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IN SEARCH OF JUSTICE AND EQUITY IN COGNITIVE EVALUATION: APPLICATIONS OF THE PASS THEORY AND THE COGNITIVE ASSESSMENT SYSTEM

EN BÚSQUEDA DE JUSTICIA Y EQUIDAD EN LA EVALUACIÓN COGNITIVA: APLICACIONES DE LA TEORÍA PASS Y DEL COGNITIVE ASSESSMENT SYSTEM

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In September 1994 one of the authors of this introduction (Rodríguez-Arocho, 1994) had the opportunity to attend the International Conference on Lev S. Vygotsky and the Contemporary Human Sciences, held in Moscow. There she met J.P. Das and Jack A. Naglieri, who that year, and at the height of the so-called cognitive revolution in psychology, published (together with John R. Kirby) their text Assessment of cognitive processes: the PASS theory of intelligence. After interesting conversations on topics of common interest for six days, at the time of the farewell Dr. Jack A. Naglieri gave Dr. Rodriguez Arocho a copy of the book. It was impossible to foresee then the importance that the book would have in a research program on cognitive processes in Puerto Rico and the development of a collaborative relationship and friendship that the two authors of this paper would establish with Dr. Naglieri to this day.

Eight research articles were included in Volume 29, Issue 2 and on this issue of Volume 30, three more articles are presented. These special sections are part of the studies conducted in Puerto Rico that are based on the PASS theory and use a cognitive assessment instrument based on it, the Cognitive Assessment System (CAS). This instrument has its original version in English and currently has a translation and adaptation to Spanish (Naglieri, Moreno & Otero, 2017). Its use has produced a body of research that has been used in educational applications aimed at the modification of cognitive functions with diverse populations. Before briefly describing the theory and the instrument to facilitate the compression of the articles in these volumes, we proceed to share some data on the historical background of the research program.

In other writings we have dealt with describing the context and the beginnings of the work with the PASS theory and CAS in Puerto Rico, to which people interested in deepening in these aspects and in some historical developments of cognitive research in Puerto Rico can refer (Rodríguez-Arocho, 2004, 2007). The beginning of the works presented in Volume 29 is associated with the Executive Functions and Language (EFEL) in ADHD study that was carried out between 2000 and 2004, in what is now the Institute of Psychological Research, a unit of the Faculty of Social Sciences at the University of Puerto Rico, Río Piedras Campus. This project was directed by the first author of this introduction and coordinated by the second author. The project was transformed into communities of learning and practice that are expressed in the works included in this issue as well as in issue 2 of Volume 30. We must recognize that there is more work than that represented in this special section and that the research and application activity of this theory and its tools continues. The work carried out in the EFEL Project was sponsored by the National Institute of Mental Health (NIMH) and by the Office of the Dean of Graduate Studies and Research of the University of Puerto Rico. Some of the later works received sponsorship from the Puerto Rico Council of Education.

The PASS theory is constructed at a historical moment in which cognitive psychology was consolidated as an alternative perspective to behaviorism. In its formulation, its creators (Das, Naglieri & Kirby, 1994) integrated the neuropsychological conception of Alexander R. Luria with research findings in information processing. They proposed an alternative vision of intelligence based on the analysis of processes rather than results, in confrontation with traditional views that codified it as a general factor. In addition, they elaborated around Luria's ideas regarding the brain as a functional unit, capable of reorganizing and susceptible to modification through interventions oriented to that purpose (Luria, 1976). At present, and with the support of technologies that validate its main proposals, the conception of the human brain as a complex system on which the PASS theory is

based has been consolidated (Ardila, 2018; Christensen, Goldberg & Bougakov, 2009; Homskaya & Tupper, 2001; Kotsyanaya & Rossouw, 2013; Lamdan & Yasnitsky, 2013).

The central idea in Luria's proposal is that the brain is a system constituted by functional units that, when they work in an integrated manner, allow the effective solution of the tasks or problems that the individual faces. For Luria (1976), the focus of attention of neuropsychology must be the functional systems and their coordination from a perspective that recognizes that they are the result of development processes in phylogeny and ontogeny and that these processes are mediated by historical dynamics, social and cultural. Among sociocultural mediations, Luria (1972) starts from the historical-cultural approach of Vygotsky (1931, 1934) to underline the centrality of education in its general form, and cognitive rehabilitation and modification as particular expressions of it (Akhutina, 2003).

Luria (1973) proposed that the brain works as a functional whole composed of three systems, each of which performs functions. The approach of function is opposed to the localization idea of the time that looked for correlations between structures of the brain and specific behaviors. At the same time, the notion of function refers to the purpose of brain activity and is distinguished from static visions. This activity generates key cognitive processes whose development is observed in phylogeny and ontogeny. Luria pointed out that the main processes are attention, language, movement and action, perception, memory and learning and the solution of problems. Each of these processes involves specific cognitive actions (Luria, 1966). These actions are carried out historical contexts and are mediated culturally and socially. This emphasis has been retaken in current neuropsychology (Ardila, 2018).

As mentioned, functions are executed by conglomerates of structures that interact and are interdependent. The first unit regulates activation/excitation, sleep-wakefulness, and attention that involves the work of structures in the ascending reticular activation system and the limbic system. The second unit deals with the integration of sensations and perceptions through the processing of the information that is received, which can be sequential or simultaneous. They are linked to structures in the posterior cortex and include the parietal, occipital and temporal lobes. The third unit is responsible for planning, monitoring, and organizing cognitive activities or executive control and is associated with the frontal cortex. Some manifestation of memory is observed in all units. Luria (1973) states that what distinguishes the functions of a static notion of ability is the continuous presence of tasks that are performed by variable mechanisms that allow achieving their realization. Based on his research, he argues that the systems are, at the same time, deep and scattered.

The PASS theory (Das, Naglieri & Kirby, 1994) adopts this conception of the functional brain and integrates research in the field of information processing that emphasizes the entry of information, its processing and its resultant. It is a theory of human intelligence that seeks to explain it from neurocognitive processes and distances itself from the idea of a general factor. The theory is constructed as an alternative to the traditional measures of intelligence, represented in the Weschler tests, among others. The PASS theory defines intelligence from the processes that compose the construct. Four key processes in intelligent behavior are identified: planning, attention, successive processing, and simultaneous processing. This is the origin of the name PASS.

Das & Naglieri (2001) synthesized the four processes involved in intelligent action. The first, planning is a mental function by which the person determines, selects, and uses information that allows the effective solution of

problems. Planning involves actions for mental representation, impulse control, processing control, prior knowledge recovery, and problem solving. As can be noted, these processes correspond to the third functional unit of Luria; this correspondence is observed in the other two processes.

The second process, attention, is the one through which some stimuli are selected, and others are ignored. It implies focused or focused cognitive activity and is characterized by being selective (not automatic), resistance to distraction, vigilance, and generating a response to the problem or task that faces. The activities in these processes are linked to the first unit of the Luria functional system.

The third and fourth processes have to do with the ways in which information is processed. Simultaneous processing is defined as the process that integrates stimuli to give them meaning. It is the ability to grasp the totality, to understand the relationship between the parts and the whole. The successive processing allows the integration of the stimuli in a specific serial order. It is about the ability to understand a progression of stimuli. The activities involved in it are related to the second functional system of Luria.

The PASS theory gave way to the Cognitive Assessment System (CAS), an evaluation system, on the one hand, inserted in the psychometric tradition and, on the other, committed to challenging its limits. The first version of this battery of tests was developed by J.P. Das & Jack A. Naglieri and published in 1997 (Das & Naglieri, 2001; Naglieri, 1999). This first version had a translation and adaptation to Spanish for research purposes, which was used in some of the studies published in this volume. Dr. Jack Naglieri participated as a consultant in the translation and adaptation of this first version carried out in the EFEL project.

The second version of CAS-2 was published in 2014 by the authors Naglieri, Das & Goldstein and consists of supplementary materials in Spanish published in 2017 by the authors Naglieri, Moreno & Otero. The standard CAS-2 battery includes three subtests to evaluate each of the processes identified in the PASS theory (in total, 12 subtests) and the basic battery includes 2 subtests for each scale. The battery is administered individually to people between 5 and 17 years old. The scale that evaluates the planning process includes Planned Codes, Planned Connect and Planned Number Matching. In the scale that evaluates simultaneous processing, the tasks are Matrices, Verbal-Special Relations, and Figure Memory. The attention scale measures Expressive Attention, Number Detection and Receptive Attention. Finally, the scale of successive processing includes Word Series, Sentences repetition (5-7 years) or Sentences Questions (8-17 years) and Visual Digit Spain.

As part of the supplementary materials of CAS2, the Cognitive Assessment System: Rating Scale (CAS: RS) (Naglieri & Goldstein, 2014) was published, which was also translated and adapted into Spanish by Dr. Yisel Torres-González (Torres- González, 2015). In addition, the second author of this introduction, Dr. Mary A. Moreno-Torres, along with Dr. Tulio Otero-Zeno, have developed materials in Spanish to work on the modification of the four cognitive processes from the PASS theory. The intervention manual Helping Children Learn: Intervention Handouts for Use in Schools and at Home (HCL) contains 75 psychoeducational interventions, of which 33 are available in Spanish (Naglieri & Pickering, 2010). The application of these tools, the CAS2: Spanish, the CAS2: RS-Spanish and the psychoeducational interventions based on the PASS theory are reviewed in some of the articles included in this volume.

Both the first and second versions of CAS have been used to evaluate cognitive functioning in research, make clinical diagnoses and design psychoeducational interventions. As stated by Dr. Naglieri in the Preface to the special section (see Vol 29, Issue 1), although traditional IQ tests are still considered a 'gold standard' by some colleagues, they been criticized for being unfair to minority groups, inappropriate for those who have limited educational opportunity, insensitive to the cognitive problems experienced by those with disabilities such as ADHD, Autism and Specific Learning Disabilities, unrelated to instruction, and an obstacle to social justice particularly for bilingual student. We support this appreciation and propose to use of the PASS theory and the CAS as tools to pursue fairness and equity in cognitive evaluation and psychoeducational interventions.

The works collected offer examples of this pursue. This volume includes articles that describe the processes of translation and adaptation to Spanish of the CAS, its psychometric properties and the computerized adaptation of interventions of the HCL manual for cognitive modification. In also include studies with diverse clinical populations and direct intervention studies on neurocognitive skills and academic achievement skills. Finally, an article is included that describes the alignment of the proposed model from the PASS theory with the best psychological evaluation practices (IDEA, 2004) and calls for its use as a tool of social justice with Hispanic populations that could be penalized. from other models of psychological evaluation.

The articles compiled in the 2018 and 2019 volumes have been presented in professional forums in Puerto Rico, Latin America, and the United States. The reception of these writings in these different forums has impressed upon us the need to disseminate information on theoretical models and the importance of evaluating psychological interventions that provide an understanding of psychological phenomena that can address perspectives with a solid scientific basis. Equally important is the clamor for measures that reduce the risks of discrimination in evaluative processes. We trust that the studies published here will serve as a basis for the development of additional studies on neurocognitive processes and their relationship with clinical and educational aspects, promote the use of neurocognitive tools for psychological evaluation, and cognitive modification.

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