Psicologia Escolar e Educacional

PAPER

DOI: http://dx.doi.org/10.1590/2175-35392022235560T

Elocation - e235560

THE SCHOOL RELEVANCE IN THE HIGHER MENTAL FUNCTIONS DEVELOPMENT: COUNTERING MEDICALIZATION

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ABSTRACT

The present study, of conceptual bibliographic nature, was based on the theoretical assumptions of Historical-Cultural Psychology. Its objective was to defend the relevance of the higher mental functions development, from school education, in opposition to the hegemonic vision that culminates in the medicalization of students. We identified that school education is the pivotal point for the good higher mental functions development, such as attention, which allows us to criticize the common practice of diagnosing students with difficulties in the schooling process as neurological "disorders", such as ADHD, with indication of medication (methylphenidate) for treatment. We conclude that we are not facing an alarming rate of children with pathologies or neurological disorders who need medication in order to advance their schooling process, but rather children lacking, above all, a quality school education, guided by public policies that guarantee the higher mental functions development.

Keywords: education; school; medicalization; historical-cultural psychology

Relevancia de la escuela en el desarrollo de las funciones mentales superiores: contraponiéndose a la medicalización

RESUMEN

El presente estudio, de cuño bibliográfico conceptual, se fundamentó en los presupuestos teóricos de la Psicología Histórico-Cultural. Se tuvo por objetivo defender la relevancia del desarrollo de las funciones mentales superiores, a partir de la educación escolar, contraponiéndose a la visión hegemónica que culmina en la medicalización de alumnos. Identificamos que la educación escolar es el punto clave para el buen desarrollo de las funciones mentales superiores como, por ejemplo, la atención, lo que nos posibilita hacer la crítica a la práctica común de diagnosticarse alumnos con dificultades en el proceso de escolarización como "portadores de trastornos" neurológicos, como el TDAH, con indicación de medicamentos (metilfenidato) para tratamiento. Concluimos que no estamos delante de un índice alarmante de niños con patologías o trastornos neurológicos que necesiten de medicamentos para avanzar en su proceso de escolarización, sino de niños desproveídos, sobre todo, de una educación escolar de calidad, centrada por políticas públicas que garanticen el desarrollo de funciones mentales superiores.

Palabras clave: Educación; escuela; medicalización; psicología histórico-cultural

A relevância da escola no desenvolvimento das funções mentais superiores: contrapondo-se à medicalização

RESUMO

O presente estudo, de cunho bibliográfico conceitual, se fundamentou nos pressupostos teóricos da Psicologia Histórico-Cultural. Teve por objetivo defender a relevância do desenvolvimento das funções mentais superiores, a partir da educação escolar, contrapondo-se à visão hegemônica que culmina na medicalização de alunos. Identificamos que a educação escolar é o ponto fulcral para o bom desenvolvimento das funções mentais superiores, como por exemplo, a atenção, o que nos possibilita fazer a crítica à prática comum de se diagnosticar alunos com dificuldades no processo de escolarização como "portadores de transtornos" neurológicos, como o TDAH, com indicação de medicamentos (metilfenidato) para tratamento. Concluímos que não estamos diante de um índice alarmante de crianças com patologias ou transtornos neurológicos que precisam de medicamentos para avançar em seu processo de escolarização, mas sim de crianças desprovidas, sobretudo, de uma educação escolar de qualidade, norteada por políticas públicas que garantam o desenvolvimento de funções mentais superiores.

Palavras-chave: educação; escola; medicalização; psicologia histórico-cultural

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INTRODUCTION

Schools in Brazil have been experiencing, for several decades, difficulties in ensuring the appropriation of scientific knowledge to a large part of its target audience, as it presents itself in front of a significant index of students with so-called "learning and behavior problems". As a result, these end up being directed to care in psychological and medical clinics, often associated with the health issue, as shown in the studies by Collares and Moysés (2010), Suzuki, (2012); Franco, Tuleski and Eidt (2016), among others. These researches also denounce the already constituted process of pathologization and medicalization of education in Brazil.

It must be recognized that the hegemonic understanding of school complaints remains under the organic/biological bias in order to seek explanations and justifications in the individual, especially in the child, in their body, disregarding factors extrinsic to them, such as historical determinants, social, cultural, economic and political factors involved in the production of school difficulties.

Souza (2010), a relevant researcher about the theme of school complaints, opposes this view, stating that the theoretical understanding that makes it possible to go beyond the individual, considering the objective conditions in which the school fulfills or not its social function, is that which analyzes the schooling process and not the students' learning and behavior problems, in order to transfer the

> (...) axis of analysis of the individual for the school and the set of institutional, historical, psychological, pedagogical and political relations that are present and constitute the daily life at school. In other words, the psychological aspects are part of the complex universe of the school, being intertwined in the multiple relationships that are established in the pedagogical and institutional process present in the school (p. 60).

However, even if there are other perspectives for analysis and work, in addition to the individualizing aspects, we still face a high rate of referral to health professionals for children with complications in the schooling process for diagnosis and treatment, especially psychologists and doctors. Thus, starting from a historical-cultural bias, we go against this understanding, since we understand man as a social, historical and cultural being, and endowed with a psyche constituted in the relationships that he establishes with his social reality.

This study, therefore, aims to defend the relevance of the development of higher mental functions, from school education, in opposition to the hegemonic view that culminates in the medicalization of students. To do so, we will initially approach the brain in its biological/cultural unit with emphasis on the brain functioning in functional systems and higher mental processes and their inter functionalities, and then we will emphasize the role of the school in the process of developing higher mental functions.

The present study is characterized as being of a conceptual bibliographic nature, based on the theoretical and methodological assumptions of Historical-Cultural Psychology elaborated by LS Vigotski (1896-1934) together with his collaborators, AN Leontiev (1903-1977) and AR Luria (1902-1979). Due to the fact that throughout the text we use expressions and concepts proposed by Vigotski that present controversies due to problems in translating the original (Russian) into other languages, especially into Portuguese, we consider it is important to make some considerations about this aspect. To do so, we turn to Prestes (2010), since when performing an analysis of the translations of Vigotski's[1] works, the author identified that there were many mistakes, which "led to distorted interpretations of Lev Semionovitech's thought. Thus, according to her, this carelessness in translating Vigotski's texts caused distortions of fundamental concepts of his theory, altering his ideas in a preponderant way. Nevertheless, it should be noted, as the author points out, that some intentional adulterations carried out in these translations "are hidden under an ideological veil that is almost imperceptible to the reader" (p.11). Duarte (1996a) also draws attention to the fact that in the translations of Vigotski's works, such as *Thought and Language*, at least two-thirds of the original text were suppressed, mainly eliminating his Marxist reflections in order to appear that "[…] were extrinsic to his psychological theory and, therefore, suppressed without prejudice to the understanding of the author's thought" (p.19). This is unacceptable, since Vygotsky's intention was in fact to elaborate a Marxist Psychology (Duarte, 1996a).

THE BRAIN IN ITS BIOLOGICAL/CULTURAL UNIT: THE DEVELOPMENT OF HIGHER MENTAL PROCESSES AND THEIR INTER FUNCTIONALITIES

According to Luria (1991), the theoretical basis of the brain underwent radical transformations, given that the theory that supported its study for several decades was supported by concepts that approximated brain activity to mechanical models, in which its functioning was explained by "analogy with a telephone network", but "the interests of science have now tended to move in the opposite direction" (p. 2). From this point onwards,

[1] For further details, consult – Prestes, Z. R. (2010). *Quando não é quase a mesma coisa: análise de traduções de Lev Semionovitch Vigotski no Brasil repercussões no campo educacional*. Doctoral Thesis. Faculty of Education, University of Brasília (UnB), Brasília.

the brain began to be studied based on new principles and, thus, being seen as a highly complex and peculiar functional system and no longer through mechanistic analogies.

However, understanding brain functioning as a functional system implies knowing the concept of function, which, according to Luria (1977), is characterized as "the organism's adaptive activity aimed at fulfilling a task, both physiological and psychological. In this sense, one speaks of the function of breathing, the function of locomotion, the function of perception, and even intellectual functions" (p. 25 - Our translation).

According to this conception, the function constitutes a functional system reserved to perform a certain biological task and ensured by a complex of interlinked acts that, in the end, guarantee the successful fulfillment of the task. Thus, it is evident that the substantial characteristic of the functional system is that it is normally supported by a dynamic constellation of links, located at different levels of the nervous system, and that these links can change, although the task remains the same. What remains unchanged are the starting and ending points of this chain, that is, the task and the result; however, the intermediate links can change within a wide range of possibilities (Luria, 1981). Thus, in the words of Luria (1991, p. 89): "the function constitutes a complex activity, exercised by the joint work of an entire system of organs, each of which integrates this "functional system".

This concept of a function as a complex functional system is defined in opposition to the perspective of a particular tissue, since the most complex somatic and autonomous processes are organized as functional systems. "This concept can be applied with much more reason to the complex "functions" of behavior" (Luria, 1979, p. 28 emphasis added). The author cites as an example the function of movement, in which the individual, to change his position in space and reach a certain point, or to perform certain actions, does not do it only through efferent, motor impulses, that is, for

> [...] a movement occurs, there must be a constant correction of the initial movement by afferent impulses that provide information about the position of the limb movement in space and the change in muscle tone, so that during its course any necessary correction can be made. Only such a complex structure of the locomotion process can satisfy the fundamental condition of maintaining the invariable work, its execution by variable means and the consequent obtaining of a constant result due to these variable dynamic means (Luria, 1979, p. 28).

Thus, according to Luria (1979), all mental functions, such as perception, memory, "language and thought, writing, reading and arithmetic, cannot be considered as isolated or indivisible "faculties", which can be assumed as " function" of limited groups of cells or being "localized" in particular areas of the brain" (p. 29, emphasis added).

According to Luria (1981), the higher forms of mental functions (voluntary attention, memory, abstraction, emotion, etc.) are constituted by a complex structure and delineated during ontogenesis (the individual's development from birth to death). They rely on external aids, such as language and the digital counting system, and are constantly connected with the reflection of the outside world in full activity, "and their concept loses all its meaning if considered apart from this fact" (Luria, 1981, p. 16).

According to Luria (1981), these historically formed external aids are fundamental in "establishing functional connections between individual parts of the brain, and that through their help, areas of the brain that were previously independent become the components of a single functional system." (p. 16). In this perspective, any kind of conscious human activity is only possible with external help. So, every conscious activity requires various external aids for its performance, "and it is not until later that it gradually becomes condensed and converted into an automatic motor skill" (p. 17).

Thus, Luria (1981), when considering higher mental functions as complex functional systems, makes the following reservation, that they are not located in

> [...] narrow zones of the cortex or isolated cell clusters, but they must be organized into systems of zones working in concert, each of these zones playing its role in a complex functional system, each of these territories being able to be located in areas of the brain completely different and often quite distant from each other. (Luria, 1981, p. 16).

Luria (1981, p. 19) draws attention to the following aspect: "mental activity is a complex functional system, involving the participation of a group of areas of the cortex operating in concert", and they can refer to areas far from one of the others; an injury to each of these areas can lead to an alteration of the entire functional system, and thus the loss of a particular function, or a symptom, would very likely not indicate the specificity of its location. With this, the author has been problematizing and explaining that the loss of a function or a symptom cannot be directly related to a certain area of the cerebral cortex, since mental activity is a complex functional system.

Thus, Luria (1979) is categorical in stating that the concept of location of a focus does not coincide with location of a function, "And that the syndrome must be subjected to a complex structural analysis, which is the basis of the neurophysiological method

of investigation." (p. 38). And so,

> In order to progress from the verification of the *symptom* (loss of a certain function) to the location of the corresponding mental activity, a long way must be traveled. Its most important part is the *detailed psychological analysis of the structure of the disorder and the elucidation of the immediate causes of the breakdown of the functional system*, or, in other words, *a detailed qualification of the observed symptom*. (Luria, 1981, pp. 19-20, emphasis added).

Starting from the complexity that involves human mental functions, Luria (1981) defined the main functional units of the brain as three. The first functional unit of the brain, *defined as a unit to regulate tone or wakefulness* (our italics), is located mainly in the brainstem, diencephalon and medial regions of the cortex and is understood by Luria (1981) as responsible for maintaining cortical tone; such systems "*suffer the differentiating influence of the cortex themselves, and the first functional unit of the brain operates in close cooperation with the higher levels of the cortex.*" (p. 48, emphasis added).

Luria (1981) highlights this functional unit of the brain, drawing attention to the fact that the waking state is essentially relevant for human mental processes to follow their correct course, as only in excellent waking conditions does the individual " it can receive and analyze information, that the necessary selective systems of connections can be brought to mind, its activity programmed and the course of its mental processes verified, its errors corrected and its activity kept on an appropriate course" (p. 28). And this, according to the author, would not be possible during sleep, since "the course of reminiscences and associations that arise is of a disorganized nature and properly directed mental activity is impossible" (p. 28).

The second functional unit of the brain, which is responsible for *receiving, analyzing and storing information*, is located in the lateral areas of the neocortex on the convex surface of the hemispheres, *"whose posterior regions it occupies, including the visual (occipital), auditory regions (temporal) and general sensory (parietal).*" (Luria, 1981, p. 49, emphasis added). This functional unit of the brain is constituted

> [...] by parts that have great modal specificity, that is, their component parts are adapted to receive visual, auditory, vestibular or general sensory information. The systems in this unit also comprise the central systems of gustatory and olfactory reception, although these, in man, are so eclipsed by the central representation of the higher exteroceptive systems, linked to the reception of stimuli from objects situated at a distance, that they occupy a markedly smaller place in the cortex. (Luria, 1981, p. 49).

Thus, the base of this unit is formed by primary or projection areas of the cortex, organized, above all, by afferent lamina IV neurons, many of which have enormous specificity. There are also "neurons of the cortical visual systems that respond only to the strictly specialized properties of visual stimuli (gradations of color, the character of lines, the direction of movement)" (Luria, 1981, p. 50).

Another relevant aspect addressed by the author is that the reception, encoding and storage of information, despite being fundamental for cognitive processes, constitute only one of the factors, as another of its important aspects is the organization of the activity. conscious, which is related to the third of the brain's functional systems - ***a unit to program, regulate and verify mental activity,*** as man is not passive to the information he receives, but also "creates *intentions*, builds *plans* and *programs* for his actions, inspects its performance and regulates its behavior so that it conforms to these plans and programs" (Luria, 1981, p. 60, emphasis added).

The structures of the third brain unit are located in the anterior regions of the hemispheres, anterior to the precentral gyrus, and are responsible for programming, regulating and verifying activity. Luria (1981) considers the most relevant part of this unit to be the part represented by the prefrontal divisions of the brain, as they do not contain pyramidal cells, they are also recognized as the granular frontal cortex. "It is these portions of the brain, belonging to the tertiary zones of the cortex, that play a decisive role in the formation of intentions and programs and in the regulation and verification of the most complex forms of human behavior." (Luria 1981, p. 66).

It is worth noting that, according to Luria (1981), the three units maintain a certain interaction, as it would be a mistake to think that each one would function completely independently, for example, considering "that the second functional unit is entirely responsible for the function of perception and thought, while the third would be through the function of movement and the construction of actions" (p. 78). In this way, "each form of conscious activity is always a complex functional system and occurs through the combined functioning of all three brain units, each of which offers its own contribution" (Luria, 1981, p. 78).

To show the interaction among the three main units, let us take, for example, the perception function that, according to Luria (1981), occurs through the combined act between the three functional units of the brain: that is, "the first provides the necessary cortical tone, the second carries out the analysis and synthesis

of incoming information, and the third provides the required controlled search movements that give the perceptual activity its active character" (p. 79). The three main functional brain units, therefore, work together, and only from the "study of their interactions, in which each unit offers its own specific contribution, will it be possible to reach an understanding of the nature of the brain mechanisms of activity. mental" (Luria, 1981, p. 80). Therefore, we agree with Leite (2015, p. 65) when explaining that

> The interaction of the three units as a functional system can be fully applied to the complex functions of behavior, that is, the higher psychological functions are expressed in the interaction of these three units. The simple act of getting around, for example, requires a joint activity of functions, as the subject has to anticipate for himself the direction in which he should go, the intensity, the way in which he will move. Likewise, we can think of this inter functionality of functions when we remember, speak, get emotional, etc.

Thus, based on functional systems, as well as the inter functionality of higher mental functions, we have subsidies to assert that a child's inattentive or hyperactive behavior should not be understood as resulting exclusively from the malfunction of some higher mental function, notably the *attention*, an understanding that has supported the diagnoses of alleged disorders, such as Attention Deficit Hyperactivity Disorder (ADHD) and Attention Deficit Disorder (ADD). Thus, it is worth remembering that a function does not work in isolation, memorization, for example, fundamentally requires the activity of perception and attention, and this applies to all other psychological functions.

That said, it expands the possibility of putting into discussion the diagnoses that depart from the premise that the child is inattentive or hyperactive because a certain point or area of the brain is not working as it should and hence the indication of medication to activate that specific area. We say this supported by Luria's neuropsychology and we understand that a drug that will act with the purpose of activating a specific area, such as attention, would not be enough to make the child stop being inattentive or hyperactive, given the inter functionality of higher mental functions and also the complexity that involves the interconnections of the attention unit itself. According to Luria (1981, p. 197, emphasis added), mental processes "are not indivisible "functions" or "faculties", but rather complex functional systems based on the coordinated work of a group of brain zones, each of which it makes its particular contribution to the construction of the complex psychological process".

In this sense, we highlight Leite (2017, p.176, author's highlights) who, when studying the development of higher psychological functions, with prominence the function of attention, to counteract ADHD diagnoses, states that even though certain areas are relevant in the organization of behavior, they "cannot respond, alone, to the act of 'paying attention' or being quiet, other regions are involved" (p.176). The author adds that: "it is necessary that external educational actions, full of content of social relations and communication, are carried out so that these different zones relate to each other and form their own functional systems" (p.176). From this perspective, we highlight the essentiality of school education in the development of higher mental functions.

THE ROLE OF THE SCHOOL IN THE DEVELOPMENT OF HIGHER MENTAL PROCESSES

Starting from the premise that the individual's development from birth to death (ontogenesis) is linked to the appropriations of historically instituted forms of human activity, we highlight the need to understand human brain development from its biological/cultural unit, as Leite (2017) points out, the development and reorganization of brain functioning are generated by external actions developed by adults, as they insert the child into the culture. Therefore, in the words of the author:

> The functional brain systems, therefore, are re-equipping and getting complex their performance as new learning takes place. It is, therefore, essential not only the presence of a superior pair for learning to occur and consolidate, but that this superior pair can be organized in such a way as to enable learning to occur in the best possible way. That is, if the adult is clear about the role they play in the constitution of the child's higher psychological functions, they will be able to intentionally guide their care and teachings. (Leite, 2017, p. 179).

Thus, taking the dialectical relationship between learning and development as fundamental, it is essential to emphasize that there are different educational forms/practices in different cultures, but it must be recognized that in a schooled society they are often neglected and/or made invisible. Therefore, it is essential to strive for education, whether formal or not, that aims at the full development of potential, with a view to training the human in the individual.

Although we recognize that non-formal education (family, community, religious education, etc.), that is, that which is not provided by the school, and which is presented in different contexts and collectives, is important in the development of higher psychic

functions, as it is also about an education in which "[...] forming a citizen who will act in society" (Leite, 2017, p. 180), here we will focus on (formal) school education. However, we consider it pertinent to point out that it is only possible to emphasize school education as essential in the psychic development of students, due to the fact that we are inserted in a schooled society, otherwise this is essential.

Thus, for Duarte (1996b), it is up to school education to provide its students with the transmission and appropriation of scientific contents that were historically elaborated by humanity. For this author, the school must be aware of its primary function, not limited to providing the child with access to scientific content in a mechanical and streamlined way. It is necessary to consider that an empty and fragile teaching "will not produce anything qualitatively new, but only a quantitative increase in the information it dominates" (p. 40).

Martins (2013) takes a stand on this aspect, bringing to the discussion that not all learning is a driver of development, and thus alerting us that, according to Historical-Cultural Psychology, it is not possible to give second place to "the selection of content and the organized form of learning" (p. 278), as well as for Historical-Critical Pedagogy, it is essential to "identify in the educational act in which conditions learning actually operates at the service of the development of individuals" (p. 278).

Vigotski (2014) draws attention to the need for coherence between learning and the student's level of development, since, according to the author, there are at least two levels of development[2] - the effective/real level and the potential/near level. The first refers to the "development of the child's psycho-intellectual functions that was achieved as a result of a specific developmental process already carried out" (p. 111). The second, the level of potential development, refers to what the child is not yet able to do alone, but with the help of others, especially adults. Thus, in the words of Vigotski (2014, p. 113):

> What a child can do today with the help of adults he can do tomorrow on his own. The area of potential development allows us, therefore, to determine the child's future steps and the dynamics of their development and to examine not only what development has already produced, but also what it will produce in the maturation process.

Thus, learning should focus on the zone of potential development, or on those functions that are in the process of development. Good teaching, as stated by Vigotski (2001), is one that focuses on knowledge that the child has not yet acquired, but that is about to materialize, as teaching them what they already know is a waste of time, since nothing it will add to you in your psychic development. The goal must be a teaching that leads to the mastery of cultural mediators, who will lead to the development of the individual.

Vigotski (2014) points out that "school learning guides and encourages internal development processes" (p. 116). Therefore, it is up to the school "to discover the appearance and disappearance of these internal lines of development at the moment they occur, during school learning" (p. 116). In the words of the author:

> The child's development never accompanies school learning, as a shadow accompanies the object that projects it. Tests that compared school progress cannot, therefore, reflect the actual course of a child's development. There is a reciprocal dependence, extremely complete and dynamic, between the process of development and that of learning, a dependence that cannot be explained by a single aprioristic speculative formula. Each subject has its own relationship with the course of the child's development, a relationship that changes as the child moves from one stage to another. This forces us to re-examine the entire problem of formal disciplines, that is, the role and importance of each subject in the child's subsequent general psycho-intellectual development. (Vigotski, 2014, pp. 116-117).

School education from a cultural-historical perspective, as can be seen, becomes essential in the development of psycho-intellectual functions, since, as Saviani (2003) states, what is not given by nature has to be historically constructed by individuals; in this way "we can therefore say that human nature is not given to man, but is produced by him on the basis of biophysical nature" (p. 13). And as a result of this the author writes that:

> Educational work is the act of producing, directly and intentionally, in each individual, the humanity that is historically and collectively produced by

[2] In Brazil there are controversies regarding the expressions: *effective development level and potential development level proposed* by Vigotski. It is also possible to observe the use of the expression *current level of development or real level of development* to refer to what the child is already able to do alone and *the expressions near level of development or proximal level of development* to designate what the child is still unable to do for itself, but with the help of the other. In our understanding, this is due to the fact that, as Prestes (2010) points out, many of Vigotski's texts translated into Portuguese, in addition to suffering distortions and mistakes in the interpretation of his ideas, distorting concepts and attributing names that go in different directions, which are not exactly the proposals by the author, there is also the difficulty in transliterating words from Russian to Portuguese, since in this country there is no general official rule for "the transliteration from Russian to Portuguese" (p. 17) .

> all men. Thus, the object of education concerns, on the one hand, the identification of cultural elements that need to be assimilated by individuals of the human species so that they become human and, on the other hand and concomitantly, the discovery of the most appropriate ways to achieve this goal. (Saviani, 2003, p. 13).

Saviani (2003, p. 14) is categorical in stating that school "is about elaborated knowledge and not spontaneous knowledge; to systematized knowledge and not to fragmented knowledge". In the same direction, Facci (2004) shows the relevance of school education, pointing out that it differs "from other forms of spontaneous education, as its specificity is the production of humanity in the individual" (p. 227).

Education, therefore, especially formal education, constitutes the pivotal point for the continuity of the historical process, since, according to Facci (2004), education in this theoretical aspect "is highlighted because it is based on the assumption that human beings appropriate the culture to develop and for the development of society as a whole to occur" (p. 230).

Martins (2013) points out the degree of conditionality between the development of higher psychological functions and teaching, especially that systematized and intentional. Voluntary attention, for example, which is a very relevant higher psychological function and the lack of it in students constitutes one of the main school complaints, is only able to develop under teaching conditions, as according to Luria (1981) , this function constitutes a social act, not being of biological origin, it is not the result of the maturation of the organism, but rather, "of forms of activity created in the child during their relationships with adults, in the organization of this complex regulation of selective mental activity" (p. 228). However, it is worth noting that according to Vigotski (1995), the cultural development not only of the *attention function*, but also of all other higher mental functions (memory, abstract thinking, language, etc.) "consists in the social being in the process of its life and activity elaborates a series of artificial stimuli and signs" (p. 215). Stimuli and signs that will enable the individual to control his own behavior.

Thus, based on Vigostski (1995), we can state that these functions are not formed naturally in the individual, but through the socio-cultural relations established in their environment, appropriating cultural instruments and signs[3]. Thus, it must be recognized that signs play a unique role in the development of higher psychological functions, given that from the interiorization of these, new functions are added to the history of each individual. Thus, according to Franco, Tuleski and Eidt (2016, p. 208),

> The researches by Luria (1977, 1980, 1991) and Vigotsky (1995) demonstrated that the higher psychological functions, responsible for the conscious activity of man, are historical-social formations, whose base is established in and by the mediated relationships of the child with his environment. cultural throughout its development. This child, therefore, will or will not become a cultural adult, whose full capabilities and potential of the human race are materialized from an integral cortical base, in which highly complex functional systems are developed, depending on the possibilities of appropriation of instruments and cultural signs.

Thus, assuming that the development of higher mental functions is not driven by nature, as its genesis is socio-historical, we bring back the essentiality of education, especially school, making the reservation that it is not just any education that promotes development, because for Martins (2013), an education that has as its goal the development of all mental functions requires a teaching that is not

> [...] the one that reproduces everyday life at school, marked by heterogeneity, spontaneity, unsystematic actions; nor is it the one that empties school education of classical content, scientific content in the name of common sense content, spontaneous concepts and pseudo-concepts, operating within the limits of empirical thought. Likewise, it is not the one who attributes the possibilities of learning to the individual particularities of the students, present in their actual development, keeping them hostage to what they are, to the detriment of what they can become. (Martins, 2013, p. 307).

Also according to the author, it is necessary to be clear that all higher mental functions are constituted from the external to the internal, that is, from the outside to the inside. These processes, therefore, "originate and are structured thanks to social life during the process of sociocultural development and, at first, their development comprises necessarily external operations carried out under the guidance of the other" (p. 300, author's emphasis). And that, as the author states, includes school education that has as its goal the overcoming of elementary functioning.

FINAL CONSIDERATIONS

The present study allowed us to identify the fragility of hegemonic conceptions related to the schooling process and the supposed disorders, that is, those that

[3] Signs are "symbolic representations of knowable objects, which by definition carry socially shared meanings internalized by the subject in the midst of these same relationships, composing a social communication system that enables the individual's conscious orientation in the world" (Ferracioli, 2018, pp. 41-42).

are reduced to the individual in order to understand school complaints, based exclusively on an organicist and/or biologistic view of human development. With this, we do not intend to deny that within the school there are children with organic problems who may benefit from certain medications, nor that there are "inattentive", "hyperactive", "opponent" students, among others who do not advance in schooling; the criticism is precisely in treating such issues as natural and exclusively resulting from neurological diseases and/or disorders – with the exemption of the school.

When studying the development of attention in the constitution of human development, Leite (2015) alerts us to the fact that the understanding of inattentive and hyperactive behaviors as resulting from disorders intrinsic to the individual seems "one more way to corroborate the established current order than trying to review it, discuss it or transform it" (p. 171). The author takes the position that this causes the continuation of "the rampant consumption of drugs to treat such cases and those who, for some reason, do not fit this order or are unable to reproduce it are held individually responsible" (p. 171).

Based on Historical-Cultural Psychology, we defend that the complaints, which we commonly face in school spaces, of children considered inattentive, hyperactive, opposed, slow, among many other characteristics attributed to them in their schooling process, need to be covered and analyzed on the basis that the development of human functions and capabilities is only possible through the appropriation of what was historically elaborated by humanity, since the biological inheritance, that is, what was genetically inherited, despite being important, is not decisive in the development of the individual.

Thus, starting from an analysis under the perspective of Historical-Cultural Psychology, we glimpse the possibility of affirming that the intercurrences in the learning processes and behaviors of students can be a forceful expression of a school education that is not organized in a way to promote the good development of all higher mental functions. Therefore, in our understanding, we are not facing an alarming rate of children with pathologies or neurological disorders who need medication to advance their school process, but rather of children lacking, above all, a quality school education, which materializes from to ensure the learning and development of all higher mental functions.

We defend, therefore, a school education with developmental and non-pathologizing purposes, which has a systematic, intentional teaching, which does not make scientific content secondary, the organized form of learning and the role of the teacher, which strives for the transmission and appropriation of scientific contents and cultural, which has as its goal the constitution of the human in the individual. That does not attribute the learning possibilities to the particularities of the student, making him solely responsible for both his success and failure. School education organized along these lines must be guided by public policies that endorse it and that make efforts so that it becomes a great potential for extinguishing school complaints, to depathologize the schooling process and curbing the medicalization of school-age children.

Finally, we suggest the need for studies that deepen the theme in its theoretical-practical dialectical relationships, with the aim of presenting propositions in favor of full human development. Only in this way will we be able to face and overcome the alarming rate of misunderstanding about the essential role of higher mental functions in the learning and development processes necessary for schooling.

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Received: March 25, 2020
Approved: July 4, 2021

Support: Coordination for the Improvement of Higher Education Personnel (CAPES), through its Postdoctoral Fellowship Program.

This paper was translated from Portuguese by Ana Maria Pereira Dionísio.