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Human Development

Dyslexia and developmental language disorder: Cognitive-linguistic differences in reading

Silvia B. Guimarães[1]
https://orcid.org/0000-0002-6578-8877

Renata Mousinho[2]
https://orcid.org/0000-0002-7117-8952

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1 Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Rio de Janeiro, RJ, Brazil.

2 Federal University of Rio de Janeiro (UFRJ), Rio de Janeiro, RJ, Brazil.

Abstract

Reading comprehension is a product of the performance of both decoding ability and language comprehension. The difficulty in reading comprehension may be due to a deficit in any of these skills. The study aimed to verify the underlying reading skills in two clinical groups, Developmental Dyslexia (DD) and Developmental Language Disorder (DLD), seeking their similarities and differences. The sample included children from the early years of schooling. Both groups were assessed for reading comprehension skills, word reading speed, phonological processing and comprehension, and language production. The comparison between the two groups showed that the groups were similar in phonological skills but differed in oral language comprehension and production skills. In this ability, the DD group had a higher performance compared to the DLD group. The study concluded that different forms of intervention are necessary to supply the specific weaknesses of each group.
Keywords: reading comprehension; reading; dyslexia; developmental language disorder; language.

HABILIDADES DE NOMEAÇÃO INFANTIL E A QUALIDADE DOS AMBIENTES

Resumo

A compreensão da leitura é produto do desempenho das habilidades de decodificação e compreensão da linguagem. A dificuldade de compreensão da leitura pode ser a consequência de um déficit em qualquer uma dessas habilidades. O objetivo do estudo foi verificar as habilidades subjacentes de leitura em dois grupos clínicos, dislexia do desenvolvimento (DD) e transtorno do desenvolvimento da linguagem (TDL), buscando suas similaridades e diferenças. A amostra foi de crianças nos anos iniciais da escolarização. Avaliaram-se os grupos em compreensão leitora, velocidade de leitura de palavras, processamento fonológico e compreensão e produção de linguagem. Os resultados das comparações entre os dois grupos mostraram que eles foram similares nas habilidades fonológicas, mas diferiram nas habilidades de compreensão e produção da linguagem oral. Nesta habilidade, o grupo DD obteve maior desempenho quando comparado ao grupo TDL. Concluiu-se que diferentes formas de intervenção são necessárias para suprir as fragilidades específicas de cada grupo.
Palavras-chave: compreensão leitora; leitura; dislexia; transtorno do desenvolvimento da linguagem; linguagem.

DISLEXIA Y TRASTORNO DEL DESARROLLO DEL LENGUAJE: DIFERENCIAS COGNITIVO-LINGÜÍSTICAS EN LECTURA

Resumen

La comprensión lectora es un producto del desempeño de la capacidad de decodificación y la comprensión del lenguaje. La dificultad en la comprensión lectora puede ser la consecuencia de un déficit en cualquiera de estas habilidades. El objetivo del estudio fue verificar las habilidades de lectura subyacentes en dos grupos clínicos, dislexia del desarrollo (DD) y trastorno del desarrollo del lenguaje (TDL), buscando sus similitudes y diferencias. La muestra fueron niños de los primeros años de escolaridad. Los grupos fueron evaluados en comprensión lectora, velocidad de lectura de palabras, procesamiento fonológico, comprensión y producción del lenguaje. Los resultados de la comparación entre los dos grupos mostraron que los grupos eran similares en habilidades fonológicas, pero diferían en las habilidades de comprensión y producción del lenguaje oral. En esta capacidad, el grupo DD tuvo un mayor rendimiento en comparación con el TDL. Se concluyó que son necesarias diferentes formas de intervención para suplir las debilidades específicas de cada grupo.

Palabras clave: comprensión lectora; lectura; dislexia; trastorno del desarrollo del lenguaje; lenguaje.

1. Introduction

The Simple View of Reading (Gough & Tunmer, 1986) defines reading comprehension as a product of both decoding and oral language comprehension. Decoding connects the relationship between letters and word sounds. The automatization of this process allows the reader to read the words of the text quickly and accurately (Gough & Tunmer, 1986). Language comprehension involves skills related to extracting meaning from what is read. These are abilities involved in word, sentence, and text comprehension (Gough & Tunmer, 1986). Dyslexic readers or readers with developmental language disorder (DLD) have difficulty in reading, which may be due to weaknesses in decoding skills and/or oral language comprehension. Identifying the similarities and differences in cognitive-linguistic skills within the framework of these disorders is an important step towards understanding the origins of reading comprehension difficulties.

Both DLD and specific reading disorders (developmental dyslexia – DD) are neurodevelopmental disorders, which means that symptoms appear in the

development and persist throughout life. Overall, both severely impact children's educational and psychosocial outcomes when not identified and treated early (Adlof & Hogan, 2018; Bishop & Snowling, 2004).

DD is a specific disorder in reading acquisition that is observed in individuals with average intelligence and hearing, as well as with adequate environmental and instructional opportunities (Stanovich, 1994). One of the strongest hypotheses concerning its cause comes from the phonological deficit, which affects the accuracy and fluency of word reading and, consequently, the comprehension of written language (Lyon, Shaywitz, & Shaywitz, 2003). For a review of dyslexia deficit models, see Pennington et al. (2012).

DLD is characterized by deficits in language production and/or comprehension despite normal intelligence and hearing, as well as by the presence of a suitable learning environment (Bishop, Snowling, Thompson, Greenhalgh, & CATALISE-2 Consortium, 2017). DLD is diagnosed when the child's language development does not follow other skills for no apparent reason, despite their normal non-verbal ability. The child has at least two or more dimensions of impaired language, such as the syntactic, morphological, semantic and/or phonological levels (Bishop et al., 2017).

Research shows that both disorders share reading difficulties (Bishop, McDonald, Bird, & Hayiou-Thomas, 2009; Bishop & Snowling, 2004; Catts, Adlof, Hogan, & Weismer, 2005; Snowling, Hayiou-Thomas, Nash, & Hulme, 2019). Bishop and Snowling (2004) proposed a two-dimensional model that relates impairment in phonological skills and broader language skills (e.g., morphology, vocabulary, and syntax). The model suggests that both disorders are partially distinct because they share phonological difficulties (one common factor is decoding deficit), but they differ in the extent to which broader language difficulties are implicated. DD would be associated with difficulties in phonological skills and, therefore, reading deficit would be more strongly associated with difficulties in decoding words. Subsequently, the longitudinal study conducted by Catts et al. (2005) showed a complementary hypothesis to Bishop and Snowling's (2004) by highlighting disorders with different underlying deficits. A weakness in phonological processing is strongly associated with dyslexia, but not with DLD when it occurs without comorbidity with DD. There is the presence of DLD with strong phonological skills, but other language skills would be impaired (Nation, 2005).

There are several studies that consider DLD and DD as separate disorders, but comorbidity between them is common, as shown by Adlof & Hogan (2018), Bishop et al. (2009), and Ramus, Marshall, Rosen, & van der Lely (2013). When both are present, reading impairment gets worse due to poor performance in phonological and broader language skills (vocabulary, morphological, syntactic, and semantic aspects). Thus, within the Simple View of Reading (Gough & Tunmer, 1986), decoding would be the main obstacle dyslexic readers face and the broader impairment of language skills would be the weaknesses of readers with DDL.

It is worth mentioning that the scientific literature on reading was built and designed for English-speaking children. There are criticisms about the Anglocentrism of reading theories (Share, 2008). English has an outlier orthography (Share, 2008). Testing the effects of skills involved in reading in more transparent languages, such as Portuguese, is important. Few studies have made direct comparisons between disorders with Portuguese speakers. That said, this article aims at understanding the underlying reading processes in two clinical groups, DD and DLD, seeking their similarities and differences. The hypothesis that guides this study is that, despite the similarities regarding complaints of reading difficulties, the cognitive-linguistic profile differs between the groups mentioned.

2. Method

2.1 Sample

The file data of the ELO program: *escrita, leitura e oralidade* (writing, reading, and speaking) (Mousinho, 2017) were used in this study. The inclusion criteria of the protocols were children diagnosed with DD by the ELO project team, henceforth dyslexia, or with DLD, who were attending the early years of elementary school (1st to 3rd year). This selection of schooling refers to the literacy cycle. A total of 76 protocols were selected, of which 48 children were diagnosed with a specific reading disorder and 28 with a language disorder. Children were from 6 to 12 years old, with a mean age of 7 years and 9 months of age (SD=12.9) for the DD group and a mean of 8 years of age (SD=14.6) for the DLD group. The two groups did not show a significant difference in chronological age, $t(74)=-1.05$, $p=0.29$.

The children participating in the ELO project had a clinical profile carefully developed by a multidisciplinary assessment team made up of speech therapists,

psychologists, neuropediatricians, and psychopedagogists. The diagnoses complied with the criteria of the *Diagnostic and Statistical Manual of Mental Disorders: DSM-5* (American Psychiatric Association, 2013). The assessments encompassed reading, writing, oral language, and cognition aspects. The clinical profile was based on the linguistic and cognitive assessments collected individually from each child, as well as the parents' detailed reports on their children's developmental history and school trajectory.

The ELO project: writing, reading, and speaking, approved in July 2010 by the Research Ethics Committee of the Deolindo Couto Neurology Institute (CEP-INDC) and renewed under resolution number 5/2013, is aimed at assisting children with complaints of learning difficulties. All children and their parents signed a consent form allowing the ELO project to use in the information available in the assessments for research purposes.

2.2 Instruments

2.2.1 Reading measures

Reading evaluation was performed with the following narrative texts according to the school year: 1st year children read "A Folia das Cores" (The happiness of the colors), with 113 words; 2nd year children read "O Acidente" (The Accident), with 196 words (Cocco & Hailer, 1995), and the 3rd year children read the text "As travessuras de Afonsinho" (Afonsinho's mischief), consisting of 724 words. The examiner gave the following instruction: "You are going to read this text and, when you finish it, I will ask you questions about it". Reading speed was measured in words per minute (WPM). Each child was offered 5 minutes to read the text orally. The number of words read during this time was divided by five to calculate the number of WPM. Reading comprehension was assessed through five eliciting questions about the story read by the child, and the percentage of correct answers was calculated. The questions had to do with the characters, the actions that guide the story, their consequences and the outcome of the narrative.

2.2.2 Oral Language

The comprehension of oral language was analyzed based on the text the examiner read, who would then ask the child to retell it, and finally ask eliciting questions about it. The text "O leão e o rato" (The Lion and the Mouse), consisting

of 104 words and 560 characters (Carpaneda & Bragança, 2005), was used. First, the children retold the story's narrative; then, they answered five questions about the story they had read. The comprehension and production of the narrative were measured from the levels of complexity proposed by Brandão & Spinillo (2001).

The five categories used by Brandão and Spinillo (2001) as a basis for the classification of narrative production were the following:

- *Level I*: Repetition of the proposed theme or production of disconnected sentences, which may or may not be related to the topic.
- *Level II*: Description of the characters' state. The topic only inserts statements and suggests the main character.
- *Level III*: Sequence of events linked by causal relationships, some of which include a goal/reason for the main character. The theme is a guiding axis.
- *Level IV*: Problem situation to be solved by the main character and that motivates him/her, but the outcome is sudden and poorly elaborated, without solving the problem.
- *Level V*: Complex and detailed narrative. The story has a well-elaborated beginning, middle, and end, with an explicit resolution of the problem situation.

To classify the comprehension of narratives, the following parameters by Brandão and Spinillo (2001) were used:

- *Level I*: Disconnected reproductions, different plots, literal repetition of the proposed topic, or phrases not related to the text.
- *Level II*: Descriptive reproductions of the state of characters or situations, without causal relationships. It may involve some characters or events from the original narrative, not always real.
- *Level III*: Reproductions already characterized by a sequence of events interconnected by causal relationships, which include parts of the story, not always in an articulated or reliable way.
- *Level IV*: Global reproductions, with a problem situation to be solved, but with a sudden end, without a precise connection between the problem and its resolution.
- *Level V*: Complete reproductions of the narrative heard, with inferences, articulation between central ideas and resolution of the problem situation.

The comprehension of the text to which the child listened was also assessed through five eliciting questions about the story read by him/her. As in the analysis of the comprehension of the text read by the children, the questions dealt with the characters, actions that guide the story, their consequences, and the outcome of the narrative. The percentage of correct answers was considered for the analysis.

2.2.3 Phonological processing

For phonological awareness, the Tests of Metalinguistic and Reading Skills (in Portuguese, *Provas de Habilidades Metalinguísticas e de Leitura* – Prohmele) (Cunha & Capellini, 2009) test was used, with the following tasks: initial, final, and mid-identification, segmentation, addition, substitution, subtraction, and combination. For each one of the tasks, there were 6 items assessing the syllabic level and six items assessing the phonemic level. The total percentage of correct answers in syllabic tasks and phonemic tasks were used as parameters for analysis.

The rapid automatized naming (Denckla, 1974, validated by Capellini, Ferreira, Salgado, & Ciasca, 2007) measured the time between visual recognition and verbal response to a sequence of visual stimuli: letters, numbers, colors, and objects. Only the version of numbers and letters was used for this research, whose naming speed was measured in seconds.

2.3 Procedures

The evaluations took place at the Speech Therapy Laboratory of the Federal University of Rio de Janeiro (UFRJ). The evaluation process was carried out in four different steps (see Mousinho, 2017). On the first one, a complete family medical history was taken. On the second one, three different assessments were individually carried out with the team qualified in neurology, speech therapy, and neuropsychology. On the third day, new speech therapy and neuropsychological sessions were held, in addition to psycho-pedagogical investigation and mathematical skills. On the fourth step, after the meeting of the interdisciplinary team and preparation of the report, the family received feedback and guidance.

2.4 Data analysis

The variables were combined into two groups: phonological processing (syllable awareness, phonemics, and rapid automatized naming), and oral language

skills (comprehension of oral narrative, eliciting questions, and oral narrative production). First, to determine whether the two groups (dyslexia and specific language disorder) differed in performance in the two skill domains, a one-way multivariate MANOVA analysis of variance was performed, followed by a univariate analysis of variance (ANOVAs). The premise of homogeneity of the covariance matrices was verified with the Box test, which is useful for different sample sizes. Pillai's Trace test was the statistical inference test used. For non-parametric measurements, the Mann-Whitney t-test was used to compare reading measurements. Furthermore, the effect size was calculated according to Field (2009), and values above 0.80 were considered large. After showing the significant results of group comparisons, the qualitative analysis of the frequency percentage within groups will be presented. Data were analyzed using the SPSS version 13 for Windows.

3. Results

The means and standard deviations of all measurements used are shown in Figure 3.3.1. Data from each distribution were checked for normality (Field, 2009). Before conducting the following analyses, the distributive properties of all measures were examined. Data were checked for normality by dividing the skewness by the standard deviation of the error (Field, 2009). The reading speed and oral reading comprehension variables had values violated above 2.0.

3.1 Reading Skills

The comparison of reading measures between the dyslexia groups was not statistically significant in word reading speed, U=616, p=0.54, and oral reading comprehension, U=579, p=0.26. Both groups had similar reading performances.

3.2 Phonological processing

For homogeneity, Box tests were not significant, p=0.20, which indicates that the assumption of homogeneity of the covariance matrices was not violated. In the MANOVA test, there was no statistically significant difference between dyslexics and those with language disorder in the measures of syllabic awareness, phonemics, and rapid automatized naming, Λ=0.01, F(3.72)=0.25, p=0.86, η^2p=0.01. The groups also had similar performances in phonological processing skills (syllabic awareness, phonemics, and rapid automatized naming).

3.3 Oral language comprehension skills

Finally, in the language comprehension measures, the Box test was not statistically significant, p=0.74, which indicates that the assumption of homogeneity of the covariance matrices was not violated. In the MANOVA test, there was a group effect, Λ=0.90, F(4.71)=160.0, p<0.001, η^2p=0.90. In all measures of oral comprehension, the groups differed in relation to performance, F(1.7)=4.1, p<0.05, η^2p=0.05, in the production of the oral narrative F(1.17)=10.8, p<0.01, η^2p=0.002 and in the eliciting questions F(1.9)=6.4, p<0.05, η^2p=0.08. The t-test showed that the means of the groups with Dyslexia were higher than those of the DLD group and were statistically significant in the comprehension of oral narrative, t(74)=2.02, p<0.05, production of oral narrative, t(74)=2.66, p<0.01, and eliciting questions t(48)=3.10, p<0.01. Cohen's calculation shows a large average effect size for eliciting questions (r=0.40) and oral narrative production (r=0.30) and low effect for oral narrative comprehension (r=0.23).

Figure 3.3.1. Descriptive statistics of the measurements.

	Dyslexia (n=48)	Language disorder (n=28)
	Mean (Standard deviation)	**Mean (Standard deviation)**
Age in months	94.75 (12.9)	98.14 (14.6)
Reading Skills		
Word reading speed	26.7 (20.5)	28.1(30.5)
Oral text comprehension	1.39 (1.7)	0.96 (1.5)
Phonological processing		
Syllabic awareness	553.78 (135.6)	547.6 (176.2)
Phonemic awareness	309.44 (162.9)	321.17(212.9)
Rapid Automatized Naming	92.2(34.14)	97.12 (50.94)
Oral Skills		
Oral narrative comprehension	3.5 (1.30)	2.9 (1.31)
Production of oral narrative	3.5 (1.22)	2.7 (1.27)
Eliciting Question	4.02 (1.15)	3.03 (1.42)

Qualitative analysis of language production and comprehension within clinical groups are shown in Figures 3.3.2 and 3.3.3. In oral narrative comprehension, the dyslexia group concentrated on categories IV and V (66.6%), while a low percentage was observed in categories I, II, and III (33.4%). In the language disorder group, category distributions were more equivalent; however, 64.3% of the answers were within categories I, II, and III and 35% in categories IV and V. Note that the two groups differed in the quality of comprehension, and the dyslexia group showed more incidence in more linguistic complex categories. In the oral narrative production, the dyslexia group concentrated on categories IV and V, with a total percentage of 56.3%; while categories I, II, and III represent 43.8% of the total occurrences. In the group with language disorder, 53.9% of the answers were in categories I, II, and III and 46.1% were in categories IV and V. In general, children in the dyslexia group tend to produce the narrative in more complex categories than those in the DLD group. It is noteworthy that, in the language disorder group, 25% of the frequency of responses fell into category I.

Figure 3.3.2. Percentage of Children in Comprehension Levels of Oral Narrative by Diagnosis Group.

Language comprehension category	Diagnosis	
	Dyslexia	Developmental Language Disorder
I	14.6%	21.4%
II	6.3%	14.3%
III	12.5%	28.6%
IV	45.8%	25.0%
V	20.8%	10.7%

Figure 3.3.3. Percentage of Children in Comprehension Levels of Oral Narrative by Diagnosis Group.

Language Production category	Diagnosis	
	Dyslexia	Developmental Language Disorder
I	4.2%	25.0%
II	22.9%	14.3%
III	16.7%	32.1%
IV	37.5%	21.4%
V	18.8%	7.1%

Thus, there were important variations in the quality of the categories concerning the groups. Children in the DLD group understand and produce oral stories in the most elementary categories. Dyslexic children, on the other hand, tend to present comprehension and oral production in elaborate categories.

4. Discussion

This study aimed to verify the cognitive-linguistic profile between the groups of children complaining of learning difficulties in reading: DD and DLD, based on the Simple View of Reading. In particular, the proposal that similarities between groups could arise in terms of phonological skills in cases of comorbidities was examined (Catts et al., 2005), but distinctions should be evident when language comprehension skills are considered (Bishop & Snowling, 2004).

First, the findings indicated that phonological skills seem important to explain the similarities of reading difficulties in both groups in this study. The group's performance with DLD in the tasks of phonological awareness and automatized naming was similar to the group with Developmental Dyslexia. DLD is a heterogeneous disorder, and the similarity in phonological abilities with the DD group can be partially explained due to a possible overlap between diagnoses. These findings are in line with a longitudinal reading development model proposed by Catts et al. (2005), Bishop et al. (2009), and Snowling et al. (2019), who found phonological deficits only in the DD group when comparing the DD and DLD groups.

The most severe phonological difficulties were found in cases of associations between DD + DLD compared to the DD group.

Then, oral language comprehension skills were explored. The results show differences between the groups, which suggests the central thesis of the Bishop and Snowling (2004) model that their performance on non-phonological tasks should distinguish children in dyslexia from children in the DLD group. The results found in this study are in line with the proposal of these authors. Children in the DLD group had lower scores in the tasks of production and comprehension of oral language compared to children in the group with DD. Qualitative analysis of children's performance in language comprehension tasks shows that the dyslexic group had a higher response frequency with a more complex language level. These results also corroborate Bishop and Snowling's (2004) hypothesis that children with DLD have a wider range of language deficits, involving more linguistic levels, compared to children with DD.

Based on the Simple View of Reading model (Gough & Tunmer, 1986), reading difficulties arise from weaknesses involved in word recognition and / or oral language comprehension. In the DD group, difficulties in phonological processing to read words accurately and fluently can indirectly impact reading comprehension via decoding. After these basic difficulties are overcome, reading comprehension is competent. According to Nation (2005), despite the phonological deficit, the strength in DD can come from the broader linguistic abilities of language, such as oral language comprehension. They can support reading skills and provide a means of compensation for these readers. However, this compensation may be less accessible to readers with DLD, which proved to be more impaired, indicating a more general deficit at different language levels, which may explain the difficulties in fluency and reading comprehension.

5. Conclusion

The present study is believed to contribute to understanding differences and similarities of reading difficulties faced by Brazilian students with DD and DLD. In this sense, from the perspective of the Simple View of Reading that guided the study, both DD and DLD would share similarities in phonological difficulties related to decoding, but they differ in broader linguistic skills, such as language comprehension.

The study supports the hypothesis that, in the sample of Brazilian students, the disorder most likely associated with a deficit in phonological processing is DD. This deficit is considered the proximal cause of word reading issues in DD (Vellutino, Fletcher, Snowling, & Scanlon, 2004). Children with DLD, on the other hand, may have broader language deficits implicated in language decoding and comprehension, as in Catts et al. (2005), Bishop et al. (2009), and Snowling et al. (2019) when combined with the DD case.

The study had some methodological limitations. The first one was related to the absence of a control group of typical readers with the same reading level. This is an important control, as it is possible to compare groups without interference from the reading experience (Bryant & Bradley, 1987). The second limitation is that this is a cross-sectional study and, therefore, the cause-and-effect relationship cannot be presented, but it is feasible to establish a relationship among the variables. Future studies are needed to follow the linguistic development patterns that explain the reading difficulties in both groups (DD and DLD). Adlof and Hogan (2018) point out that longitudinal designs, which control language experience before schooling, can verify how much overlap is observed among the disorders throughout schooling. More evidence comparing language development trajectories is essential to determine the differences between these two disorders more accurately, especially the extent to which other aspects of language development, such as vocabulary, syntax, and speech, are affected in individuals with DD and DLD.

The study has a theoretical and a practical contribution. The first one is related to understanding aspects of reading in the context of more transparent spelling. The latter is related to understanding the skills that underlie reading difficulties and allows us to think about clinical interventions, inclusive educational actions, and more effective assessments to overcome a history of reading failure over the school years. In addition, the study highlights the importance of comprehensive language assessments. Broader language assessments can help identify children's strengths and weaknesses more fully, which can guide effective interventions.

References

Adlof, S. M., & Hogan, T. P. (2018). Understanding dyslexia in the context of developmental language disorders. *Language, Speech, and Hearing Services in Schools*, *49*(4), 762–773. doi:10.1044/2018_LSHSS-DYSLC-18-0049

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Washington, DC: APA.

Bishop, D. V., McDonald, D., Bird, S., & Hayiou-Thomas, M. E. (2009). Children who read words accurately despite language impairment: Who are they and how do they do it? *Child Development*, *80*(2), 593–605. doi:10.1111/j.1467-8624.2009.01281.x

Bishop, D. V., & Snowling, M. J. (2004). Developmental dyslexia and specific language impairment: Same or different? *Psychological Bulletin*, *130*(6), 858–886. doi:10.1037/0033-2909.130.6.858

Bishop D. V., Snowling M. J., Thompson P. A., Greenhalgh T., & CATALISE-2 Consortium (2017). Phase 2 of CATALISE: a multinational and multidisciplinary Delphi consensus study of problems with language development: Terminology. *The Journal of Child Psychology & Psychiatry*, *58*(10), 1068–1080. doi:10.1111/jcpp.12721

Brandão, A. C. P., & Spinillo, A. G. (2001). Produção e compreensão de textos em uma perspectiva de desenvolvimento. *Estudos de Psicologia*, *6*(1), 51–62. Retrieved from http://www.scielo.br/pdf/epsic/v6n1/5332.pdf

Bryant, P. E.; Bradley, L. (1987). *Problemas de leitura na criança*. Porto Alegre, RS: Artes Médicas.

Capellini, S. A., Ferreira, T. L., Salgado, C. A., & Ciasca, S. M. (2007). Desempenho de escolares bons leitores, com dislexia e com transtorno do déficit de atenção e hiperatividade em nomeação automática rápida. *Revista da Sociedade Brasileira de Fonoaudiologia*, *12*(2), 114–119. doi:10.1590/S1516-80342007000200008

Carpaneda, I., & Bragança, A. (2005). *Porta aberta: Alfabetização*. Rio de Janeiro: FTD.

Catts, H. W., Adlof, S. M., Hogan, T. P., & Weismer, S. E. (2005). Are specific language impairment and dyslexia distinct disorders? *Journal of Speech, Language, and Hearing Research*, *48*(6), 1378–1396. doi:10.1044/1092-4388(2005/096)

Cocco, M. F., & Hailer, M. A. (1995). *ALP: Análise, linguagem e pensamento: Um trabalho de linguagem numa proposta socioconstrutivista*. São Paulo: FTD.

Cunha, V. L. O., & Capellini, S. A. (2009). *Prohmele: Provas de Habilidades Metalinguísticas e de Leitura*. Rio de Janeiro: Revinter.

Field, A. (2009). *Descobrindo estatística usando o SPSS* (2a ed.). Porto Alegre: Artmed.

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, *7*(1), 6–10. doi:10.1177/074193258600700104

Lyon, G. R., Shaywitz, S. E., & Shaywitz, B. A. (2003). A definition of dyslexia. *Annals of Dyslexia*, *53*(1), 1–14. doi:10.1007/s11881-003-0001-9

Mousinho, R. (2017). ELO: Escrita, leitura e oralidade. In A. L. Navas, C. S. Azoni, D. G. de Oliveira, J. P. A. Borges, & R. Mousinho (Orgs.), *Guia de boas práticas: Do diagnóstico à intervenção de pessoas com transtornos específicos de aprendizagem* (pp. 14–18). São Paulo: Instituto ABCD.

Nation, K. (2005). Children's reading comprehension difficulties. In M. J. Snowing, & C. Hulme (Eds.), *The science of reading: A handbook* (pp. 248–266). Oxford: Blackwell.

Pennington, B. F., Santerre-Lemmon, L., Rosenberg, J., MacDonald, B., Boada, R., Friend, A., ... Olson, R. K. (2012). Individual prediction of dyslexia by single versus multiple deficit models. *Journal of Abnormal Psychology*, *121*(1), 212–224. doi:10.1037/a0025823

Ramus, F., Marshall, C. R., Rosen, S., & Lely, H. K. van der (2013). Phonological deficits in specific language impairment and developmental dyslexia: Towards a multidimensional model. *Brain: A Journal of Neurology*, *136*(2), 630–645. doi:10.1093/brain/aws356

Share, D. L. (2008). On the Anglocentricities of current reading research and practice: The perils of overreliance on an "outlier" orthography. *Psychological Bulletin*, *134*(4) 584–615. doi:10.1037/0033-2909.134.4.584

Snowling, M. J., Hayiou-Thomas, M. E., Nash, H. N. & Hulme, C. (2019). Dyslexia and developmental language disorder: Comorbid disorders with distinct effects on reading comprehension. *The Journal of Child Psychology and Psychiatry*, *61*(6), 672–680. doi:10.1111/jcpp.13140

Stanovich (1994). Annotation: Does dyslexia exist? *The Journal of Child Psychology and Psychiatry*, *35*(4), 579–559. doi:10.1111/j.1469-7610.1994.tb01208.x

Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *The Journal of Child Psychology and Psychiatry*, *45*(1), 2–40. doi:10.1046/j.0021-9630.2003.00305.x

Authors note

Silvia B. Guimarães, Department of Education, Pontifical Catholic University of Rio de Janeiro (PUC-Rio); **Renata Mousinho,** Faculty of Medicine, Federal University of Rio de Janeiro (UFRJ).

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Correspondence concerning this article should be addressed to Silvia Brilhante Guimarães, Rua Marquês de São Vicente, 225, 10º andar do Prédio do Leme, Gávea, Rio de Janeiro, RJ, Brazil. CEP 22451-900.

E-mail: silvia_brilhante@yahoo.com.br