



Specific Language Impairment: Evaluation and detection of differential psycholinguistic markers in phonology and morphosyntax in Spanish-speaking children

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ABSTRACT

Background: The diagnosis of Specific Language Impairment (SLI) is very complex, given the variety of clinical pictures described in this disorder. Knowledge about the linguistic markers of SLI can facilitate its differentiation from the normal profile of language development. These markers can also be used as tools that may improve diagnostic.

Aims: To determine which psycholinguistic markers best discriminate Spanish-speaking children with SLI from children with typical language development.

Method and procedure: The performance of 31 Spanish-speaking children with SLI was analysed using a battery of 13 psycholinguistic tasks organized into two areas: phonology and morphosyntax. The performance of the SLI group was compared to that of two subgroups of controls: aged matched (CA) and linguistically matched (CL).

Outcomes and results: The data show that the SLI group performed worse than the CA subgroup on all 13 verbal tasks. However, the performance of the SLI group did not significantly differ from that of the CL subgroup on most (11/13) of the tasks. Stepwise discriminant analysis established the canonical function of three tasks (morphologic integration, sentence understanding and diadochokinesis) which significantly discriminated SLI from CA, with sensitivity 84% and specificity 90%.

Conclusions and implications: These results contribute to determining the psycholinguistic and clinical characteristics of SLI in Spanish-speaking children and provide some methods for screening assessment.

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What this paper adds?

1. The reader should be able to distinguish between Spanish-speaking children with SLI and Spanish-speaking children without SLI in the results from an assessment battery of psycholinguistic tasks.
2. The reader should know the markers that best define the profile of Spanish-speaking children with SLI in phonology and morphosyntax.

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1. Introduction

In recent decades, numerous studies have sought to determine the main linguistic markers of Specific Language Impairment (SLI). This deficit to learn spoken language is presented in children with no apparent learning disability. The diagnosis of this difficulty in the acquisition and development of language—which is without a specific neurological, sensory or physical origin—is very complex, given the great variety of clinical pictures described in this language disorder. From an epistemological point of view, the linguistic markers of SLI facilitate its differentiation from the normal profile of language development and identify risk factors. These markers can also be used as tools and in tasks that may improve diagnostic accuracy in clinical, educational, and speech-language pathology contexts.

Many diagnostic tasks have been proposed based on markers identified at various levels of linguistic analysis. Leonard has emphasized that the assessment and treatment of SLI requires knowledge of its specific markers or features. Moreover, he suggests that the study of clinical markers in children with SLI should be a multi-lingual effort: “. . . The greater the number of languages studied, therefore, the greater the number of children who can be served in an informed manner” (Leonard, 1998; p. 89). With this in mind, different studies have shown numerous linguistic markers of SLI in different languages: such as, English, Finnish, French, German, Greek, Hebrew, Italian, Spanish, and Swedish (see Leonard, 2014; chapter 4, for a review). Generally, it is clear that SLI markers are numerous, occur in many different languages, and span all areas of analysis of language (phonology, morphosyntax, semantics, and pragmatics). Moreover, the profiles of children with SLI can differ according to the language they speak. In this article we only focus on the features present in Spanish-speakers with SLI and significant markers in two linguistic areas: phonology and morphosyntax.

Spanish is one of the most commonly spoken languages in the world. According to a recent report from the Instituto Cervantes, approximately 500 million people speak the language as an L1 around the world. Thus, an early, accurate, and reliable means of identifying the SLI profile among Spanish speakers would be of great use to clinicians working in the diagnosis and intervention of this disorder. Although studies to identify markers in Spanish-speaking children with SLI are becoming more numerous, these are still exceeded by studies on children whose native language is English.

From an epistemological perspective, Leonard (1998) has summarized the theories that back up the clinical markers from the SLI in three big sections: SLI as a Processing Deficit in Specific Mechanisms (the Phonological Memory Deficits and the Deficit of Temporal Processing), SLI as a Limitation in General Processing Capacity, and SLI as a Deficit in Linguistic Knowledge. Even more synthetically, Conti-Ramsden (2003) has summarized the theoretical approaches to linguistic markers into these two: processing approach and linguistic approach.

In the area of Phonology, the researches have explained the deficits found in children with SLI from three perspectives, generally fit within a processing approach: phonological memory capacity deficit (e.g., Bishop, North, & Donlan, 1996; Gathercole & Baddeley, 1990; Montgomery, 1995; Montgomery, 2000), deficit in the temporal processing (Tallal, 2000), and “surface hypothesis” (Leonard, 1998). In order to justify the limitation in memory for phonological work, the research on the characteristics of Spanish-speaking children with SLI disorders has indicated the nonword repetition deficits (Aguado, Cuetos, Domenzain, & Pascual, 2006; Ebert, Kalanek, Cordero, & Kohnert, 2008; Hincapié-Henao et al., 2008; Martínez, Herrera, Valle, & Vázquez, 2003), and greater difficulty in word repetition and nonword repetition when these elements are located at the beginning of a sentence (Martínez et al., 2001, 2002). As well, nonword repetition deficit has been noted in Spanish–English bilingual children with SLI (Girbau & Schwartz, 2007, 2008). In this area, another studies have identified problems retrieving phonological forms (Gallego, Revilla, & Schüller, 2000). Complementarily, the sentence repetition task has been shown as a SLI linguistic marker: a research by Hincapié-Henao et al. (2008) has replicated with Spanish-speaking children similar results obtained by Botting and Conti-Ramsden (2003) and Conti-Ramsden and Botting (2001) by with English-speaking children.

Within a limitation in general processing capacity, it has been pointed to justify the “surface hypothesis” (Leonard, 1998) a delay in segmental element acquisition and syllabic omissions in spontaneous speech (Aguilar-Mediavilla, 2002). In addition, syllabic omissions have been demonstrated in Spanish–Catalan bilingual children with SLI (Aguilar-Mediavilla, Sanz-Torrent, & Serra-Raventós, 2007). Finally, the difficulty in phonological awareness in Spanish-speaking children with SLI (de Barbieri & Coloma, 2004) can show phonological memory deficit and limitation in general processing capacity.

Regarding morphosyntax, the studies justify the existence of a deficit in linguistic knowledge. In this way, several studies have revealed significant limitations in Spanish-speaking children in adjective-agreement inflections (e.g., Bedore & Leonard, 2001), problems with the use of articles or clitic pronouns (Anderson, 2001; Anderson & Lockowitz, 2009; Anderson & Souto, 2005; Bedore & Leonard, 2005; Bosch & Serra, 1997; de la Mora, 2004; Hincapié-Henao et al., 2008; Restrepo & Gutiérrez-Ciellen, 2004), difficulties with verbal inflections (Bedore & Leonard, 2001; Grinstead et al., 2013; Hincapié-Henao et al., 2008; Serra-Raventós, Aguilar-Mediavilla, & Sanz-Torrent, 2002), a high number of errors in clausal utterances (Restrepo, 1998), and the production of incomprehensible and confusing messages (Sanz-Torrent, 2002). Furthermore, problems have also been demonstrated in Spanish–Catalan bilingual children with SLI in the use of articles or clitic pronouns (Sanz-Torrent, Serrat, Andreu, & Serra, 2008), function word omission (Aguilar-Mediavilla et al., 2007) and multiple omissions, poor resources and syntactic errors in sentence production (Andreu, Sanz-Torrent, Guardia-Olmos, & MacWhinney, 2011; Serra-Raventós et al., 2002). Difficulties have also been found in Spanish–English bilingual children with SLI with verbal inflections (Simon-Cerejido, 2009) and deficits in the use of articles or clitic pronouns (Simon-Cerejido & Gutierrez-Ciellen, 2007).

Therefore, studies on Spanish-speaking children with SLI show that they have difficulties in their language development; however, the results usually show that a large number of factors are involved and that there is variability in phonology

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