



ELSEVIER

Contents lists available at ScienceDirect

# Research in Developmental Disabilities



## Specific language impairment and developmental dyslexia: What are the boundaries? Data from Greek children

I. Talli <sup>a,\*</sup>, L. Sprenger-Charolles <sup>b</sup>, S. Stavrakaki <sup>a</sup><sup>a</sup> Aristotle University of Thessaloniki, Greece<sup>b</sup> Aix-Marseille University, Centre National de la Recherche Scientifique, Laboratoire de Psychologie Cognitive, France

### ARTICLE INFO

#### Article history:

Received 6 November 2014

Received in revised form 5 December 2015

Accepted 22 December 2015

Available online 7 January 2016

#### Keywords:

Specific language impairment (SLI)

Dyslexia

Decoding skills

Reading comprehension

Phonemic awareness

Phonological short-term memory (STM)

### ABSTRACT

This study examines the significance (between-groups comparisons) and frequency (within-group analyses) of deficits in developmental dyslexia (DD, mainly deficits in decoding and phonemic awareness), specific language impairment (SLI, mainly deficits in listening comprehension), or both (mainly deficits in phonological short-term memory [STM]). Participants included two groups of children who had received a diagnosis of either SLI ( $N = 15$ ) or DD ( $N = 15$ ). For the between-groups comparison, the groups were matched pairwise on nonverbal IQ to 30 chronological age controls (CAC) and 30 reading level controls (RLC). For the within-group analyses, the participants were compared to 91 CACs and 63 RLCs. We developed tasks not used for the diagnoses to assess phonological skills (decoding, phonemic awareness, phonological STM) and non-phonological skills (listening and reading comprehension). SLI children scored lower than both DD children and RLCs on tasks assessing listening and reading comprehension, and lower than RLCs on phonological STM and phonemic awareness. Within-group comparisons showed that a higher proportion of SLI than DD children presented severe deficits in the same four domains. The opposite pattern was found for decoding skills (7 SLI children with a severe deficit, versus 13 in the DD group). These findings are discussed in the light of models explaining the overlap between SLI and DD. They highlight the need to assess both phonological and non-phonological skills in SLI and DD children, using both between- and within-groups designs.

© 2015 Elsevier Ltd. All rights reserved.

### 1. Introduction

Developmental dyslexia (DD) is a disorder that is specific to reading acquisition, which is observed in individuals with normal intelligence and hearing as well as adequate environmental and instructional opportunities (e.g., Lyon, Shaywitz, & Shaywitz, 2003; Vellutino, Fletcher, Snowling, & Scanlon, 2004). Children with DD are characterized by deficits in three main domains: phonological reading skills (also called decoding skills), phonemic awareness, and phonological short-term memory (STM). Secondary consequences may include problems with reading comprehension (Lyon et al., 2003).

Specific language impairment (SLI) is a disorder involving difficulty in acquiring oral language despite normal intelligence and hearing, as well as the presence of an adequate learning environment (Leonard, 1998/2014). In addition to deficits in processing oral language at the morpho-syntactic level (e.g., van der Lely, 2005) and the lexico-semantic level (e.g.,

\* Corresponding author at: Mantzaridi 3, Panorama, 55236 Thessaloniki, Greece.

E-mail address: tallijoan@yahoo.com (I. Talli).

McGregor, Newman, Reilly, & Capone, 2002), another key marker of SLI is the presence of phonological deficits, especially in phonological STM (e.g., Archibald & Gathercole, 2006).

The relationship between these two developmental disorders is a matter of ongoing debate, as many children diagnosed with SLI are also found to have impaired reading skills (e.g., Bishop, McDonald, Bird, & Hayiou-Thomas, 2009; Catts, Adlof, Hogan, & Weismer, 2005; McArthur, Hogben, Edwards, Heath, & Mengler, 2000; Ramus, Marshall, Rosen, & van der Lely, 2013), and many children who are diagnosed with DD are also found to have impaired oral language skills (e.g., Kamhi & Catts, 1986; Joanisse, Manis, Keating, & Seidenberg, 2000; McArthur et al., 2000). Moreover, phonological deficits are often observed in these two clinical groups, especially in phonological STM (e.g., Kamhi & Catts, 1986; Larkin & Snowling, 2008).

These findings suggest an overlap between SLI and DD, which has been explained by three main models. The first is the severity model (Kamhi & Catts, 1986), which suggests that DD and SLI should be understood as a single disorder. According to this model, the same phonological deficits cause oral language deficits in SLI and reading deficits in DD, but the deficits are more severe in SLI.<sup>1</sup> According to the second model, the additional deficit model (Bishop & Snowling, 2004), phonological processing deficits are an underlying cause of both DD, with its characteristic word-level reading difficulties, and SLI, with its characteristic oral language difficulties. In this model, SLI is attributed to the presence of additional non-phonological deficits. These two models offer contrasting predictions about phonological deficits: according to the severity model, these deficits should be more severe in SLI children than in DD children, whereas the additional deficit model instead predicts an additional (non-phonological) deficit in SLI children. The third model, the comorbidity model (Catts et al., 2005), proposes that DD and SLI are two separate disorders with different causes, and holds that a deficit in phonological processing is closely associated with DD, but not with SLI in the absence of DD. This model acknowledges that SLI and DD co-occur more frequently than would be expected if they were independent, but attributes this fact to comorbidity.

The severity and additional deficit models thus predict that children with SLI will always have DD, whereas the comorbidity model holds that SLI and DD are partly independent, so that some children with SLI have a reading deficit (SLI-DD) while others do not (SLI-only). Therefore, in order to clearly understand the main characteristics of these two developmental disorders, studies are needed that simultaneously assess phonological and non-phonological skills in both spoken and written language and in children diagnosed with either SLI or DD. In addition, to identify either distinct or similar patterns in these groups' oral language and reading profiles, between- and within-group comparisons should be performed on a wide range of skills.

The present study was designed to do exactly this. We used a large battery of phonological and non-phonological tests with children who had received a diagnosis of either SLI or DD. We had two main goals. The first was to investigate the differences in speed and/or accuracy between these two groups of children (as well as between these groups and chronological-age and reading level controls) on the various tests. The second was to investigate the proportion of children in these two clinical groups who show an impairment in each test (comparative case-series approach). These two goals are complementary, since in "a comparative case-series approach, two contrastive sets of patients are recruited, and each individual is investigated with the same test battery, forming two case series. Because the same assessments are used, this method allows the researcher to compare performance not only across individuals within a case series but also between the two groups" (Ralph, Patterson, & Plaut, 2011, p. 469).

In the following sections, before presenting our study in detail, we summarize the main issues surrounding these developmental disorders. We focus in particular on the question of deficits (in both SLI and DD) in (1) reading comprehension compared to listening comprehension, (2) various phonological skills (especially phonological awareness and phonological STM), and (3) phonological as opposed to non-phonological skills. A fourth question concerns the need for studies in languages with a shallower orthography than English, notably in Greek. Orthographic complexity is known to have a negative impact on reading skills (e.g. Seymour, Aro, & Erskine, 2003; Ziegler & Goswami, 2005).

### 1.1. Deficits in listening and reading comprehension in SLI and DD

According to the simple view of reading (SVR: Hoover & Gough, 1990), reading comprehension depends on both decoding and listening comprehension. Therefore, we predicted significant reading comprehension deficits in each of these two clinical groups, as a consequence of deficits in either listening comprehension (in SLI) or decoding skills (in DD).

Reading comprehension has rarely been simultaneously examined in combination with listening comprehension and in both SLI and DD. An exception is the recent study of Bishop et al. (2009), which examined both reading and listening comprehension in children diagnosed with DD, SLI, or both (SLI-DD), in comparison to typically developing children (TD). Levels of vocabulary (definition of spoken words) and listening comprehension (understanding directions and stories) were used to define the SLI population. Decoding levels (assessed with word and pseudoword reading fluency) were used to define the DD population.

As expected, the decoding scores of DD and SLI-DD children were lower than those of SLI and TD children, while the scores of the former two groups did not differ. In addition, although the decoding scores of SLI-only children were also lower than

<sup>1</sup> The severity hypothesis is also at the core of the model developed by Pennington (2006) to compare reading disability (RD) and speech-sound disorder (SSD). In this model, SSD is presented as "both an earlier and more severe form of the same etiology and cognitive deficit underlying RD" (p. 389). Pennington added that SSD should be differentiated from SLI, "which is defined by deficits in semantics and syntax" (p. 394).

Download English Version:

<https://daneshyari.com/en/article/371068>

Download Persian Version:

<https://daneshyari.com/article/371068>

[Daneshyari.com](https://daneshyari.com)