



Reading skills in young adolescents with a history of Specific Language Impairment: The role of early semantic capacity



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ABSTRACT

This study assessed the reading skills of 19 Spanish-Catalan children with Specific Language Impairment (SLI) and 16 age-matched control children. Children with SLI have difficulties with oral language comprehension, which may affect later reading acquisition. We conducted a longitudinal study examining reading acquisition in these children between 8 and 12 years old and we relate this data with early oral language acquisition at 6 years old. Compared to the control group, the SLI group presented impaired decoding and comprehension skills at age 8, as evidenced by poor scores in all the assessed tasks. Nevertheless, only text comprehension abilities appeared to be impaired at age 12. Individual analyses confirmed the presence of comprehension deficits in most of the SLI children. Furthermore, early semantic verbal fluency at age 6 appeared to significantly predict the reading comprehension capacity of SLI participants at age 12. Our results emphasize the importance of semantic capacity at early stages of oral language development over the consolidation of reading acquisition at later stages.

Learning Outcomes: Readers will recognize the relevance of prior oral language impairment, especially semantic capacity, in children with a history of SLI as a risk factor for the development of later reading difficulties.

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1. Introduction

Children with specific language impairment (SLI) present a language disorder that delays the mastery of language skills without presenting hearing loss or other developmental delays (see definition by the National Institute of Deafness and Other Communication Disorders from the U.S. National Institutes of Health). This disorder affects the reception and expression of spoken language capacities, respectively b16700 and b16710 in the International Classification of Functioning, Disability and Health. According to diagnostic criteria established by Stark and Tallal (1981), these children obtain scores in language tests <1.25 standard deviations or less although present a performance IQ of 85 or above. Recent episodes of otitis media, abnormalities in the structure or the oral motor skills, neurological damages or other social–psychological disabilities that could explain their impairment also need to be discarded.

SLI affects all language components but there are large individual differences due to the heterogeneity of the disorder. With regards to phonology, some of the most common characteristics are a lack of production of trisyllabic words, omission

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of unstressed initial syllables and final consonants, simplification of diphthongs, consonant cluster reduction and phoneme substitution (Aguilar-Mediavilla, Sanz-Torrent, & Serra-Raventós, 2002; Aguilar-Mediavilla & Serra-Raventós, 2006). Morphosyntax presents omission of function words and required arguments, errors in verb agreement and tense as well as limited syntactic structures with a deficit on the mean length utterance (Aguilar-Mediavilla, Sanz-Torrent, & Serra-Raventós, 2007; Sanz-Torrent, Aguilar-Mediavilla, Serrat, & Serra-Raventós, 2001; Serra-Raventós, Aguilar-Mediavilla, & Sanz-Torrent, 2002; Serrat et al., 2010). A semantic delay is evidenced by late acquisition of the first word (about 24 months) and occurrence of the lexical explosion (24/36 months). Small vocabulary, use of circumlocutions, common words or wildcards, frequent pauses, repetitions and interjections are also present, pointing out the lexical shortage of these children (Guo, Tomblin, & Samelson, 2008). Finally, pragmatics is affected too, with a lack of initiative to start conversations, passive participation, and improper use of turn taking (Leonard, 1998).

During primary school, both typically developing and SLI children are expected to acquire the fundamental skill of reading. Through reading we are able to decipher a text and understand the message it transmits, an essential ability during schooling, as most of academic knowledge is transmitted and worked by means of written language. Literacy depends on the reader's capacity to transform written symbols into words and full sentences. Nevertheless, being able to decode words, and even paragraphs, accurately is not enough: we need to comprehend what we read and create a mental representation of the information presented in the text. The Simple View of Reading, a model of the process of reading acquisition proposed by Hoover and Gough (1990), focuses on the distinction of these two processes, decoding and comprehension, as the basic components of reading.

Decoding depends on different processes, from the identification of individual or full sequences of letters, to the transformation into their corresponding phonemes, also including access to relevant lexical entries. Following the U. S. National Reading Panel (2000), this component involves three domains of reading: phonemic awareness, phonics and fluency. The knowledge that words are made up of smaller sound units and that these units can be represented by the letters of the alphabet, hence, has a prominent role during decoding, and phonological processing abilities have been established frequently as a good predictor of later reading outcomes (Aguilar-Mediavilla, Buil-Legaz, Pérez-Castelló, Rigo-Carratalà, & Adrover-Roig, 2014; Melby-Lervåg and Lervåg, 2011). Reading comprehension, on the other hand, focuses on the interpretation of activated semantic information and reflects a complex set of skills involving several cognitive processes that are common to both oral and written language modalities (Hoover and Gough, 1990). According to the U. S. National Reading Panel (2000), this capacity involves word fluency, enhanced vocabulary skills and text comprehension abilities.

The relationship between SLI and reading acquisition has been thoroughly researched over the last few years. Some studies even consider SLI and dyslexia as different stages in a continuum of language impairment (Bishop and Snowling, 2004; Farquharson et al., 2014). However, the nature of the exact relation between SLI and reading impairment is still unclear, as different studies have obtained conflicting results regarding the simultaneous appearance of these two deficits. In a recent review, Ricketts (2011) summarizes previous evidence regarding the association between SLI and reading difficulties. For example, various studies have been conducted with children with SLI, who displayed an impaired performance on decoding and comprehension tasks compared with age-matched controls (Snowling, Bishop, & Stothard, 2000; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998). Catts, Fey, Tomblin, and Zhang (2002) conducted similar studies, in this case with a large sample of 117 children with a preschool diagnosis of SLI. They found reading impairment in the majority of their participants, showing deficits in both word recognition and reading comprehension. However, almost 40% of their sample appeared to present unimpaired decoding and comprehension capacities. Differences in the presence of reading deficits associated with SLI may be due to the improvement of language skills of some of the children during schooling, which consequently would improve reading abilities. However, the apparent lack of impairment could also be interpreted as illusory recovery (Scarborough and Dobrich, 1990) in which case these children could experience some difficulties in reading in their adolescence and adulthood when literacy demands become more specialized. Furthermore, discrepant findings exist, not only regarding the presence of literacy impairments, but also in relation to the developmental time course of reading abilities in SLI children (St. Clair, Durkin, Conti-Ramsden, & Pickles, 2010).

Discrepancies between studies might be related to the heterogeneity of the language profiles associated to SLI. In line with the general framework posed by the Simple View of Reading, Bishop and Snowling (2004) suggest that reading abilities of children with SLI might be directly influenced by their strengths and weaknesses across phonological and supra-phonological domains (i.e. semantics, grammar...) of oral language. Thus, whereas the former would influence written word recognition deficits, the latter would be related to reading comprehension impairments.

Other sources of discrepancy between studies of literacy acquisition in children with SLI might be related to the specific characteristics of the languages studied, including morphological or syntactic complexity as well as the degree of transparency of the orthographic systems studied. Orthographic transparency, which is known to affect the ease of reading acquisition (Caravolas et al., 2012), refers to the degree of direct correspondence between graphemes and phonemes in a language. Thus, results obtained in very deep languages like English (Bishop and Snowling, 2004), might not be extrapolable to more transparent orthographic systems like Dutch (Vandewalle, Boets, Ghesquière, & Zink, 2012), Italian (Brizzolara et al., 2011) or Catalan (Aguilar-Mediavilla et al., 2014).

Our study aims to compare the evolution of the reading abilities of children with a history of SLI and children with typical development in the context of a transparent language such as Catalan. We present the results of the second phase of a longitudinal study that started with the diagnosis of our participants at age 6. Our new data explores the evolution of their reading capacities between ages 8 and 12, a period during which children complete their last four years of primary education,

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