



Assessing spelling in kindergarten: Further comparison of scoring metrics and their relation to reading skills[☆]

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ABSTRACT

Early reading and spelling development share foundational skills, yet spelling assessment is underutilized in evaluating early reading. This study extended research comparing the degree to which methods for scoring spelling skills at the end of kindergarten were associated with reading skills measured at the same time as well as at the end of first grade. Five strategies for scoring spelling responses were compared: totaling the number of words spelled correctly, totaling the number of correct letter sounds, totaling the number of correct letter sequences, using a rubric for scoring invented spellings, and calculating the Spelling Sensitivity Score (Masterson & Apel, 2010b). Students ($N = 287$) who were identified at kindergarten entry as at risk for reading difficulty and who had received supplemental reading intervention were administered a standardized spelling assessment in the spring of kindergarten, and measures of phonological awareness, decoding, word recognition, and reading fluency were administered concurrently and at the end of first grade. The five spelling scoring metrics were similar in their strong relations with factors summarizing reading subskills (phonological awareness, decoding, and word reading) on a concurrent basis. Furthermore, when predicting first-grade reading skills based on spring-of-kindergarten performance, spelling scores from all five metrics explained unique variance over the autoregressive effects of kindergarten word identification. The practical advantages of using a brief spelling assessment for early reading evaluation and the relative tradeoffs of each scoring metric are discussed.

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1. Introduction

Although the interrelations between spelling skills and reading development have been acknowledged for quite some time (e.g., Hoillingsworth, 1923), educators and practitioners often consider spelling and reading skills as distinct (Cooke, Slee, & Young, 2008; Foorman, Schatschneider, Eakin, Fletcher, Moats & Francis, 2006; Johnston, 2001). Spelling assessments are often considered separately from reading assessments and are typically underutilized within reading evaluations. Norm-referenced reading assessments may omit spelling assessment, seldom extend downward to kindergarten, or may not be scored in ways that are sensitive to the approximate or invented spellings typical of early learners.

There is good reason to attend to the spelling skills of beginning readers (e.g., kindergarten). Spelling and reading rely on a foundation of common skills, and these processes may develop concurrently and reinforce each other (Adams, 1990; Caravolas,

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Hulme, & Snowling, 2001; Ehri, 1997, 1998, 2000; Hecht & Close, 2002; Shankweiler & Lundquist, 1993; Treiman, Berch, Tincoff, & Weatherston, 1993). A synergistic relation between these skills is evidenced by gains that are observed when instruction integrates spelling within reading instruction (Santoro, Coyne, & Simmons, 2006; Treiman, 1998; Uhry & Shepherd, 1993; Weiser & Mathes, 2011). The assessment of beginning spelling skills can serve as a window into students' early reading development (Ouellette & Sénéchal, 2008b; Treiman, 1998) and may provide information on students' knowledge and ability to apply foundational reading skills in ways that conventional reading assessments may not (Apel, Thomas-Tate, Wilson-Fowler, & Brimo, 2012). As part of a more comprehensive approach to reading assessment, spelling may help identify specific skill deficits and inform intervention strategies for struggling students (Al Otaiba & Hosp, 2010; Masterson & Apel, 2010a; Moats, 1993; Robbins, Hosp, Hosp, & Flynn, 2010).

Spelling assessment with students at early stages of reading development can provide important information on their knowledge of and ability to apply phonological awareness and alphabetic knowledge. Phonological awareness is critical for early spelling, as beginning spellers must retain an oral representation of a word in memory and then represent phonological units with letters, thus implicating skills in phoneme isolation and phonemic segmentation (Bryant, MacLean, Bradley, & Crossland, 1990; Caravolas et al., 2001; Goswami & Bryant, 1990; Muter, Hulme, Snowling, & Taylor, 1997; Nation & Hulme, 1997; Treiman et al., 1993). Alphabetic knowledge is also closely related to early spelling, and research has established the importance of an understanding of knowledge of letter sounds and patterns on beginning spelling (Caravolas et al., 2001; Ehri, 1997, 1998; Hecht & Close, 2002; Muter et al., 1997; National Early Literacy Panel (NELP), 2008; Ouellette & Sénéchal, 2008b; Puranik, Lonigan, & Kim, 2011; Ritchey, 2008; Ritchey & Speece, 2006). Students' spelling of words, even when not spelled correctly (e.g., spelling "was" as [wuz]), can provide insight on their knowledge of letter sounds (Ahmed & Lombardino, 2000; Ouellette & Sénéchal, 2008a, 2008b). Thus, the spelling responses of children in kindergarten and first grade can provide important information on their knowledge of and ability to apply phonemic awareness and alphabetic knowledge to print-related tasks.

Spelling assessment may also provide insight on word reading skills. Spelling skills are associated with decoding and pseudoword reading (Furnes & Samuelsson, 2009; Lombardino et al., 1999; NELP, 2008; Ritchey, Coker, & McCraw, 2010; Robbins et al., 2010), and spelling assessment can function as an index of students' knowledge of grapho-phonemic patterns, especially when those patterns are more complex (e.g., CVCe, r-controlled, blends, and CVCCVC; Robbins et al., 2010). Spelling skills have also demonstrated moderate to strong relations with skills in reading real words and text, both concurrently and as predictors of these skills in the future (Caravolas et al., 2001; Furnes & Samuelsson, 2009; Lombardino et al., 1999; Morris, Bloodgood, & Perney, 2003; Muter et al., 1997; Nation & Hulme, 1997; NELP, 2008; Ritchey, 2008; Ritchey et al., 2010; Stage & Wagner, 1992).

The assessment of spelling skills may also provide insight into more sophisticated skills related to word reading. When words do not completely conform to phonological regularity, knowledge of word spellings or reoccurring letter patterns (i.e., orthographic knowledge) is required to be able spell the word correctly. For example, knowledge of the correct sequence of letters is needed in order to spell "was" correctly, as opposed to relying solely on phonological and alphabetic information (which may yield [wuz]). Research supports the relation between spelling skills and orthographic knowledge (Lombardino et al., 1999; Ouellette, 2010; Ouellette & Sénéchal, 2008a, 2008b; Stage & Wagner, 1992) and that kindergarten students make use of basic knowledge of orthographic patterns when reading or spelling words (Wright & Ehri, 2007). Similarly, morphological awareness, which is implicated in word recognition and vocabulary knowledge (see Carlisle, 2003), is involved in spelling as well (Sénéchal & Kearnan, 2007; Treiman & Bourassa, 2000; Treiman, Cassar, & Zukowski, 1994).

In short, learning to spell is intertwined with learning to read. In early stages, both involve a strategic integration of skills in phonemic awareness and alphabetic knowledge. As spelling skills become more sophisticated, orthographic knowledge and morphological awareness are utilized to spell words correctly. Assessing spelling skills with beginning readers, therefore, may provide important information about their level of development and their ability to flexibly apply important skills to print-related tasks.

1.1. Special considerations for assessing spelling with early learners

A lack of attention to the spelling skills of early readers may be due to several reasons, including a lack of awareness of the close relations between learning to read and learning to spell, the idea that young readers should not be expected to spell until later grades, and perhaps most likely, a reliance solely on conventional scoring of spelling responses (i.e., words are only scored as correct or incorrect). The latter point underscores a challenge to assessing spelling at early grade levels: Beginning spellers seldom spell words correctly, and conventional scoring usually results in scores of zero. Understanding the utility of spelling assessment with beginning spellers requires scoring methods that are sensitive to students' approximate or invented spellings.

Several metrics for scoring beginning spelling have been developed. Some award points based on the number of sounds represented by correct letters or letter combinations (i.e., letter sounds correct or "sound spelling") that are phonologically consistent (i.e., writing "f" for [ph]; Lombardino, Bedford, Fortier, Carter, & Brandi, 1997; Richgels, 1995; Ritchey et al., 2010; Stage & Wagner, 1992). Other metrics award credit for pairs of letters that are correctly sequenced, such as the correct letter sequences metric that is recommended within curriculum-based measurement (Hosp, Hosp, & Howell, 2007). More sophisticated metrics consist of rubrics or rating scales, in which each word is scored based on predetermined rules according to spelling accuracy or how successfully students represent letters with phonologically consistent spellings (De Graff & Torgesen, 2005; Hecht & Close, 2002; O'Connor & Jenkins, 1995; Rao, Prakash, & Joshi, 2006; Ritchey et al., 2010; Tangel & Blachman, 1992). An example of a rating scale approach is the Spelling Sensitivity Score (Masterson & Apel, 2010b), which awards points based on a student's accuracy in spelling elements (i.e., phonemes) of a word.

Limited research has compared the validity of various spelling scoring metrics. Comparing conventional scoring, letter sounds, letter sequences, and rubric scoring with a sample of general education kindergarten students, Ritchey et al. (2010) found that the four approaches were highly correlated ($r_s = .84$ to $.98$). Further, the scoring metrics differed little in the degree to which they

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