

SICOLE-R: Evaluation (Computerized) of Cognitive Processes Involved in Reading.

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Abstract

Introducing Sicole-R, Portuguese version and first data. The Sicole-r is a cognitive tool, a software platform for evaluation of dyslexia. Enables the diagnosis of cognitive budget deficits associated with dyslexia, in children. From video games, computerized form, it is possible the assessment/diagnosis of dyslexia. The SICOLE-R (cognitive system of reading) (version for children from 7 to 12 years) is a cognitive evaluation tutorial system of processes of reading, original in Spanish language. Is a computerized battery of assessment of cognitive processes of reading, in general, and dyslexia, specifically. Is a tool with wide application and dissemination, currently being used on a large scale, filing, virtually the entire Spanish Kingdom, by education psychologists, fundamentally, while diagnostic strategy of capacities of children in compulsory schooling.

Is an example of new technologies applied to diagnosis of dyslexia. Is an integrated system, composed of 20 tasks for the syntactic modules (5 tasks), spelling (4), texts (2), phonological (5), the perception of speech (4) [Jietal07a]. Evaluates the lexical processing, perceptual and semantic-syntactic, and contains, in addition, knowledge evaluation modules: metalinguistic, syllabic and phonemic awareness and phonological awareness (syllabic and phonetic).

Introduction

We know the high prevalence of learning disabilities (AD) and recurrent levels of literacy and numeracy too low, national schools, primarily in basic education cycles, revealed either by teachers or by national and international reports (eg OCDE) and there is, concomitantly, great lack of assessment tools and intervention, validated for the Portuguese population, mainly in computerized version, playful, attractive, but complete and theoretically well-founded.

In fact, in Portugal there is a major shortcoming in the assessment of dyslexia. The same can be said at the material level of intervention, prevention and / or remediation.

The best of our knowledge at the level of assessment, can only be found in the validation phase, the Dyslexia Assessment Battery Development [1], whose objective is to assess dyslexia in children aged 8 to 12 years: assessment of reading, writing and long-term memory; The Banc: neuropsychological assessment battery of Coimbra, Mário Simões (www.uc.pt/fpce/cientificas/projectos/projecto3); inventory identification of learning difficulties, Cristina Pettrucci, the PADD - Evidence Analysis and Screening Dyslexia by Carreteiro (2003-2008, Analysis and screening Test Dyslexia) [2], consisting of several subtests that examine the player's performance against a set of criteria with a view to screening for phonological disorders or spellings. The PADD analyzes the performance of children, youth and adults on tasks of reading and phonetic awareness. It is an individually administered test (on paper or computer)



(<http://www.psic clinica.net/testes.htm>) Battery and Differential Diagnosis of Dyslexia Maastricht, Alexandra Reis, University of Algarve.

However, instruments that is still in phase or in validation studies and standards, little or nothing vulgarized and not yet available for use. The information we have points, also, with the exception of one of instruments, PADD, be on paper, traditional, strict assessment tools that do not allow a comprehensive analysis and intervention and as complete as the Battery proposal and Multimedia widely used and disseminated by the team of La Laguna, Tenerife, Spain. In fact, the battery that we propose to adapt to the Portuguese population, in addition there are versions already available, with results validated and widely disseminated, with multiple international standards, has many other advantages, namely a digital version being computed with entertaining and meaningful tasks, it becomes very attractive, and if a composite, is fairly complete, it includes an evaluative component (SICOLE-R) and a component of intervention, treatment (TRADISLEXIA), including multiple cognitive processes involved in learning and teaching of language, related, because with dyslexia, such as access to the lexicon, the perception of speech (phonemes), phonological awareness, working memory, speed or time of appointment, morphological and orthographic processing etc.. That is a battery and multimedia software very thorough and complete evaluation and treatment of cognitive processes involved in developmental dyslexia.

Also, and very brief, it is considered that dyslexia is associated with a pattern of difficulties that can be evaluated through tests, although scarcer in Portugal, as already mentioned, the instruments created for this purpose.

In this sense, to fill the gaps, assessment and also to intervene at the specific level of difficulty in reading, adopting a logic of profitability and to unify efforts, pursuing objectives, to, developmental or technological literacy, we propose to adapt Portuguese for Portugal, SICOLE-R and TRADISLEXIA [3] [4].

That is, we propose to ADAT, Portuguese for Portugal, software, or technology applications for evaluation and treatment of dyslexia development, thus contributing to the development of neuropsychology and school technology education in Portuguese. In this sense, these tools would work or would become part of protocol for evaluation / treatment of national schools, technical instruments at the service of education.

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In this space and time, our purpose is to present only the instrument of evaluation, i.e., the SICOLE-R.

Method

Obtained authorization from the authors to use the battery for research, the team found, consisting of elements with degrees in Educational Psychology, Linguistics and consultants, teachers of Spanish, University of Coimbra, close collaboration with the authors' own, has begun the first contacts with the material, its familiarity, for the consideration of criteria of construction and its translation and adaptation to the Portuguese language rules. Initially, we proceeded to the translation of software and content analysis of any cultural aspects at work. Were used, and in this first phase, although we are dealing with two different languages, with a degree of transparency of different spellings, being far more transparent Spanish [5], whenever possible, the same criteria used in the original: the usual words are always in character and family, i.e., frequent words, sentence structures with more and less frequent, in equal number from buildings sentences structure with active, passive and additional focused. Also, we kept as much as possible next words with the same syllabic structure and approximate length. Also, whenever possible, we kept the original images, since that would guarantee the required correspondence.



This phase is the foundation for its assembly, a true version in Portuguese, of Portugal, which in the computerized version, will necessarily be administered initially to a small sample of children of different ages, with marked and unmarked difficulties in reading and / or writing, trying to analyze the degree of understanding and readability of items of various proposed tasks, requiring a thorough analysis of results, with a view to possible reformulations of items or even exams. Only such analysis can give us guarantees of validity of battery, its capacity to assess what really is to measure, and also of its discriminative capacity, within and between groups. Only later, with a significant and representative sample, will be used throughout the software, analyzing and treating the data obtained in order to obtain normative data.

This whole process, referred to as a first phase, aims to be the validation phase of instrument. Subsequent phases will be applied primarily at children and young people with marked learning disabilities, their evaluation and diagnosis and intervention, analyzing the gains of intervention process.

Brief Description of instrument

The same team has developed and worked on a number of tools "aimed at the diagnosis of cognitive deficits associated with dyslexia in children" SICOLE-R. The SICOLE-R is an example of new technologies applied to the diagnosis of dyslexia. According to the mentors, is a new international and can be extended / spread to other countries (with branches / versions in the Universidad del Valle, Guatemala, University of Guadalajara, Mexico, the Universities of Texas and Arizona, United States of America , and on-going versions in Italian and Portuguese in Brazil) [6].

The SICOLE-R (read-cognitive system) is a diagnostic tool of exploitation, an integrated intelligent tutorial consisting of 22 tasks (21 +1 memory assessment work, for syntactic modules (6 tasks), spelling (5), texts (2), phonology (5), speech perception (3) [4]. Evaluates the lexical processing, perceptual-semantic and syntactic processing, containing further assessment modules metalinguistic knowledge: awareness syllabic and phonemic and phonological awareness (syllables and phonemes) (see Figure). As you can see by the image (see Figure), each port corresponds to different modules or processes, evidence and closing the various items. It is attractive, suggestive and appropriate to age.

The SICOLE-R is a cognitive tool, a platform for software development of dyslexia assessment. Allows the diagnosis of cognitive deficits associated with dyslexia in children. From video games, in computerized form, it is possible the assessment / diagnosis of dyslexia. The SICOLE-R (read-cognitive system) (version for children from 7 to 12 years) is a cognitive system tutorial assessment processes of reading, original in Spanish. It is a computerized assessment battery of cognitive processes of reading in general, and developmental dyslexia, in particular. It is a tool with wide application and dissemination, and is currently in wide use, as a matter of protocol, in almost all the Spanish kingdom, by educational psychologists, primarily as a strategy for diagnostic capacities of children in compulsory education.



It is, strictly speaking, software to enhance learning, and working to assess the difficulties of reading and writing, to be used in different educational settings and research.

We noted that the research with this battery is progressing in a testing phase of assembly, pending a preliminary application or administration in a very near future.

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