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Efficacy of the *TELL* language and literacy curriculum for preschoolers with developmental speech and/or language impairment☆

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ABSTRACT

The purpose of this investigation was to examine the efficacy of a new preschool oral language and early literacy curriculum package (*Teaching Early Literacy and Language* [*TELL*]) for children with developmental speech and/or language impairment (DSLI) either as a primary (e.g., specific to speech and/or language) or secondary impairment (e.g., developmental delay that includes DSLI). Participants included 118 children (30 females, 88 males, *M* age = 53.58 months) with DLSI and their 29 preschool teachers. The design was a randomized controlled trial (RCT) with assignment to experimental versus contrast conditions at the classroom level. Teachers in *TELL* classes received formal training, in-class support, and mentoring to implement the curriculum. Dependent measures for the children included scores on the *Clinical Evaluation of Language Fundamentals-Preschool 2nd* edition (*CELF-P2*), the *Phonological Awareness Literacy Screening for Preschool* (*PALS-PreK*), the *Renfrew Bus Story* (*BUS*), and a receptive and expressive vocabulary measure developed for this investigation (VOCAB). Results indicated that when compared to the contrast group, children in the *TELL* condition demonstrated greater gains on the phonological awareness subtest of the *CELF-P2*, the sentence length score of the *BUS*, the letter sounds, beginning sound awareness, and rhyme awareness subtests of the *PALS-PreK*, and *VOCAB*. Results suggest that the *TELL* curriculum package has promise for promoting gains in early literacy and oral language skills in preschool children with DLSI.

Thirteen percent of 4- and 5-year olds in U.S. preschools receive special education services (United States Department of Education, 2007). Of these, 82% demonstrate developmental speech and/or language impairment (DSLI), either as a primary diagnosis (i.e., no impairments other than speech and/or language), or as a condition secondary to another primary diagnosis (e.g., developmental delay, mental retardation). Children with speech impairments have difficulty with articulation (e.g., substituting one sound for another, as in "thay" instead of "say") and may demonstrate phonological pattern errors (e.g., omitting final consonants). Children with language impairment demonstrate atypical development of language form (e.g., phonology, morphology, grammar), content (e.g., semantics, vocabulary), or use of oral language.

Oral language and literacy development are highly correlated in young children (Boudreau & Hedberg, 1999; Dickinson & Tabors, 1991; Lonigan, Burgess, & Anthony, 2000) and DSLI significantly increases risk for poor reading outcomes (e.g., Larney, 2002; Schuele, 2004; Sices, Taylor, Freebairn, Hansen, & Lewis, 2007). As a result, effective early childhood programs are needed to promote oral language and literacy development (National Early Literacy Panel [NELP], 2008), particularly in at-risk children (Justice, Chow, Capellini, Flanigan, & Colton, 2003). The purpose of this study was to evaluate the efficacy of a curriculum designed to improve the oral language and literacy development of preschoolers with DSLI. The curriculum is entitled "Teaching Early Literacy and Language" and will be referred to as *TELL*. As an efficacy study, the goal of this research was to demonstrate the causal impact of the *TELL* curriculum when the implementation was controlled by researchers.

1. Foundations of conventional literacy development: oral language and code-related skills

Conventional literacy skills refer to those essential for all literacy activities including decoding, reading comprehension, oral

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reading fluency, writing, and spelling (NELP, 2008). The foundations of conventional literacy are developed during the preschool years and include oral language and code-related skills defined as skills with a specific focus on understanding the alphabetic code. Components of *oral language* that provide an important foundation for conventional literacy include semantic (e.g., receptive and expressive vocabulary), syntactic (e.g., grammar and syntax), narrative discourse (e.g., story retelling), and conceptual knowledge (e.g., background information). *Code-focused* skills serving as a foundation for conventional literacy development include concepts of print (e.g., directionality), beginning writing (e.g., name writing), grapheme knowledge (e.g., letter names), grapheme–phoneme correspondence (sounds made by each letter), and phonological awareness (e.g., combining sounds to form a word, matching words with the same initial sound). Collectively, these code-focused skills have been referred to as emergent, precursor, or early literacy skills (e.g., NELP, 2008). In the present article, the term '*early literacy skills*' refers to these code-focused skills.

Research indicates that oral language and early literacy skills in preschoolers predict decoding ability and reading comprehension in early elementary school (Anderson & Nagy, 1992; Bishop & Adams, 1990; Catts, Fey, Zhang, & Tomblin, 1999; Kendeou, van den Broek, White, & Lynch, 2009; NELP, 2008; NICHD-ECCRN, 2005; Strickland & Shanahan, 2004). For example, in the NELP meta-analysis, preschoolers' concepts about print, phonological awareness, alphabet knowledge, and the ability to write their name were highly correlated with later reading decoding. Recent research supports the NELP findings. Puolakanaho et al. (2008) found that phonological and language processing measures administered to 3–5-year olds predicted reading accuracy at the end of second grade. Kendeou et al. (2009) found that decoding skills (e.g., combining sounds to form a word) in preschool uniquely predicted decoding skills two years later in elementary school.

Some studies indicate that the relationship between oral language and reading comprehension does not emerge until children have learned to decode (Kendeou et al., 2009; Speece, Roth, Cooper, & de la Paz, 1999; Storch & Whitehurst, 2002; Vellutino, Tunmer, Jaccard, & Chen, 2007), but others indicate an earlier association. These differences may be due to the dynamic relationship between oral language and early literacy development. For example, Kendeou et al. (2009) found that preschool oral language predicted preschool decoding (i.e., phonics), but by second grade oral language and decoding independently predicted reading comprehension. Different findings may also be due to frequent use of receptive vocabulary as the only measure of oral language, which may not capture the important relationship between oral language and reading development (Dickinson & Tabors, 1991; Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, & Poe, 2003). Indeed, NELP (2008) findings showed that measures of more complex language skills (e.g., grammar, listening comprehension, and ability to define words) were stronger predictors of later reading achievement than vocabulary.

Clearly the preschool years are an essential time for children to acquire skills that are important for the development of conventional literacy skills. The presence of DSLI poses a significant risk factor for later literacy difficulties and for reading failure (e.g., Hammer, Farkas, & Maczuga, 2010; Johnson, Beitchman, & Brownlie, 2010; Schuele, 2004; Schuele & Boudreau, 2008; Sices et al., 2007), and children who enter kindergarten with oral language and early literacy skill deficits are at high risk for reading failure (e.g., Missall, McConnell, & Cadigan, 2006; Scarborough, 2002; Torgesen, 2002). Both speech and language impairment are associated with problems learning to read (Aram & Hall, 1989; Bashir & Scavuzzo, 1992; Bird, Bishop, & Freeman, 1995; Bishop & Adams, 1990; Lewis, Freebairn, & Taylor, 2000; Nathan, Stackhouse, Goulandris, & Snowling, 2004; Rvachew & Grawburg, 2006; Schuele, 2004). Further, preschoolers with language impairment demonstrate persistently depressed academic achievement, greater grade retention, and lower rates of post-secondary school attendance than their peers with typical development (Aram & Nation, 1980; Catts, Fey, Tomblin, & Zhang, 2002; Hall & Tomblin, 1978). Given these risk factors, it is important to address the oral language and early literacy skills of children with DSLI during the preschool years and to increase their ability to benefit from reading and writing instruction in elementary school.

1.1. Oral language and early literacy interventions and curricula

Oral language and early literacy *interventions* typically target one specific skill (e.g., vocabulary, identification of beginning sounds in a word) or small set of skills (e.g., inferential language, print concepts, letter sounds and identification) over a relatively short period of time (e.g., weeks). This is in contrast to *curricula* that include a scope and sequence of instruction intended to teach multiple skills over an extended time period (e.g., school year). More empirical evidence is available for interventions for children with typical development, or those who are at-risk due to poverty, than for children with DSLI.

The NELP (2008) report included meta-analyses of code-focused, shared-reading, and language-enhancement interventions. Reviewed *code-focused* interventions were designed to teach children how to crack the alphabetic code and typically targeted phonological awareness skills (e.g., beginning sounds of words, combining sounds to form words, counting syllables), although some interventions also targeted alphabet knowledge (letter names and sounds) as well as print concepts (e.g., print directionality, identification of book title and author). *Shared reading* interventions focused on the interaction between the reader and child and included various strategies to engage the child actively in the storytelling (e.g., defining vocabulary, identifying components of a book, predicting what might occur next). Some of the interventions used a dialogic reading protocol (e.g., Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999; Wasik & Bond, 2001; Whitehurst et al., 1988) and others engaged children through planned questions and comments during the interactions. Language enhancement interventions all included instructional strategies intended to promote some aspect of children's oral language (e.g., vocabulary, grammar, receptive and/or expressive language skills).

Results of the NELP meta-analyses indicated that code-focused instructional strategies were highly successful in promoting children's gains in phonological awareness, alphabet knowledge, and print concepts. The shared-reading interventions consistently demonstrated positive effects on children's oral language skills and print concepts. The language enhancement interventions, as might be expected, were associated with significant gains in the children's language. It was also noted that the successful interventions were typically conducted as individual (i.e., one-on-one) or small-group instructional activities.

Oral language interventions for children with DSLI. Research focused specifically on young children with DSLI has resulted in a substantive empirical literature that delineates effective oral language interventions (for a review see Fey, 1986; Leonard, 1998, or Paul, 2007). The vast majority of intervention strategies for young children with DSLI are consistent with both social constructivist (Vygotsky, 1997) and transactional (e.g., Sameroff & Fiese, 2000) theories of learning and development. The adult–child interaction typically serves as the intervention context, with the adult responding to a child's attentional lead by providing language input that highlights the desired linguistic target. As children make progress, the adult linguistic input is scaffolded to promote children's acquisition of more complex language behavior. Within this framework interactive language teaching practices for preschool-