

Portuguese Early Literacy Screening Tool- RaLEPE: A Pilot Study

Sara Pereira Sapage¹, Anabela Cruz-Santos²

Recibido 7 de noviembre de 2020 / Primera revisión 9 de febrero de 2021 / Aceptado 1 de marzo de 2021

Abstract. Early literacy development is an indicator of a child's overall cognitive-linguistic development and affects their academic, social, emotional and behavioural skills. Research suggests that early detection in preschool years can have an important role in the prevention of academic failure. There is a lack of early literacy screening tools for Portuguese preschool children. This study aims to present preliminary data results of the development and validation of the Preschool Early Literacy Screening Tool (Rastreo de Literacia Emergente Pré-escolar; RaLEPE). A pilot study was carried out with a sample of 128 screenings, answered by the parents/caregivers of the Portuguese children between 3 to 6-years-old. The analysis of results shows the reliability of the tool, with a very good internal consistency for RaLEPE total scale and the different sections. Therefore, preliminary results of this study indicate internal validity of the RaLEPE and confirm this as a screening tool usefulness for early intervention childhood to provide early diagnosis and contribute to early intervention for children with language and learning disorders.

Keywords: Early Detection; Early Literacy; Portuguese Speaking Children; Preschool Children; Screening Tool.

[es] Herramienta de detección de la alfabetización temprana en portugués - RaLEPE: Un estudio piloto

Resumen. El desarrollo temprano de la alfabetización es un indicador del desarrollo cognitivo-lingüístico general de los niños y afecta a sus habilidades académicas, sociales, emocionales y conductuales. La investigación sugiere hasta el momento que la detección temprana en los años preescolares puede tener un papel importante en la prevención del fracaso académico. Carecemos, no obstante, de una falta de herramientas de evaluación de la alfabetización temprana para los niños preescolares portugueses. Este estudio tiene como objetivo presentar los resultados de los datos preliminares del desarrollo y validación de la Herramienta de detección de alfabetización temprana en edad preescolar (Rastreo de Literacia Emergente Pré-escolar; RaLEPE). Se realizó un estudio piloto con una muestra de 128 encuestas, respondidas por los padres / cuidadores de los niños portugueses de 3 a 6 años. El análisis de resultados muestra la fiabilidad de la herramienta, con una muy buena consistencia interna para la escala total RaLEPE y los diferentes tramos. Por lo tanto, los resultados preliminares de este estudio indican una alta validez interna del RaLEPE y lo confirman como una herramienta de utilidad para la intervención temprana en la infancia de cara a brindar un diagnóstico e intervención temprana en niños con trastornos del lenguaje y el aprendizaje.

Palabras clave: Alfabetización; Detección temprana; Herramienta de detección; Niños de habla portuguesa; Preescolar.

Sumario: Introduction. Method. Results and Discussion. Conclusions. References.

Como citar: Sapage, S. P., y Cruz-Santos, A. (2021). Portuguese Early Literacy Screening Tool- RaLEPE: A Pilot Study. *Revista de Investigación en Logopedia* 11(2), e71711. <https://dx.doi.org/10.5209/rlog.71711>

Introduction

A growing number of children are at risk of learning before reaching the first grade. Research suggests that early detection in preschool years can have an important role in the prevention of high-risk of academic failure (McGee & Richgels, 2014).

Therefore, the high risk of educational underachievement must be addressed before difficulties become established and start to impact on learning. Early assessments and interventions must be included in government actions to build a secure foundation for literacy (Fricke & Millard, 2016; Rogde, Melby-Lervåg, & Lervåg, 2016).

Oral language, listening skills and other early literacy skills are important precursors to learning how to write and read and children are expected to achieve certain milestones during the preschool year. Literacy outcomes are influ-

¹ Centro de Investigação em Educação (CIE), Universidade do Minho. tfarasapage@gmail.com

² Centro de Investigação em Educação (CIE), Universidade do Minho.

enced by these early literacy skills. Some of the most important components for learning how to read and write are phonemic awareness, the relation between the graphemes and phonemes, fluency, vocabulary and comprehension. Oral and written language development reciprocally contribute to each other and impact the ability to read and write (Hougen & Smartt, 2012; Kincaid, McConeell & Wackerle-Hollman, 2020; McGee & Richgels, 2014).

Speech, language and early literacy development are an indicator of a child's overall cognitive development and affect their academic, social, emotional and behavioral future (Rogde, Melby-Lervåg, & Lervåg, 2016). Early literacy skills can provide an early indicator of later reading skills (Birgisdottir, Gestsdottir, & Geldhof, 2020). Therefore, screening tools identify children early enough to provide intervention and avoid or reduce difficulties and other consequences, improving the education outcomes of the population at a reasonable cost (Iragorri & Spackman, 2018). Consequently, screening and monitoring the progress of early literacy development among preschool children is important. Increasing and improving the assessment is pressing to support early literacy interventions and provide evidence of long-term effects of these interventions (Johanson, Justice, & Logan, 2016; Sapage, Cruz-Santos, & Engel de Abreu, 2020).

In a paradigm of prevention and early identification of children's difficulties in learning to read and write, screening is the choice for the quick and cost-effect identification of children (Acosta et al., 2003; Iragorri & Spackman, 2018).

Early literacy screening tools are composed of items considered relevant for domains that are the foundations for reading and writing, particularly oral language, phonological awareness, alphabet knowledge, print concepts and word awareness (Birgisdottir, Gestsdottir, & Geldhof, 2020; Iyer et al., 2019; Lonigan, 2006; Lonigan et al., 2008; Wilson & Lonigan, 2010). There are some tools cited as a screening measure of emergent literacy skills for English and Spanish-speaking children, such as Get Ready to Read! Screening Tool (GRTR; Whitehurst & Lonigan, 2001), Early Language and Literacy Individual Growth and Development Indicators (IGDIs; McConnell, 2002), Phonological Awareness Literacy Screening Pre-K version (PALS-PreK; Invernizzi, Sullivan, & Meier, 2001); Test of Preschool Early Literacy (TOPEL; Lonigan, Wagner, Torgesen, & Rashotte, 2007). PALS-PreK, revised GRTR and TOPEL show high internal consistency reliability, upper than .75 (Invernizzi, Sullivan, Meier, & Swank, 2004; Lonigan et al., 2007; Lonigan & Wilson, 2008).

In Portugal, studies have pointed out that a huge percentage of pre-school and school-aged children have communication problems (Correia, 2013). In the 2017/2018 academic year, most Portuguese children with special needs, both in pre-school and school-age were identified as having difficulties in aspects as "acquiring and applying knowledge" (55%), "acquiring language" (52%) and "communicating" (48%) (Direção-Geral de Estatísticas da Educação e Ciência, 2018). Thus, it becomes pertinent to explore this topic to detect early and with greater efficiency in Portugal (Correia, 2013).

To face the need to screen these difficulties, different screening and assessment tools have been validated and standardized for the Portuguese-speaking children (see some examples of validated tools in Table 1).

Table 1. Tools Validated/Standardized for Portuguese Preschool Children

Tools	Authors	Type of tool	Children's age	Areas
3 P's – <i>Checklist</i> de comunicação e linguagem dos 0 aos 36 meses	Rigolet (2000)	Checklist	0-36M	Communication and Language
RALF – Rastreo de Linguagem e Fala	Mendes, Lousada & Valente (2015)	Screening	3-5Y	Language and Speech
Language Use Inventory (LUI)	Guimarães & Cruz-Santos (2020)	Inventory	18-47M	Communication and Language
Inventários de desenvolvimento Comunicativo de <i>MacArthur-Bates</i>	Viana, Cadime, Silva, Santos, Ribeiro, Santos, Lima, Costa, Acosta, Meira, Santos, Lucas & Monteiro (2017)	Inventory	8-30M	Communication, gestures and Language

Note. M= months; Y= years.

Family and professionals daily deal with the child and are important to screen and to be part of the process in order to prevent difficulties in early stages. Studies in different languages have shown that parent reports can contribute highly to the rate of detection of developmental problems. Consequently, these reports are useful and effective in the early development screen (Guimarães, Cruz-Santos, & Almeida, 2013; Guimarães, 2016; Iyer et al., 2017; Squires, Twombly, Bricker, & Potter, 2009). Therefore, there are screening/assessment tools validated or standardized that use the knowledge of parents and professionals about their children's skills (Guimarães & Cruz-Santos, 2020; Iyer et al., 2017; Iyer et al., 2019; Mendes, Lousada, & Valente, 2015). However, only a few communication and language assessment/screening tools have been validated or standardized for the preschool Portuguese-speaking population. There is also a lack of early literacy screening tools for Portuguese preschool children that include domains such as alphabet knowledge, letter-sound association, word awareness, print concepts, contact with books, etc.

In this manuscript, results obtained in the pilot study are presented. This preliminary data was obtained after the use of the first version of the Rastreio de Literacia Emergente Pré-escolar (RaLEPE)/ Preschool Early Literacy Screening Tool that was developed and applied in this pilot study research. The study is part of a research project that intends to standardize the RaLEPE for the Portuguese population and to establish normative guidelines for the screening of early literacy difficulties.

Method

Participants

For this pilot study, 200 RaLEPE screening tools were distributed in daycare centers and kindergartens located in two districts of the North of Portugal. From these 200, 128 were analyzed; 36 were not returned and 36 were excluded according to the inclusion and exclusion criteria. The inclusion criteria for the study were: a) child age range 3 to 6-year-old, b) presence of oral language, c) child exposed to European Portuguese. The exclusion criteria for the study was: a) Portuguese as a second language; b) absence of more than two answers; c) diagnosis of developmental disability, hearing impairment, speech or language problem or delay.

The participants of the sample were parents and caregivers of children. Children's description considering gender and age groups is presented below (see Table 2).

Table 2. Sample description (n=128)

Age in years	Age mean in months (SD)	Group distribution (%)	Gender (%)	
			Female	Male
3	43.2 (3.5)	23.4	9.4	14.1
4	55.0 (3.5)	23.4	10.2	13.3
5	65.6 (3.8)	28.1	10.9	17.2
6	75.4 (2.4)	25.0	7.0	18.0

Instrument

A preliminary version of the Rastreio de Literacia Emergente Pré-escolar (RaLEPE)/ Preschool Early Literacy Screening Tool was developed and focused on screen early literacy development in 3-6-year-old children. RaLEPE included 62 items organized in five domains/sections, namely oral language-comprehension, oral language-production, metalanguage (including phonological awareness), skills associated with letters (including alphabet knowledge, letter-sound association and word awareness) and associated with the book (including print concepts).

The items in each section were listed by order of early childhood development. Therefore, the first section, oral language-comprehension, begun with item 1 'identifica imagens de objetos familiares/ identify images of familiar objects' and ended with item 12 'compreende frases complexas/ understand complex sentences'.

To guarantee that the respond understood the language used in the formulation of the tool items, each one had a written example of the skill that underlie the item. For example, in oral language-production section, item 14 "nomeia imagens de ações/ name action pictures", the example was "Se mostrar uma imagem de uma ação e perguntar à criança 'o que o menino está a fazer?', a criança diz que o menino está a beber/ If you show an action picture and ask the children 'what is the boy doing?', the children answer correctly that the boy is drinking".

The RaLEPE has instructions that are written in a very simple and daily language so that the parents and caregivers can fill the screening tool accordingly to its purpose. They answer "1" when the children already had acquired the skills and answer "0" when the skill is not acquired yet. The RaLEPE total score is obtained by adding the scores of the five domains/sections. The higher the score obtained, the better is the child's performance.

In order to control the inclusion and exclusion criteria, a socio-cultural and economic questionnaire was conducted to characterize the child and family background. The first section collected information about child's background (e.g. date of birthday, mother tongue language and existence of health problems) and the second section collected information about the family/caregiver (e.g. parent's education level, parent's job).

Procedure

The process of developing a screening tool includes several steps as a method to provide the accuracy and validity of data, following the guidelines of other similar instruments (Bishop, 2013; Iragorri & Spackman, 2018).

The first step was the review of the literature for item identification. In order to categorize the domains/sections and skills most important to screen, an extended review of literature about early literacy development was conducted. After this process a large number of items were identified corresponding to relevant skills in the age group of 3 to 6-years-old. These early literacy skills are the most predictive of reading and writing skills, such as oral language, phonological awareness and print knowledge (Lonigan, 2006; Lonigan et al., 2008). All these skills are expected to be acquired and developed sequentially in time. The items were all written in a positive direction, listed sequentially according to the expected age of acquisition and development (simple to complex skills) and included in the specific domains/sections. The second step was the construction of the instrument, specifically the selection of items, instructions, administration procedures, scoring procedures and judge's agreement. The third procedure and the aim of this paper was the implementation of the pilot study.

The pilot study aims to determine responses dispersion, analyze the internal consistency of each item (ICR) and the internal validity of the instrument itself. A group of participants were recruited in daycare centers and kindergartens located in two districts of the North of Portugal, constituting a sample of 128 parents and caregivers of children. Participants signed an informed consent form, assuring confidentiality of responses as established by the Ethics Committee of the University of Minho.

Furthermore, to analyze and certify the existence of ambiguous instructions or content of the items, a focus group reflection was conducted with the parents and caregivers. The protocols were statistically analyzed using SPSS, version 25.

Results and Discussion

The first version of RaLEPE had 62 items in total and all the items correspond to dichotomous responses, "0" or "1". In the sociodemographic questionnaire, parents also provide information related to birth, health condition, the first language of the child and family's background.

In order to verify the internal consistency index, Cronbach's alpha coefficients for all the sections of RaLEPE were performed. When analyzed the total of the screening tool, the RaLEPE showed high internal consistency ($\alpha=0.973$). When analyzing each section, results show high internal consistency with α between 0.84 and 0.94 (see Table 3).

Table 3. Cronbach's Alpha Coefficients in RaLEPE

Domains/ Sections of RaLEPE	Cronbach's alpha coefficients	N° of Items
Oral language-comprehension	0.84	12
Oral language-production	0.93	16
Metalanguage	0.94	17
Skills associated with letters	0.92	12
Skills associated with books	0.87	5

To verify the differences and usefulness of the instrument, the sample was divided into four groups accordantly to the children's ages. Alpha coefficients of all groups are shown in Table 4.

Table 4. Cronbach's Alpha Coefficients for Age

Domains/ Sections of RaLEPE	Cronbach's alpha coefficients			
	3-years-old	4-years-old	5-years-old	6-years-old
Oral language-comprehension	0.86	0.82	0.85	0.92
Oral language-production	0.92	0.89	0.88	0.94
Metalanguage	0.48	0.87	0.90	0.89
Skills associated with letters	0.82	0.87	0.84	0.78
Skills associated with books	0.86	0.85	0.85	0.77

All the sections of RaLEPE showed good reliability with all age groups, as screening tools existing in other languages such as English and Spanish (Invernizzi, Sullivan, Meier, & Swank, 2004; Lonigan et al., 2007; Lonigan & Wilson, 2008). The metalanguage section is the exception. The weak internal consistency for the 3-years-old age group can be justified by the fact that these items reflect complex skills for 3-years-old children.

In order to identify the items that should remain, the internal consistency of the items was analyzed as well. Most of the items showed moderate internal consistency (α between 0.70 and 0.80). However, some items had a weak internal consistency ($\alpha < 0.30$), specifically item 1, 2, 6, 9, 10 and 11. The first two items were removed and the other four items were maintained because the alpha coefficients were more than 0.20 and these items measure important skills of language and early literacy development.

Professional and parent's reports and comments were analyzed, and a conceptual and semantics review was conducted. This analysis led to the following modifications: a) two additional items were introduced, resulting in dividing one item in two, one in the metalanguage section and the other in the book section; b) the items in the book section were reorganized to facilitate the answer by participants; and c) the language of some item's examples was simplified in semantics.

Conclusions

Early literacy is the foundation of literacy skills and is also essential for academic success and well-being. The early detection and intervention may decrease the number of young children with difficulties in the future. Moreover, assessment systems that support these efforts are increasingly important because can be indicators of the developmental difficulties that may affect emotional and social outcomes for an individual across their life span (Fricke et al., 2017; Haley et al., 2017; Kincaid, McConnell & Wackerle-Hollman, 2020; Rogde, Melby-Lervåg, & Lervåg, 2016).

The next procedure in this research project will be the standardization of the RaLEPE in Portugal. The aim is to gather enough information related to the children's performance criteria and markers related to early literacy skills in Portuguese children aged 3- to 6-years. Moreover, to contrast the validity of the screening tool, other language tests can be conducted. This project aims to develop a screening tool usefulness for early childhood intervention, in order to provide early identification, and contribute to an efficacy on early intervention for children with language and learning disorders or children at risk.

Acknowledgements

This work is funded by the Science and Technology Foundation (FCT), the Human Capital Operational Programme (POHP) and the North Regional Operacional Programme (PORNorte), through European Social Fund and Nacional Fund MCTES (Grant number: SFRH/BD/138797/2018) and funded by CIEd – Research Centre on Education, Institute of Education, University of Minho, projects UIDB/01661/2020 and UIDP/01661/2020, through national funds of FCT/MCTES-PT.

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