the individual with the world, interaction mediated by the objects created by human beings. In Vygotskian psychology, the action develops from the social to the individual; the social aspect from the beginning is in the child's interaction with the adult and is developed towards the management of individual actions.

Furthermore, the controversies between the operational logical psychology of Piaget and the cultural-historical of Vygotsky allow mental or cognitive development to be detailed: 1. the operational logic of Piaget characterizes the cognitive development retrospectively, and also determines the cognitive levels from the structural aspects of notions and subjacent operations. Development time is necessary, as duration and succession order. The stages of mental development are determined from the equilibration process of their cognitive structures. 2. Vygotsky's cultural-historical psychology characterizes cognitive development prospectively; in respect to defining a zone of proximal development (ZPD) that establishes the distance between the real development level and the potential development level.

The contributions of this paper "Piaget-Vygotsky Controversies in Developmental Psychology" are: 1. Start from the conception of "unit of analysis" in each one of these theories and determine their theoretical and methodological aspects; 2. particularize a reflection showing the neo-Vygotskian research contributions to egocentric speech, children's play, and cognitive development, where the research is oriented towards developing superior psychological functions and individual actions.

In a nutshell, between these two psychologies of development, the grounds of the whole discussion are its epistemological conception: 1. In the Piagetian theory, the "constructivist logical structuralism" is the progressive construction of operational structures that balance one after another, always supporting themselves on the next ones, filling gaps and re-balancing in a vaster territory. The Piagetian psychogenetic study emphasizes the development of operational structures of intelligence during the first fifteen years of the individual's existence; 2. In the Vygotskian theory, "the "materialistic and historical dialectic" defines the human psyche for the development of society, for the development of the individual and for its mediated character. Action mediated by instruments (instrumental mediation) leads to sociocultural analysis and to the development of the cognitive processes in the human being. The transformations experimented by the human psyche are structural as well as functional.

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