OCNOS
Revista de Estudios sobre Lectura

Ocnos
Revista de estudios sobre lectura
http://ocnos.revista.uclm.es/

Open Access
Full Text
Article

Orthographic depth and reading comprehension in Spanish

Opacidad ortográfica y aprendizaje de la comprensión lectora en español

Andrés Calero
https://orcid.org/0000-0001-5171-153X
Universidad Nacional de Educación a Distancia (UNED). London (United Kingdom)

Esther Calero-Pérez
https://orcid.org/0000-0001-8210-2091
IES Marqués de Lozoya. Segovia (Spain)

Abstract

As a model of instruction, the teaching sequence "learning to read" and "reading to learn" imported to our schools from an opaque language like English, has hindered the reading skill development of many primary education readers. Based on different cross-linguistic studies indicating that the degree of consistency and syllabic complexity of the print-speech correspondences has an impact not only on how students learn to read and write an opaque or a transparent orthography, but also on the models of reading comprehension instruction, this theoretical review sets: firstly, that learning to read an orthographically opaque language such as English or French is harder than learning to read a transparent one such as Spanish or Finnish; and secondly, that children need more time to read an opaque than a transparent orthography. Consequently, an instructional perspective of reading development in our language should extend beyond the acquisition of decoding, fluency and literal comprehension, encouraging readers to develop their simultaneous processes of learning to read and reading to learn, and also improving their vocabulary, background knowledge, awareness of the different textual structures and cognitive-metacognitive skills.

Resumen

Un modelo de instrucción basado en la secuencia didáctica "aprender a leer" y "leer para aprender" importado a nuestras escuelas desde un idioma opaco como el inglés, ha lastrado el desarrollo lector de muchos estudiantes de Educación Primaria. Con base en estudios translingüísticos que indican que el nivel de transparencia y complejidad silábica tiene un impacto no solo en cómo se aprende a leer y escribir en los distintos sistemas alfabéticos de escritura, sino también en los modelos de instrucción en comprensión lectora, este trabajo de revisión plantea: primero, que aprender a leer en lenguas opacas como el inglés o el francés es más arduo que hacerlo en lenguas transparentes como el finés o el español; y segundo, que el alumnado tarda más en dominar la lectoescritura de una lengua opaca que la de otra transparente. Consecuentemente, una perspectiva de instrucción en lectoescritura en nuestra lengua debería ir más allá de la mejora de habilidades de decodificación, fluidez lectora y comprensión literal, para promover que los lectores jóvenes aprendan a leer y lean para aprender simultáneamente, mejorando su vocabulario, sus esquemas de conocimiento, el reconocimiento de las distintas estructuras textuales, y sus habilidades cognitivas y metacognitivas.

33

Introduction

Comprehension is the backbone of any reading activity and an unavoidable teaching objective at school. However, according to PIRLS (2016) data, only 6% of grade 4 students in Spain achieved high levels of performance in reading comprehension, while 20% were at low levels. In contrast, students in other European countries such as Ireland, Finland, Poland, England, Hungary and Sweden scored around 22% at the high level and 6% at the low level. In this international test, a high level of comprehension of narrative texts is obtained by providing linguistic, world knowledge and inferential thinking to interpret events and characters' actions within a textual structure based on a time sequence of causally related events. While readers must have a more academic vocabulary in order to understand informational texts, they must be able to recognize their particular mode of logical and hierarchical organization of ideas and integrate the textual base they construct with their knowledge schemes to interpret information.

It is now known that different writing systems determine not only the speed and efficiency whereby readers discover the grapheme/phoneme (G/F) correspondence, but also the reading development rate (Rau et al., 2015). Also, that reading comprehension performance is hampered by instructional designs based on the didactic sequence: "learning to read" in the first place and then "reading to learn", by overemphasizing low-level processes such as decoding, word recognition, reading fluency and literal comprehension, ignoring the critical value of the acquisition of thematic contents between 6 and 8 years of age, or those related to textual genre and the use of cognitive and meta-cognitive strategies (Pearson & Cervetti, 2012).

Based on the above, this review paper aims at: (1) considering cross-linguistic research data that analyze the impact of the level of orthographic depth of alphabetic languages on decoding, word recognition and the development of reading comprehension between 6 and 15 years of age, (2) questioning the learning to read/reading to learn didactic approach, and (3) making pedagogical proposals that enhance reading comprehension in a transparent language such as Spanish.

Development of the conceptual framework

Orthographic depth and word recognition

Alphabetical writing systems encode language by their greater or lesser consistency in the G/P correspondence, and by their level of syllabic complexity. The "COST" (European Cooperation in Science and Technology Program, Niessen et al., 2000), collects these variables on a continuum of transparency/opacity of the main European languages (see table 1), with transparent languages and a simple syllabic structure such as Finnish, and other more opaque and syllabically complex languages such as English.

The orthographic depth hypothesis (Katz & Frost, 1992) and empirical evidence explain that it is easier and faster to acquire reading skills in transparent languages with a consistent G/P correspondence than in opaque languages with a poor G/P correspondence. For example, in English the underlined vowel in these word pairs: [*profane – profanity*], [*divine – divinity*] y [*extreme – extremity*], is phonetically different. Contrarily, the phoneme /ʃ/ corresponding to the letter group [sh] in the word [fish] is written in at least nine different orthographic realizations: [*nation*], [*brochure*], [*conscious*], [*crucial*], [*fuchsia*], [mansion], [*ocean*], [*passion*], [*sugar*]. According to Bowers and Bowers (2017), 16% of monosyllabic words in English are irregular in G/P correspondence, and between 60% and 80% of multisyllabic words in third grade texts are similarly morphologically complex.

Other cross-linguistic and neuroimaging studies indicate that word recognition processes are different and more complex depending on the transparency-opacity continuum. Paulesu et al. (2000) found differences in the brain activation patterns of Italian and English readers when reading words.

Table 1
Orthographic transparency and syllabic structure in European languages

Syllabic structure	Transparent	Orthographic depth				Opaque
Simple	Finnish	Greek	Portuguese	French		
		Italian				
		Spanish				
Complex		German	Dutch	Danish	English	
		Norwegian	Sweden			
		Icelandic				

Source note: Niessen, M., Frith, U., Reitsma. P., & Öhngren, B. (2000). *Learning disorders as a barrier to human development 1995-1999. Evaluation Report.* Technical Committee COST, A.8. Social Sciences.

The former activated their upper left temporal lobe more often, which is linked with phoneme processing, while the latter activated their inferior temporal gyrus more often, which is related to global word recognition. Seymour et al. (2003) proposed a word and pseudo-word reading activity to groups of grade 1 students from 14 European countries. In order to rule out the impact of socio-economic status on cross-language outcomes, students were selected from middle socio-economic backgrounds, with the exception of English-speaking students who performed above their peers in British schools but were from high socio-economic backgrounds. While Finnish, Greek or Spanish students reached the top scores in word reading (between 95% and 98%), and pseudo-word reading (between 89% and 92%), English speakers were at the bottom (34% and 29% respectively). Additionally, results in terms of reading time were favourable to the most transparent languages, with Finnish students reading words twice as fast as English speakers. The results of another comparative study (Defior et al., 2002), where Spanish and Portuguese students in their first four years of Primary Education read words and pseudo-words, also showed a significant difference favourable to the former in terms of reading time and accuracy, especially among grade 1 and grade 2 students; however, these differences disappeared from grade 3 onwards, and it was also found that the highest level of reading accuracy and pace was reached by the Spanish students in grade 2, while the Portuguese students did so at the end of grade 3. Similarly, Rau et al. (2015), found that young and adult English readers showed longer word reading times than their counterparts in a more transparent language such as German. Using eye-tracking technology, they observed differences in the strategies used, with early German readers relying more on G/F transformation rules, and intermediate and higher English readers relying on processing larger units, such as onset and rhyme, or syllables and whole words. In turn, English adult readers spent more time processing texts than German readers, so that spelling consistency not only impacted the reading development of early learners, but cross-linguistic differences continued to be detected even among adult readers.

Differences were also found when writing words. Calero et al. (1999) compared the mistakes made when writing a text on the same topic by bilingual English/Spanish students from Secondary Education, evidencing that writing in English showed a difficulty factor 3.21 times higher than writing in Spanish. It is thus not surprising that readers of the unpredictable English writing system spend approximately the first 4 years of schooling decoding the alphabetic code, with British teachers

used to encouraging the development of sublexical, morphological and semantic strategies to support word recognition and text comprehension.

Decoding and language comprehension as predictors of reading comprehension

Using the Simple View of Reading (Hoover & Gough, 1990) as a reference, which states that decoding and comprehension of spoken language are basic components of reading comprehension performance, two studies compared the impact of these components on reading development in transparent and opaque languages. The first of these studies, conducted by Florit and Cain (2011), involved a meta-analysis of research data from early and intermediate learners of English and other more transparent languages (Finnish, Spanish, Greek, Italian, German, Norwegian, French and Danish), showing a different impact and degree of latency of these components. Whilst oral language comprehension was the essential predictor of reading comprehension instead of decoding for the readers of more transparent languages in grades 1 and 2, the latter was the strongest predictor of reading comprehension for the English language readers, even for grade 5 students (see table 2). In the second study of a longitudinal nature with Peruvian primary school readers assessed in grade 1 (n= 91) and 3 (n=71) grades, Tapia (2017) replicated the results

Table 2
Correlations between decoding/reading comprehension and language comprehension/reading comprehension in English and other more transparent languages

Language	Grade 1 & 2		Grade 3, 4 & 5	
	D/RL	L/RL	D/RL	L/RL
English	.83**	.38**	.61**	.71**
Most transparent languages	.36**	.50**	.45**	.68**

Note: D: decoding; CL: Reading comprehension; L: Language comprehension.
Source note: Florit, E & Cain, K. (2011). The Simple View of Reading: Is It Valid for Different Types of Alphabetic Spellings? From *Educational Psychology Review, 23.*
**ρ < .001.

of Florit and Cain (2011) and concluded that oral language comprehension between 6 and 9 years of age was a more powerful predictor than decoding for reading development in a transparent language such as Spanish.

It is further argued that phonological awareness is a metalinguistic skill closely related to decoding and word recognition in alphabetic languages (Carrillo, 1994). Similarly, it is found that the importance of this skill decreases in favour of the ability to understand spoken language when an optimal level of decoding is achieved. However, whilst in opaque languages such as English, phonological awareness predicts word recognition ability until grade 4 approximately, in transparent languages such as Spanish this predictive character is usually present until the end of grade 1. In a comparative study with Mexican early readers, Goldenberg et al. (2014) selected a sample of students in Mexican schools with no phonological awareness instruction and two other samples of students in US schools with instruction in Spanish and English, respectively, and a curriculum that included phonological awareness development in both cases. In the initial assessment, the score of students in the Mexican schools was lower in terms of phonological awareness compared to the two groups in the US schools. However, while maintaining this difference from their peers in US schools, by the end of grade 2, they were achieving significantly higher results in reading achievement, which raises questions about the level and duration of the initial impact of phonological awareness among young readers of languages such as English and readers of Spanish.

Orthographic depth and the development of reading comprehension

In a recent and unique paper that has addressed joint results from the international PIRLS and PISA tests as a subject of study, McClung and Pearson (2019) analysed the impact of the level of orthographic opacity of 7 alphabetic languages on the development of reading comprehension at two stages of the academic life of readers: those corresponding

to the ages of completion of the PIRLS (2006, 2011) and PISA (2009) tests. The following was envisaged: (1) the existence of an effect of the chosen writing systems on reading comprehension performance in the medium term (PIRLS: 9/10 years) and in the long term (PISA: 15/16 years); and (2) the fact that the results of readers of more transparent languages would show less variability than those of less transparent languages. For this purpose, the scores of students from countries that usually take the test in several languages were analysed: PIRLS (Canada -French *vs* English- and Belgium - Dutch *vs* French); PISA (Canada - French *vs* English, Belgium - Dutch *vs* French, Switzerland - Italian *vs* German *vs* French, and Finland - Finnish *vs* Swedish).

In order to answer the first assumption, the intra-country PIRLS results (Canada/Belgium) showed an orthographic opacity/reading comprehension effect favouring students from more transparent languages with performance below the 25th percentile. Thus, Belgian readers of Dutch (more transparent) performed significantly better than readers of French (opaquer). The same effect also takes place in favour of Canadian French, which is more transparent than English. Cross-country analysis revealed that scores below the 25th percentile for English and French readers were also significantly lower than for Dutch readers, but not when comparing English and French readers. It was also found that French readers performing below the 10th percentile obtained significantly lower scores than Dutch readers, and higher than English readers. Regarding the second assumption, the analysis of dispersion of results indicated that readers of the opaquest languages (English and French) showed a greater variability of performance in reading comprehension, compared to students of more transparent languages such as Dutch. However, in contrast with the above, the gap in terms of reading comprehension performance between transparent and opaque language learners disappeared when scores above the 25th percentile were considered.

In relation to PISA, the same intra-country orthographic depth/reading comprehension interaction effect in favour of pupils with more transparent languages was found in three of the four countries (Switzerland, Belgium, and Canada). Interestingly, Finland was the exception, with no significant differences or variability of results between readers taking the test in Swedish, which is more opaque and syllabically complex, and Finnish, which is more transparent and simpler. Similarly, scores below the 25th percentile for readers of more transparent languages were significantly higher than those of their counterparts with more opaque languages, and the analysis of differences between countries showed greater variability of results among learners of more opaque languages, compared to their peers with more transparent languages. It is worth noting that, as in the case of PIRLS, within-country data showed no effect of orthographic depth on the performance of 15-year-old readers scoring above the 25th percentile, and a small positive effect when the analysis was conducted across countries, with English readers slightly outperforming their counterparts in relatively more transparent languages.

In short, the differences found between opaque and transparent language learners tended to be larger among those who were less proficient, but not among the most proficient. Therefore, these authors concluded that the opaquest spellings seem to keep the less proficient readers stuck on the floor of the distribution for longer, while pushing the more proficient ones towards the ceiling. Their strong demands on decoding skills conditioned the performance of the least expert readers, while the most expert ones, with scores above the 25th percentile and an optimal level of automaticity in word recognition, focused their attention on the semantic aspects of the text rather than on the phonological aspects. Their pedagogical guidelines for learning reading comprehension are interesting, depending on the writing system used:

> Those education systems where students working on in-depth spellings should be ready to expect and achieve a greater level of diversity in the reading skills of

students, including the expectation that students with low reading levels will require more support to improve their level of reading comprehension. Those countries with more transparent spellings, whose teachers focus their instructional practice on decoding processes, may also explore additional avenues to provide their students with morphological, syntactic, world, and strategic knowledge, that enable them to draw inferences, as a means of reinforcing the process of meaning construction at an early age. (McClung & Pearson, 2019, p. 61)

The didactic sequence "learning to read" and "reading to learn"

Chall's (1983) developmental stages of reading was easily adapted by education systems to a pedagogical approach divided into two different learning periods. The first stage, up to the age of 8 (stages 0, 1 and 2), when students are prepared to learn to read essentially by working on low-level processes such as alphabetic code decoding, word recognition, reading fluency and literal comprehension, generally using narrative texts characterized by easily decodable vocabulary and content with familiar concepts and ideas. The second stage, between 9 and 13 years (Stage 3), when readers read to learn and acquire knowledge of new informational texts in Social Sciences, Natural Sciences, etc., with less recognizable vocabulary, conceptually enriched content, and a demand for higher-level mental processes to connect text ideas, construct inferences, and develop comprehension monitoring, control and regulation.

This instructional approach emerged in the USA at a time when the great pedagogical debate known as the reading wars was raging between those who placed value on the direct and systematic teaching of decoding skills (Phonics) on the one hand and, on the other, those who were part of the Whole Language perspective approach, a movement which emphasized the priority of instructing readers from the early school years in the process of meaning construction, considering the decoding of the alphabetic code as a low-level cognitive skill within a cognitively complex activity

such as reading comprehension. The latter would become the backbone of constructivist pedagogy, guided by two principles: (a) authenticity in reading materials and activities, and (b) curricular integration of the basic skills of listening, speaking, reading and writing. Although Chall (1983) argued in the preamble to his work that "the comprehension process should be practiced at all stages, from initial to advanced" (p. 24), the pedagogical approach generated and still in force in many classrooms is not justified, because:

– Decoding, linguistic and semantic processes are *de facto* temporarily separated from cognitive processes that bring world knowledge, thematic and strategic knowledge into play. They all feed into each other and are part of the understanding of oral or written discourse at any age. One learns to read, and one reads to learn always and simultaneously (Pearson & Cervetti, 2012).

– A high proportion of students are left behind during the first 2 or 3 years of school, and their needs for vocabulary development, background knowledge and strategic thinking are not sufficiently addressed as they are engaged in the decoding process. These are: (a) those who live in families of a low socio-economic, and (b) those who have difficulties in elaborating a coherent representation of the meaning of the text, characterized by not being encouraged to bring inferential thinking into the reading comprehension process.

– The critical role of contact with the expository language of informative texts at an early age is not sufficiently valued as a resource that not only facilitates the construction of knowledge schemes, but also improves reading processes such as: (a) decoding, (b) word recognition, (c) vocabulary enhancement, (d) reading fluency, and (e) literal or inferential comprehension. The more background knowledge students bring to the reading, the easier it will be for them to recognize the words in the text, the more they will expand their vocabulary and reading fluency and, as a result, the better they will understand the text (Kaefer et al., 2015).

– The ability of early readers to acquire strategic cognitive and meta-cognitive reading behaviours related to monitoring and controlling the reading comprehension process is neglected. (Brown et al., 1986)
– Finally, there has been a promotion of a recurrent use of a type of assessment in which it is customary to segment the process of reading comprehension development into a series of discrete and disconnected skills that may erroneously be considered as indicators of good reading proficiency: rapid word recognition, reading speed, or literal comprehension (Reutzel et al., 2016).

Conclusions

In short, managing the link between language, the writing system, prior knowledge and reading processes is the basic task primary school readers in all languages face in learning to read and write. Upon considering the data from the cross-linguistic studies reviewed in this paper, it is concluded that success in this linguistic and cognitive activity is determined by the specific writing system learners are confronted with, leading to differences in reading performance between learners of different alphabetic languages. Firstly, initial reading skills are acquired progressively in all languages through processes in line and constrained by the writing system being used, especially those related to learning G/P correspondence and word recognition. Secondly, the predictive role attributed to phonological awareness in the early stages of reading development across languages is shown to be heterogeneous, lacking the same level of robustness and weighting in transparent and opaque languages. Thirdly, while decoding proves to be a decisive factor with a prolonged latency level during the first years in opaque languages, its incidence is weaker and temporarily reduced in favour of oral language comprehension in transparent languages. Fourthly, the rate of acquisition of reading processes is not the same among pupils in the first years in all languages as it is slower in opaque languages such as English or French, and faster in transparent languages such as Spanish

or Finnish. In fifth place, between the ages of 11 and 15, less proficient readers show differences in reading comprehension performance in favour of those with transparent languages, but not when more proficient readers are compared. Finally, the dichotomous approach whereby a pupil first learns to read and then reads to learn is seen as a drag on the logical process of comprehension in transparent languages, more receptive to the simultaneous and progressive use of instructional procedures that combine the deciphering of the alphabetic code with the teaching of strategies that help to establish local or global semantic connections to construct the coherence of written discourse, the acquisition of thematic and world-knowledge and of the way in which different types of texts are structured.

Didactic implications

Current models of reader development promote the pedagogical idea that readers gradually acquire the ability to integrate what they read with their prior experiences and knowledge, so as to construct a coherent mental representation of the meaning that the text situation poses (Kintsch, 1998). Accordingly, for our language the current Primary Education Curriculum (MECD: Spanish Ministry of Education, Science and Sport, 2014) defines reading and writing as:

> The instruments through which the cognitive processes are triggered and elaborate knowledge of the world, of others and of oneself and therefore play an essential role as a tool for the development of the acquisition of new learning throughout life (MECD: Spanish Ministry of Education, Science and Sport, 2014, p. 19379).

In this sense, this curriculum document is committed to the development of knowledge as a critical component of high-level processes that explain what students can come to understand and learn by reading. Therefore, while only 3 out of the 29 Block-2 learning standards for reading are aimed at improving low-level processes, the remaining 26 call for students to gradually become familiar with higher-level processes in order to construct a coherent representation of text content.

On this basis, the following teaching guidelines are proposed:

– Teacher- reading aloud to all pupils in the early and middle grades of primary school, as this activity has a significant impact on improving processes such as decoding, word recognition, vocabulary, oral language comprehension and reading comprehension. Decoding and word recognition are not only a product of learning the rules of G/P transformation, but also and fundamentally of perceiving the sounds and words that learners hear and process as they are read aloud. In this context, the teacher's modelling of strategic behaviours gradually expands their vocabulary, inference-making skills, oral language and reading comprehension (Trelease, 2011).

– Explicit instruction in vocabulary improvement not only helps readers to discover the meaning of unfamiliar words, but also to acquire knowledge schemes. Comprehension of a text is achieved by knowing the meaning of at least 90/95% of its words (Schmitt et al., 2011). Those who do not reach that percentage will end up not understanding it and not expanding the reservoir of words in their lexicon at the same time. This instruction should encourage them to look for the meaning of words in the semantic clues provided by the text itself, and in the segments of which they are composed (prefixes, root and suffixes).

– Expanding prior knowledge is crucial, not only to enhance readers' inferential thinking, but also to recognize words in the text more quickly and improve their vocabulary (Hirsch, 2007). Prior knowledge refers to "knowledge of the world", direct or vicarious, about people, facts or socio-cultural, geographical phenomena, etc., and also to "knowledge of the topic" to be read (amphibians, planets, etc.). Three types of activities are usually carried out to activate prior knowledge about a text, with different impact on reading comprehension performance. In the first activity, students share their prior knowledge with the other members of the group, although their contributions are often unrelated to the content of the text and divert attention from its essential content, favouring those with sufficiently constructed schemes. In the second activity, the teacher selects and presents students with specific information about ideas and concepts related to the content of the text to be read. In the third activity, the teacher previously chooses a group of texts thematically related to the text to be read and shares them with the students. Experimental evidence shows that the last two tasks are the most effective in improving reading skills (Lupo et al., 2020).

– The teaching of textual cohesion mechanisms is an essential knowledge that helps readers build the local semantic microstructure, identifying and using it strategically: (i) anaphoric references between words, e.g. pronouns such as "she", "this", etc.; (ii) semantically related lexical links in the text, e.g., "lynx", "feline", etc.; (iii) discourse markers highlighting a certain partial or global semantic relevance in the text, referenced in headings, subheadings, and in textual segments which initiate sentences or paragraphs, and induce inferential thinking and the elaboration of interpretations, e.g., "It is worth noting that...", "In short...", etc.; and (iv) additive, causal, temporal, etc., connectors linking ideas in the text, e.g., "likewise", "because", "then", etc. (García et al., 2015)

– Readers must also be taught to gradually learn to construct the semantic macrostructure of narrative and informative texts. While narrative texts are shaped in a temporal sequence of causally related events, informative texts order their discourse in a logical way in different textual structures: description, cause/effect, compare/contrast, etc. (Roehling et al., 2017). Regarding the latter, learners need to learn to recognize certain keywords which contribute semantically to organizing and prioritizing the ideas they contain, e.g., in comparison/contrast texts: "as opposed to", "on the contrary", etc.; or in cause/effect: "due to", "because of", "because of", etc. (Pérez et al., 2016).

– Finally, students learning to use cognitive strategies and self-regulation of the reading comprehension process involves stimulating them to develop their inferential thinking, and the process of planning, control and evaluation of the activity (Calero, 2017; Puente et al., 2019).

References

Bowers, J.S., & Bowers, P.N. (2017). Beyond phonics: The case for teaching children the logic of the English spelling system. *Educational Psychologist, 52*(2), 124-141. https://doi.org/10.1080/00461520.2017.1288571

Brown, A.L., Armbruster, B., & Baker, L. (1986). The role of metacognition in reading and studying. In J. Orasanu (Ed.), *Reading Comprehension: From Research to Practice* (pp. 49-76). Erlbaum.

Calero, A., Pérez, R., & Calero, E. (1999). Bilingüismo y aprendizaje de la lectura en español. *Tarbiya, 22*, 37-53. https://drive.google.com/file/d/1s-gepNnd_JmeUPjwL_Wxo-0HRPmUI24_g/view

Calero, A. (2017). *Comprensión lectora. Estrategias que desarrollan lectores autorregulados*. Comprensión-lectora.org.

Carrillo, M. (1994). Development of phonological awareness and reading acquisition. *Reading and Writing, 6*, 279–298. https://doi.org/10.1007/BF01027086

Chall, J. S. (1983). *Stages of Reading Development*. McGraw-Hill.

Defior, S., Martos, F., & Cary, L. (2002). Differences in reading acquisition development in two shallow orthographies: Portuguese and Spanish. *Applied Psycholinguistics, 23*(1), 135-148. https://doi.org/10.1017/S0142716402000073

Florit, E., & Cain, K. (2011). The Simple View of Reading: Is It Valid for Different Types of Alphabetic Orthographies? *Educational Psychology Review, 23*(4), 553-576. https://doi.org/10.1007/s10648-011-9175-6

García, J.R., Bustos, A., & Sánchez, E. (2015). The contribution of knowledge about anaphors, organizational signals, and refutations to reading comprehension. *Journal of Research in Reading, 38*(4), 405-427. https://doi.org/10.1111/1467-9817.12021

Goldenberg, C., Tolar, T., Reese, L., Francis, D., & Mejía-Arauz, R. (2014). How important is to teach phonemic awareness to children learning to read in Spanish. *American Educational Research Journal, 51*(3), 604-633. https://doi.org/10.3102/0002831214529082

Hirsch, E.D. (2007). La comprensión lectora requiere conocimiento del vocabulario y del mundo. *Estudios Públicos*, 108, 229-252. https://www.cepchile.cl/cep/site/docs/20160304/20160304094403/r108_hirsch_comprension.pdf

Hoover, W.A., & Gough, P.B. (1990). The simple view of reading. *Reading and Writing, 2*(2), 127-160. https://doi.org/10.1007//BF00401799

Kaefer, T., Neuman, S.B. & Pinkham, A.M. (2015) Pre-existing background knowledge influences socioeconomic differences in Preschoolers' word learning and comprehension, *Reading Psychology, 36*(3), 203-231. https://doi.org/10.1080/02702711.2013.843064

Katz, L., & Frost, R. (1992). Reading in different orthographies: The orthographic depth hypothesis. En R. Frost, & L. Katz (Eds.), *Orthography, Phonology, Morphology, and Meaning* (pp. 67–84). New Holland.

Kintsch, W. (1998). *Comprehension, a Paradigm for Cognition*. Cambridge University Press.

Lupo, S.M., Berry, A., Thacker, E., Sawyer, A., & Merritt, J. (2020). Rethinking text sets to support building and interdisciplinary learning. *Reading Teacher, 73*(4), 513-524. https://doi.org/10.1002trtr1869.

McClung, N., & Pearson. P.D. (2019). Reading comprehension across languages. Seven European orthographies and two international literacy assessments. *Written Language and Literacy, 22*(1), 33-66. https://doi.org/10.1075/wll.00019.mcc

MECD (2014). Real Decreto 126/2014, de 28 de febrero, por el que se establece el Currículo Básico de la Educación Primaria. *Boletín Oficial del Estado*, 52. https://www.boe.es/buscar/pdf/2014/BOE-A-2014-2222-consolidado.pdf

Niessen, M., Frith, U., Reitsma. P., & Öhngren, B. (2000). *Learning disorders as a barrier to human development 1995-1999. Evaluation Report*. Technical Committee COST. Social Sciences.

Paulesu, E., McCrory, E., Fazio, F., Menoncello, L., Brunswick, N., Cappa, S.F., & Frith, U. (2000). A cultural effect on brain function. *Nature Neuroscience, 3*, 91-96. https://doi.org/10.1038/71163

Pearson, P. D., & Cervetti, G. (2012). Should the focus of literacy education be on "reading to learn" or "learning to read"? [The point position]. En A. J. Eakle (Ed.), *Curriculum and Instruction: Debating Issues in American Education: A SAGE Reference Set* (pp. 75-81). Sage Publications.

Pérez, M., Raído, M.D., Ovalle, M., González, L., Calero, E., Piedra, A., & Calero, A. (2016). El conocimiento de la estructura textual: una estrategia que ayuda al alumnado de Educación Primaria a comprender textos informativos. *Didáctica. Lengua y Literatura, 28,* 215-242. https://doi.org/10.5209/DIDA.54080

Puente, A., Mendoza-Lira, M., Calderón, J., & Zúñiga, C. (2019). Estrategias metacognitivas lectoras para construir el significado y la representación de los textos escritos. *Ocnos*, *18*(1), 21-30. https://doi.org/10.18239/ocnos_2019.18.1.1781

Rau, A. K. Moll, K., Snowling, M.J., & Landerl, K. (2015). Effects of orthographic consistency on eye movement behavior: German and English children and adult process the same words differently. *Journal of Experimental Child Psychology,* 130, 92-105. https://doi.org/10.1016/j.jecp.2014.09.012

Reutzel, D.R., Clark, S.K., Jones, C.D., & Gillam, S.L. (2016). *Young meaning makers. Teaching comprehension, Grades K-2.* The Common Core State Standards in Literacy Series.

Roehling, J.V., Hebert, M., Ron, & J., & Bohaty, J. (2017). Text Structure Strategies for Improving Expository Reading Comprehension. *The Reading Teacher,* 71(1), 71-82. https://doi.org/10.1002/trtr.1590

Schmitt, N., Xiangying, J., & Grabe, W. (2011). The percentage of words known in a text and reading comprehension. *The Modern Language Journal, 95*(1), 26-43. https://doi.org/10.1111/j.1540-4781.2011.01146.x

Seymour, P., Aro, M., & Erskine, J. (2003). Foundation literacy acquisition in Alphabetic orthographies. *British Journal of Psychology, 94*(2), 143-174. https://doi.org/10.1348/00712603321661859

Tapia, M. M. (2017). *La concepción simple de lectura: Predictores de la comprensión lectora en alumnado de Primer y Tercer Curso de Primaria* [Unpublished doctoral dissertation]. Universidad de Navarra.

Trelease, J. (2011) *The Read-Aloud Handbook.* Penguin Book.