



Characteristics of early spelling of children with Specific Language Impairment

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ABSTRACT

The present study investigated active grapheme knowledge and early spelling of 59 first grade children with Specific Language Impairment (SLI). *Speed, nature, and knowledge transfer* of spelling acquisition were taken into account. Four orthographic characteristics that influence early spelling, namely, 'Type of Grapheme', 'Grapheme Position', 'Number of Graphemes', and 'Word Structure' were examined at the middle and at the end of first grade. At the beginning of first grade when children were between 71 and 97 months, they performed well below national norms on assessment of active grapheme knowledge. The delay in word spelling persisted, but decreased between the middle and the end of first grade. Despite this delay, the findings suggest that characteristics of early spelling for children with SLI are rather similar to those of children with typical language development. For example, children with SLI represented more graphemes at the end of first grade than at the middle of first grade, found it easier to represent the initial grapheme in words than the final or medial grapheme (Grapheme Position), were more successful spelling shorter than longer words (Number of Graphemes), and spelled words with simple structures (CVC) more accurately than those with complex structures (CVCC and CCVC; Word Structure). Finally, participants demonstrated that they can use known graphemes to spell words, but the transfer between active grapheme knowledge and word spelling was not always stable.

Learning outcomes: As a result of this activity, readers will be able to explain the *speed* and the *nature* of spelling acquisition of children with SLI. As a result of this activity, readers will be able to explain what skills are most important for teachers to practice with children with SLI to improve the spelling skills of these children.

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1. Introduction

Specific Language Impairment (SLI) refers to a failure of typical language development despite the absence of a mental or physical handicap, hearing impairment, emotional disorder or environmental deprivation (Bishop, 1992; Leonard, 1998). Problems in language development are strongly associated with problems in the acquisition of literacy (Catts, 1993; Catts, Fey, Zhang, & Tomblin, 1999). Although research on spelling and spelling instruction is scarce on children with SLI, it is known that they are at risk for developing spelling delays (Lewis, Freebairn, & Taylor, 2000; Nathan, Stackhouse, Goulandris, & Snowling, 2004; Nauc ler, 2004; Snowling, Bishop, & Stothard, 2000) and spelling problems (Kamhi & Catts, 1986; Kamhi, Catts, Mauer, Apel, & Gentry, 1988).

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Snowling et al. (2000) showed that the reading and spelling difficulties of a group of children with SLI increased between the ages of 8 and 15, albeit spelling difficulties increased less than reading difficulties. It is unknown, however, whether spelling delays emerge at the start of formal reading and spelling instruction and whether this delay increases over time in first grade. Another more qualitative aspect pertains to the nature of spelling difficulties. That is, to what extent are spelling problems of children with SLI different from those of children with typical language development? Neither of these issues has been addressed before.

1.1. Phonology and spelling

Phonology is one aspect of spelling development that has been studied extensively because it plays a fundamental role in spelling and reading (e.g., Ashby, 2010; Diependaele, Ziegler, & Grainger, 2010; Frost, 1998; Van Orden, Pennington, & Stone, 1990). It affects spelling and spelling acquisition in both typically developing children (Bosman & Van Orden, 1997; Caravolas, Volín, & Hulme, 2005; Cataldo & Ellis, 1988; Plaza & Cohen, 2003, 2004, 2006) and children with language impairments (Cromer, 1980; Nauc ler, 2004). Although spelling performance is not only influenced by phonological skills, but also by syntactic awareness and naming-speed processes (Plaza & Cohen, 2003), phonology appears to have the strongest influence on spelling (Caravolas et al., 2005; Cataldo & Ellis, 1988; Plaza & Cohen, 2003, 2004, 2006). Nauc ler (2004), for example, showed that spelling errors of first-grade children with SLI mainly consist of omissions and substitutions of graphemes (mostly context independent), unlike spelling errors of typically developing children. It is clear that children with SLI are struggling with the phonological structure of words.

Spelling is not only difficult for children with SLI, it is also generally more difficult to acquire than reading (see for a detailed discussion Bosman & Van Orden, 1997; Stone, Vanhoy, & Van Orden, 1997). Spelling is more difficult than reading, because in most alphabetic languages, including Dutch and English, grapheme-to-phoneme consistency is higher than phoneme-to-grapheme consistency. In other words, there are more possible spellings for a particular word than possible readings. For example, the phoneme [i:] can be spelled as Y in *Entry*, EY in *Key*, EE in *Deep*, EA in *Leaf*, and IE in *Chief*, whereas the reading of each of the graphemes is relatively unambiguous.

An important finding related to the phonology of spelling is that the majority of spellers commit errors that are phonetically acceptable rather than unacceptable. Nauc ler (2004), however, found that the majority (two-third) of the spelling errors of children with SLI were phonetically unacceptable. A phonetically acceptable spelling error can be pronounced identically to the intended word when grapheme-to-phoneme correspondence rules are used (Bosman & Van Orden, 1997). An example of a phonetically acceptable error is CHEEP for the word ‘cheap’, whereas CHEAM is phonetically unacceptable.

Phonology is not a factor in the current study because in the Dutch education system children start with words that have consistent grapheme–phoneme relationships in their spelling. In the current study, the words used obey the same prototypical phoneme–grapheme relationship. This means that a phonetically acceptable spelling is a correct spelling; therefore, there is not a distinction to be made between phonetically acceptable and unacceptable spellings. Furthermore, spelling problems are not just related to the phonological aspects of words. Orthographic characteristics also affect spelling and spelling acquisition.

1.2. Orthography and spelling

To our knowledge, there are no studies that focused exclusively on orthographic characteristics regarding early spelling of children with SLI. Previous research on typically developing children identified word characteristics that affect the difficulty of spelling, such as, word frequency, consistency of the phoneme–grapheme relationship, orthographic restriction of a language, type of grapheme, grapheme position within a word, number of graphemes, and word structure. For example, words that are used more frequently in a language are spelled more accurately than low-frequently words (Kreiner, 1992), and words with more consistent phoneme–grapheme relationships are spelled more accurately than words with inconsistent phoneme–grapheme relationships (Fischer, Shankweiler, & Liberman, 1985). Furthermore, typically developing spellers who are learning to spell in a language with orthographic restriction that imposes spelling principles and rules (Nunn, 1998), focus first on phonological information while they learn to rely on orthographic information over time (Varnhagen, Boechler, & Steffler, 1999). In the current study, we are interested in understanding the very early beginnings of spelling development in children with SLI. As such, we chose to use words that have high frequency in Dutch, have consistent phoneme-to-grapheme relationships, and are not affected by orthographic rules. The four characteristics that are the focus of the present study are: *Type of Grapheme*, *Grapheme Position* within a word, *Number of Graphemes*, and *Word Structure*.

With regard to *Type of Grapheme*, findings from studies in different languages indicated that young children made more errors in writing vowels than in consonants (Stage & Wagner, 1992; Treiman, Berch, & Weatherston, 1993; Wimmer & Landerl, 1997). A possible explanation for this result is that vowels are more phonetically related to each other than consonants; they sound more similar to each other than consonants (van den Berg, 1972). This could make it more difficult for children to choose the correct vowel in spelling a word. Note, however, that in the Dutch language, there are also consonants that are phonetically related, and consequently are confusing for children, like the /v/ and /f/ and the /s/ and /z/.

With regard to *Grapheme Position*, it was found that within a CVC (consonant–vowel–consonant) word, spelling of the onset is easiest, followed by spelling of the coda, which in turn is easier than the spelling of the nucleus (i.e., the V in CVC

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