

Coherence in written narratives of children with school difficulties or behavioral complaints: the role of linguistic variables and the influence of schooling

Coerência em narrativas escritas de crianças com dificuldades escolares ou queixas comportamentais: o papel das variáveis linguísticas e a influência da escolaridade

Coherencia en narrativas escritas de niños con dificultades escolares o quejas de conducta: el papel de las variables lingüísticas y la influencia de la educación

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Abstract

Introduction: The written narrative must articulate the main idea through the relation between theme, characters and outcome, being the responsibility of those who write to relate these components to bring them to coherence. Consistency consists of a dependence on macro-linguistic relations (association of the theme of the text with the structures that make it up) and micro-linguistic (connectives that will bring cohesion to the narrative), in order to provide the text with the power of interpretation. **Objective:** to analyze which linguistic variables are related to the best coherence performance in the written narratives of elementary schoolchildren. **Methods:** the sample consisted of 37 children aged 7-11 years with no intellectual or hearing deficiency. The written elaboration of each child was classified as adequate (level III and IV coherence according to the instrument used) or inadequate (level I or II coherence). A set of variables that might be related to the performance of the narrative was then analyzed, such as oral comprehension, vocabulary, phonological awareness, morphosyntactic awareness, working memory – phonological loop, reading, and writing. All of these variables were evaluated using standardized tests and statistical analysis was performed using a logistic regression model. **Results:** among all the linguistic skills evaluated, morphosyntactic awareness ($p = 0.02$) was the significant variable. In addition to these there was also schooling ($p = 0.01$), although morphosyntactic awareness showed a negative coefficient while schooling showed a positive coefficient. **Conclusion:** children with changes in morphosyntactic awareness have a greater chance to elaborate incoherent written narratives, whereas children with higher schooling elaborate more adequate texts.

Keywords: Child Language; Cognition; Narration; Educational Status; Learning Disabilities.

Resumo

Introdução: A narrativa escrita deve articular a ideia principal através da relação entre tema, personagens e desfecho, sendo responsabilidade de quem escreve relacionar esses componentes para levá-los à coerência. A coerência consiste de uma dependência de relações macro-linguísticas (associação do tema do texto às estruturas que o compõem) e micro-linguísticas (conectivos que trarão coesão à narrativa), a fim de proporcionar ao texto o poder de interpretação. **Objetivo:** analisar quais variáveis linguísticas estavam relacionadas ao melhor desempenho em coerência nas narrativas escritas de escolares do ensino fundamental. **Métodos:** a amostra foi composta por 37 crianças (idade entre 7 – 11 anos) sem deficiência intelectual e/ou deficiência auditiva. Cada criança teve sua elaboração escrita classificada em adequada (coerência nível III e IV segundo instrumento utilizado) ou inadequada (coerência nível I ou II). Posteriormente, foi analisado um conjunto de variáveis que poderiam estar relacionadas ao desempenho da narrativa, a saber: compreensão oral, vocabulário, consciência fonológica, consciência morfosintática, memória de trabalho – alça fonológica, leitura e escrita. Todas essas variáveis foram avaliadas através de testes padronizados. Para a análise estatística utilizou-se modelo de regressão logística. **Resultados:** dentre todas as habilidades linguísticas avaliadas, consciência morfosintática ($p = 0,02$) foi a variável significativa. Somada a estas, temos também a escolaridade ($p = 0,01$), porém a consciência morfosintática apresentou coeficiente negativo enquanto a escolaridade apresentou coeficiente positivo. **Conclusão:** crianças que apresentam alteração em consciência morfosintática apresentam maiores chances de elaborarem narrativas escritas incoerentes. Já as crianças com maior grau de escolaridade, são as que possuem textos mais adequados.

Palavras-chave: Linguagem Infantil; Cognição; Narração; Deficiências da Aprendizagem; Escolaridade.

Resumen

Introducción: La narrativa escrita debe articular la idea principal a través de la relación entre tema, personajes y desenlace, siendo responsabilidad de quienes escriben relacionar estos componentes para llevarlos a la coherencia. La coherencia consiste en una dependencia de relaciones macrolingüísticas y microlingüísticas, para dotar al texto de poder de interpretación. **Objetivo:** analizar qué variables lingüis-

ticas se relacionaron con un mejor desempeño en coherencia en las narrativas escritas de estudiantes de primaria. **Metodos:** la muestra estuvo formada por 37 niños (de 7 a 11 años). Cada niño tenía su elaboración escrita clasificada como adecuada (nivel de coherencia III y IV, según el instrumento utilizado) o inadecuada (nivel de coherencia I o II). Posteriormente, se analizaron un conjunto de variables que podrían estar relacionadas con el desempeño de la narrativa, a saber: escucha, vocabulario, conciencia fonológica, conciencia morfosintáctica, memoria de trabajo - bucle fonológico, lectura y escritura. Todas estas variables se evaluaron mediante pruebas estandarizadas. Para el análisis estadístico se utilizó un modelo de regresión logística. **Resultados:** entre todas las habilidades lingüísticas evaluadas, la conciencia morfosintáctica ($p = 0,02$) fue la variable significativa. Sumado a estos, también tenemos la educación ($p = 0.01$), pero la conciencia morfosintáctica tuvo un coeficiente negativo mientras que la educación tuvo un coeficiente positivo. **Conclusión:** los niños con alteración de la conciencia morfosintáctica son más propensos a desarrollar narrativas escritas incoherentes. Los niños con mayor nivel educativo, en cambio, son los que tienen los textos más adecuados.

Palabras clave: Lenguaje Infantil; Cognición; Narración; Discapacidades para el Aprendizaje; Escolaridad.

Introduction

Written language development provides a new means of communication, which is efficient as the writer develops coherent texts. Coherence is seen as “a perceivable continuity of meanings in the text, resulting in a cognitive conceptual connection between its elements”¹.

Adequate coherence in written narratives requires linguistic, metalinguistic, cognitive, and communication processes – i.e., the child must have certain skills (such as syntactic, grammar, and semantic ones) and keep the logical sequence throughout the narrative for it to be coherent²⁻⁵. When narrating events through writing, the person must organize ideas, review material they read, and master the alphabet code, spelling rules, and grammar. Writing stories is different from knowing how to read and write because the narrative skill derives from experience with texts and their manipulation, not only the ability to decode letters. After learning to read and write, children still have a long way ahead of them⁶.

Written narrative development is seldom analyzed in our country⁷, despite being an instrument that furnishes various data on written language, oral language, and cognitive development⁸. Also, few studies assess which linguistic skills are more related to the ability to maintain textual coherence. Therefore, the objective of this study was to analyze which linguistic variables (oral comprehension, vocabulary, phonological awareness, morphosyntactic awareness, working memory/phonological loop, and reading/writing) are related to coher-

ence in written narratives of children with school difficulties or with good school performance but behavioral difficulties.

Method

This cross-sectional observational study was approved by the Human Research Ethics Committee of the institution where this research was conducted (approval number 6593/2017; CAAE: 68651617.9.0000.5440). This study was exempt from having informed consent forms signed by the children’s parents/guardians because it used previously collected data.

Sample selection and characterization

The sample was selected by analyzing 70 medical records of children who were treated (between 2013 and 2017) by a multiprofessional team because of school difficulties (specific or overall, milder or more severe difficulties; e.g., some children were diagnosed only with dysorthography, while others had severe reading, word writing, and arithmetic deficits) and/or behavioral complaints (internalizing and/or externalizing behaviors). It must be pointed out that various children with behavioral complaints had adequate reading, writing, and arithmetic performance for their age.

Only 37 out of the 70 medical records met the inclusion and exclusion criteria established for the study, namely:

- Inclusion criteria: children aged 7 to 11 years old who could read and write and had a written narrative sample.
- Exclusion criteria: children diagnosed with intellectual disability and/or any genetic syndrome, patients with hearing loss of any type or degree, and incomplete data in the medical record.

The children's written narrative samples were initially analyzed to divide them into groups. Based on this analysis, two groups were formed according to the classification of the level of coherence in the written narrative, following criteria by Spinillo and Martins⁹, as follows:

- G1: 17 children (46%) with difficulties keeping their written narratives coherent (children classified on coherence level I or II) – 11 male children (65%); mean age of 9.1 years (standard deviation of 1.4).
- G2: 20 (54%) children with a good capacity to write coherent texts (children classified on coherence level III or IV) – 10 male children (50%); mean age of 9.7 years (standard deviation of 0.8).

Data collection procedure and instruments used

As previously said, this research analyzed data from medical records. It analyzed reports of the speech-language-hearing, neuropsychological, and neurological assessments of the children in question. The instruments and assessment techniques used in assistance were applied in a quiet and appropriate room (set in a hospital, in the outpatient center). Each child was individually assessed, without the company of parents/guardians, who were in the waiting room. The multiprofessional assessment process requires the children to visit the institution a few times to prevent fatigue from interfering with the test.

Data on identification, medical diagnosis and follow-up, previous medical history, and other treatments were collected specifically for this study, besides the results (scores and classification) of the instruments listed for this study. The data/multiprofessional assessment instruments collected for this study are briefly described in Chart 1.

The written narrative samples obtained during the speech-language-hearing assessment process in assistance care were reanalyzed by two speech-lan-

guage-hearing therapists specializing in language. The reanalysis confirmed the classification of the coherence level in each child's written narrative. The level of agreement between the two judges (kappa index) was classified as practically perfect.

The children were shown pictures in a logical/time sequence (a dress being made and then worn in a casual moment) to stimulate the written narrative, asking them to create a text based on those images. The instrument⁹ used in this study to assess the coherence level in the written narrative and divide the children into G1 and G2 classifies narratives into four levels – level I encompasses children with greater difficulties being coherent, while level IV encompasses children who easily perform this task. The classification into levels analyzes the continuity of the character and theme throughout the story, the main event, and the conclusion. The following characteristics are expected in each level:

- Level I: The story does not have a main event or defined topics; they are constantly changed and are not related to the conclusion, which is sudden. There may be characters.
- Level II: There is a predisposition to define and maintain the same topic throughout the narrative; there are also various events, which may or may not be interrelated, none of them defined as the main one. They may be lightly related to the conclusion, even if there is no relation with the narrative. There may be characters.
- Level III: Characters are present in the narrative from beginning to end. As in the previous level, events may or may not be interrelated, none of them defined as the main one. However, there may be a well-defined event, maintained throughout the narrative, which is the differential at this level. The conclusion is not yet connected with the plot, which slightly impairs message intelligibility.
- Level IV: The main character is maintained throughout the story and presented again in the end; they are present in the topic and in the main event, which is well-defined. These are connected with the conclusion, which involves the whole plot to end the narrative.

Children classified in level I or II were allocated in G1, and children classified in level III or IV comprised G2.

Chart 1. Collected data/instruments in this study

Variables	Instrument	Description
Sentence comprehension	PROLEC – Reading Process Assessment Test ¹⁰	Comprising 12 sentences. Children must read the sentences and do what is asked. It classifies their performance as either normal or with difficulties, according to their grade in school
Text comprehension		Comprising 4 short texts. After reading them, children must answer the questions. It classifies their performance as either normal or with difficulties, according to their grade in school
Writing	Writing to dictation ¹¹	Comprising 24 words and 12 pseudowords, dictated to the children. Their performance is classified as either average or poor, according to their age
WMP – pseudowords	PWM – Working memory/ phonological loop ¹²	Comprising 40 pseudowords divided per length (from 2 to 5 syllables). The total test score is used. Children who scored below 25% were classified “with changes”
WMP – forward digits		Comprising 14 sequences with different lengths (from 2 to 8 digits). Children are instructed to repeat the sequence forward. Those who scored below 25% were classified “with changes”
WMP – backward digits		Comprising 12 sequences with different lengths (from 2 to 7 digits). Children are instructed to repeat the sequence backward. Those who scored below 25% were classified “with changes”
Similarities subtest	WISC IV - Wechsler Intelligence Scale for Children ¹³	Pairs of words are presented to the children, who must explain the similarity between them (e.g., cat and dog). Children classified with an average-low or low performance were considered “with changes”
Vocabulary subtest		Children must orally define the words spoken to them (e.g., What is a dog?). Children classified with an average-low or low performance were considered “with changes”
Comprehension subtest		Children must answer “What would you do?” in everyday situations (e.g., What would you do if another child hit you?). Children classified with an average-low or low performance were considered “with changes”
Oral comprehension	Token Test – short version ¹⁴	Comprising 20 cards with geometric shapes and colors. 36 orders are presented (in growing order of extension/difficulty) for the child to carry out. Performances are inadequate when the score is below -1SD
Grammar judgment	Syntactic awareness ¹⁵	Comprising 20 sentences. Children must judge whether the sentence is incorrectly organized (e.g., The plays ball boy). Their performance is classified as either average or poor, according to their grade in school
Grammar correction I		Comprising 10 sentences with grammar errors. Children must orally correct the sentence. It classifies their performance as either normal or with difficulties, according to their grade in school
Grammar correction II		Comprising 10 sentences with grammar and semantic errors. Children must orally correct the sentence. It classifies their performance as either normal or with difficulties, according to their grade in school
Categorization		Children must classify stimuli into three categories (verbs, adjectives, or nouns). It classifies their performance as either normal or with difficulties, according to their grade in school
Syntactic awareness – overall		Overall performance in the syntactic awareness test (sum of the four tests described above). It classifies the children’s performance as either normal or with difficulties, according to their grades in school
Adjective use in written narratives		
Wrong verb conjugation in written narratives		The texts written by the children were analyzed according to the use of nouns, pronouns, verbs, and so forth. The absolute frequency of each variable was calculated and then their percentage of the total text
Pronoun use in written narratives		(frequency of the category/total number of words in the text)(16)
Time marker use in written narratives		

Data statistical analysis

Descriptive statistics were used to characterize the sample. The kappa index was used to test the level of agreement between judges who assessed the textual coherence level. Statistical inferences were made with logistic regression models ($\alpha = 0.05$) to analyze which variables positively or negatively influenced the children's performance in writing coherent texts.

Results

Table 1 presents the percentage of children with change/difficulty in each variable analyzed as a possible influence on the written narrative and the percentage of children enrolled in more advanced grades in school (4th grade or higher).

Table 1. Percentage of children with changes/difficulties in each variable and the logistic regression model that analyzes which variables were individually related to good performance in written narrative coherence.

Variables	Percentage of children	Estimated coefficient	P-value
Grade in school	54% (4 th grade or higher)	3.1	0.01*
Difficulty decoding words/pseudowords	32%	#####	> 0.05
Difficulty understanding sentences	21%	#####	> 0.05
Difficulty understanding texts	40%	#####	> 0.05
Difficulties in writing (spelling)	43%	#####	> 0.05
With changes in WMP – pseudowords	43%	#####	> 0.05
With changes in WMP – forward digits	16%	#####	> 0.05
With changes in WMP – backward digits	21%	#####	> 0.05
With changes in the Similarities subtest – WISC IV	21%	#####	> 0.06
With changes in the Vocabulary subtest – WISC IV	13%	#####	> 0.07
With changes in the Comprehension subtest – WISC IV	2%	#####	> 0.08
With changes in Token Test – short version	35%	#####	> 0.10
With changes in Grammar Judgement subtest – CS	8%	#####	> 0.11
With changes in Grammar Correction subtest I – CS	18%	#####	> 0.12
With changes in Grammar Correction subtest II – CS	13%	#####	> 0.13
With changes in Categorization subtest – CD	45%	#####	> 0.14
With changes in Morphosyntactic Awareness – overall	37%	-2.8	0.02*
Using less than 28% of nouns in written narrative	67%	#####	> 0.14
Wrong verb conjugation in written narrative	35	#####	> 0.14
Using pronouns in written narrative	78%	#####	> 0.14
Using time markers in written narrative	70%	#####	> 0.14

Logistic regression test ($\alpha = 0.5$); * = statistically significant variables. Obs.: The "output window" in the test presents only the p-value and the estimated coefficient of significant variables.

It is observed that 54% of children were attending 4th grade or higher and that about 40% of children had difficulties in more basic reading and writing levels (32% had difficulties decoding words and pseudo words, while 43% had too many misspellings for their age). Written text comprehension (a high-level reading task) was at an inadequate level in 40% of the children. This study did not analyze whether children with deficits in basic reading levels were the same as those who had reading comprehension deficits.

Table 1 also shows which variables individually influenced the children's capacity to write coherent texts, according to the statistical analysis. The data show that grade in school is positively related to an adequate level of coherence in writing – i.e., the higher the grade in school, the better the child's capacity to write more coherent texts. On the other hand, syntactic awareness changes are negatively related – i.e., children with low performance in syntactic awareness skills are more likely to produce poor texts.

Discussion

The objective of this study was to analyze which linguistic variables were related to good performances in writing coherent texts in children with some complaints (either behavioral or school achievement). The statistical model analysis revealed two variables as the main results: grade in school and morphosyntactic awareness changes.

This study found that grade in school positively interferes with the children's level of textual coherence. This result is explained by the various skills involved in the writing process, which are improved as they go to higher grades in school², favoring the production of cohesive and coherent texts. As children grow older, narratives become more complex regarding both the information and the syntactic elements present in the text¹⁷. Studies addressing written narrative texts in Portuguese showed that they are more expressive in 3rd grade than in 1st grade^{9,18}.

Another significant variable was the presence of changes in morphosyntactic awareness, with a negative value – i.e., children with difficulties in this metalinguistic skill are more likely to have difficulties writing coherent texts. Morphosyntax is a linguistic aspect defined as the inner structure of words and rules for combining syntagmas in sentences. By approximately 6 years old, children are already apt to reflect on and manipulate the morphosyntactic structure of the language and control its use¹⁹. Hence, morphological awareness is the children's cognitive capacity to analyze the morphemic structure of words and reflect on and manipulate morphemes (smallest units with a meaning)²⁰. Syntactic awareness, in its turn, is the capacity to analyze how sentences are organized. This metalinguistic skill is assessed in various ways, of which judgment tasks, production skills, correction, and so forth are mentioned²⁰.

International studies have already demonstrated the importance of this skill to reading (decoding or comprehension)²¹⁻²⁴ or learning a second language²⁵. Literature reviews have verified that morphosyntactic awareness is positively related to reading/writing, although the degree of their relationship may vary according to the children's mother language – language regularity²⁶. One explanation of the positive relationship between reading/writing and morphosyntactic awareness

is that it helps decode irregular words, making it an important reading skill via the lexical route²⁷.

The link between morphosyntactic awareness and reading tasks has been previously explored, whereas few studies have assessed the importance of morphosyntactic awareness to writing. A national study²⁸ pointed out that children with learning difficulties also have difficulties in morphosyntactic awareness and written narrative, in comparison with a control group; it also verified that writing was positively correlated with morphosyntactic awareness. A longitudinal study²⁹ suggested that there is a reciprocal relationship between morphosyntactic awareness and text writing and that this association may vary according to reading comprehension skills. A possible explanation why morphosyntactic awareness helps maintain textual coherence is that this skill allows children to perceive the order of words in sentences and that of sentences in text composition. Moreover, some authors state that this skill works together with the semantic capacity³⁰.

It must be highlighted that this study analyzed important linguistic variables in the construction of written narratives. However, its objective was to point out which of them, knowingly important to develop written narratives, were more related to good coherence performance, disregarding the importance of the other ones.

Conclusion

This study assessed various linguistic skills (phonological awareness, working memory/phonological loop, morphosyntactic awareness, vocabulary, oral comprehension, and reading/writing) and demonstrated that morphosyntactic awareness was the one related to the capacity to write coherent texts. The grade in school was also associated. In summary, children in higher grades write more coherent texts, although children with poor morphosyntactic awareness performance are more likely to have inadequacies in their written narratives.

References

1. Koch IGV, Travaglia LC. *Texto e coerência*. São Paulo: Cortez; 1995.

2. Bigarelli JFP, Ávila CRB. Narrative and orthographic writing abilities in elementary school students: characteristics and correlations. *J. Soc. Bras. Fonoaudiol.* 2011; 23(3): 237-44. DOI: <https://doi.org/10.1590/S2179-64912011000300009>
3. Santos MAG, Hage SRV. Textual production of children without learning difficulties. *CoDAS.* 2015; 24(4): 350-8. DOI: <https://doi.org/10.1590/2317-1782/20152014037>
4. Barrera SD, Santos MJ. Produção escrita de narrativas: influência de condições de solicitação. *Educ. Rev.* 2016; 62: 69-85. DOI: <https://doi.org/10.1590/0104-4060.48026>.
5. Spinillo AG, Melo KLR. O papel do conhecimento acerca da estrutura do texto na escrita de histórias por crianças. *Educ. Rev.* 2018; 34(69): 277-92. DOI: <https://doi.org/10.1590/0104-4060.54654>
6. Lins-Silva ME, Spinillo AG. Uma análise comparativa da escrita de histórias pelos alunos de escolas públicas e particulares. *Revista Brasileira de Estudos Pedagógicos.* 1998; 73(193): 5-16.
7. Zaboroski AP, Oliveira JP. Written narratives productions: a review of literature emphasizing pedagogical practice. *Distúrbios Comun.* 2015; 27(3): 569-88.
8. Belinchón M, Igoa JM, Rivière A. *Psicología del lenguaje. Investigación y teoría.* Madrid: Trotta; 2000.
9. Spinillo AG, MARTINS RA. Uma análise da produção de histórias coerentes por crianças. *Psicol. Reflex. Crit.* 1997; 10(2): 219-48.
10. Capellini SA, Oliveira AM, Cuetos F. PROLEC: Provas de avaliação dos processos de leitura. São Paulo: Casa do Psicólogo; 2014.
11. Seabra AG, Capovilla FC. Prova de escrita sob ditado (versão reduzida). In: Seabra AG, Dias NM, Capovilla FC. *Leitura, escrita e aritmética: avaliação neuropsicológica cognitiva.* São Paulo: Memnon; 2012. p. 71-3.
12. Hage SRV, Grivol MA. Reference values of nonword repetition test for Brazilian Portuguese-speaking children. *J. Appl. Oral Sci.* 2009; 17(spe): 63-8. DOI: [10.1590/S1678-77572009000700011](https://doi.org/10.1590/S1678-77572009000700011).
13. Wechsler D. *Escala Wechsler de Inteligência para Crianças – 4ª Edição (WISC IV).* São Paulo: Casa do Psicólogo; 2013.
14. Malloy-Diniz LF, Bentes RC, Figueiredo PM, Brandao-Bretas D, da Costa-Abrantes S, Parizzi AM et al. Normalización de una batería de tests para evaluar las habilidades de comprensión del lenguaje, fluidez verbal y denominación em niños brasileños de 7 a 10 años: resultados preliminares. *Rev. neurol.* 2007; 44(5): 275-80.
15. Capovilla FC, Capovilla AGS. Prova de Consciência Sintática (PCS): normatizada e validade para avaliar a habilidade metassintática de escolares de 1ª a 4ª séries do ensino fundamental. São Paulo: Memnon; 2006.
16. Zuanetti PA, Novaes CB, Silva K, Mishima-Nascimento F, Fukuda MTH. Main changes found in written narratives productions of children with reading/writing difficulties. *Rev. CEFAC.* 2016; 18(4): 843-53. DOI: <http://dx.doi.org/10.1590/1982-021620161843116>
17. Bento ACP, Befi-Lopes DM. Story organization and narrative by school-age children with typical language development. *Pró-fono.* 2010; 22(4): 503-8. DOI: <https://doi.org/10.1590/S0104-56872010000400024>
18. Silva MEL, Spinillo AG. A influência de diferentes situações de produção na escrita de histórias. *Psicol. Reflex. Crit.* 2000; 13(3): 337-50. DOI: <https://doi.org/10.1590/S0102-79722000000300003>
19. Dubois J. *Diccionario de Linguística.* Madrid: Alianza; 1979.
20. Carlisle JF. Morphology matters in learning to read: a commentary. *Reading Psychology.* 2003; 24(3-4):291-332. DOI: <https://doi.org/10.1080/02702710390227369>
21. Kirby JR, Deacon SH, Bowers PN, Izenberg L, Wade-Woolley L, Parrila R. Children's morphological awareness and reading ability. *Read Writ.* 2012; 25(2): 380-410. DOI [10.1007/s11145-010-9276-5](https://doi.org/10.1007/s11145-010-9276-5)
22. Tong X, Deacon SH, Cain K. Morphological and syntactic awareness in poor comprehenders: another piece of the puzzle. *J Learn Disabil.* 2014; 47(1): 22-33. DOI: [10.1177/0022219413509971](https://doi.org/10.1177/0022219413509971).
23. Brimo D, Apel K, Fountain T. Examining the contributions of syntactic awareness and syntactic knowledge to reading comprehension. *Journal of Research in Reading.* 2017; 40(1): 57-74. DOI: <https://doi.org/10.1111/1467-9817.12050>
24. D'Alessio MJ, Jaichenco V, Wilson MA. The relationship between morphological awareness and Reading comprehension in Spanish-speaking children. *Scand. J. Psychol.* 2019; 60: 501-12. DOI: [10.1111/sjop.12578](https://doi.org/10.1111/sjop.12578)
25. Siu TSC, Ho SHC. A longitudinal investigation of syntactic awareness and reading comprehension in Chinese-English bilingual children. *Learn Instr.* 2020; 67: 101327. DOI: <https://doi.org/10.1016/j.learninstruc.2020.101327>
26. Ainoã Athaide Macedo Silva, Vanessa de Oliveira Martins-Reis. The influence of morphological awareness on reading and writing: a systematic review. *CoDAS* 2017; 29(1): e20160032 DOI: [10.1590/2317-1782/20172016032](https://doi.org/10.1590/2317-1782/20172016032)
27. Grainger J, Ziegler J. A dual-route approach to orthographic processing. *Front. Psychol.* 2011; 2(54): 1-13. DOI: <https://doi.org/10.3389/fpsyg.2011.00054>. eCollection 2011.
28. Hage SRV, Azevedo NC, Nicolielo-Carrilho AP, Tabaquim MLM. Syntactic Awareness and Text Production in Brazilian Portuguese Students with Learning Disabilities. *Folia Phoniater Logop.* 2015; 67: 315-20. DOI: <https://doi.org/10.1159/000444919>
29. Tong X, McBride C. Reading comprehension mediates the relationship between syntactic awareness and writing composition in children: a longitudinal study. *J Psycholinguist Res.* 2016; 45: 1265-85. DOI: <https://doi.org/10.1007/s10936-015-9401-3>
30. Mimeau C, Laroche A, Deacon H. The relation between syntactic awareness and contextual facilitation in word reading: What is the role of semantics? *Journal of Research in Reading.* 2019; 42(1): 178-92. DOI: <https://doi.org/10.1111/1467-9817.12260>