



Speaking Out for Language: Why Language Is Central to Reading Development

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Although the National Early Literacy Panel report provides an important distillation of research, the manner in which the data are reported underrepresents the importance of language. Unlike other predictors with moderate associations with later reading, language exerts pervasive and indirect influences that are not described by the effect sizes used in the meta-analysis. Also, unlike code-related skills that develop rapidly during the years studied, language develops over an extended time span. Because it is relatively difficult to devise interventions that dramatically alter children's language abilities, the authors of this response are concerned that schools will target the more malleable code-based skills. They warn against such a move.

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The authors of *Developing Early Literacy* (National Early Literacy Panel [NELP], 2008; available at <http://www.nifl.gov/earlychildhood/NELP/NELPreport.html>) have provided a valuable distillation of the results of roughly 500 research studies completed through 2003. The panel reported the important finding that measures of complex language are more powerful predictors of later reading than are measures of vocabulary, the most commonly measured language competence. This finding may help those who recognize the need to foster language avoid overly narrow attention to vocabulary. Despite these positive elements, however, the report fails to depict adequately the role of language for three reasons: (a) By focusing strictly on the size of direct effects, it fails to describe the pervasive impact of language, which often fosters reading through *indirect mechanisms*; language has impacts on a range of abilities that underpin multiple aspects of early reading; (b) the narrow developmental time frame that the panel was directed to analyze does not reflect the *duration* of the language effect; and (c) the report highlights rapidly developing code-based factors, potentially reducing the attention that practitioners will give to more slowly developing linguistic and background knowledge.

The first time we tried to read an English sentence, it meant about as much as this Greek sentence means to most native English speakers: "Πώς έμαθα να διαβάζω." Translated as "How did I learn to read?" the sentence invites readers to consider the task they faced when first attempting to read their native language. In

an alphabetic language, as opposed to a language like Chinese that uses logographs, children must identify the individual, meaningless squiggles as letters, learn the letters and their associated sounds, blend the individual sounds into words, and then access the meanings the words encode. But reading is more than this. Children must integrate the meanings of the individual words into larger units that describe actions and events in the world. Ultimately the purpose of reading is the extraction of meaning from the printed page, and decoding written letters into the sounds they represent is but the first step. To understand the vocabulary and sentence structures that result from decoding, children must have mastery over their native language as well as knowledge of the world. Otherwise, they only decode the letters in the sentence into words that yield nothing beyond a string of seemingly disconnected sounds.

The National Early Literacy Panel Report

The NELP report is of interest to policy makers as well as educators and researchers. With 37% of fourth graders in the United States failing to achieve basic levels of reading achievement, and proportionately more of these from disadvantaged homes, the report rightly asked, "What can be done in U.S. homes, pre-schools, and kindergartens to better prepare children to succeed in learning to read and write?" (NELP, 2008, p. v). Addressing this question, it underscored the power of code-related abilities in early literacy to predict early and later reading. Although we applaud the efforts of the panel, this presentation and interpretation of the results may have unintended negative consequences. Specifically, policy makers and educators might take the report as a mandate to teach narrowly prescribed skills like letter-sound correspondence at the expense of oral language skills, vocabulary, and the associated background knowledge—the very foundations for early and long-term literacy.

To identify precursors to conventional literacy, the panel used meta-analytic techniques examining studies of skills that were observed prior to conventional literacy (i.e., between birth and age 5) and that were predictive of conventional literacy. This meta-analysis identified 11 precursor abilities that can be divided into a cluster of 6 with strong associations with reading and a cluster of 5 with moderate to weak associations. These findings are prominently displayed in the full report and the accompanying practitioner-oriented *Early Beginnings: Early Literacy Knowledge and Instruction* (Goodson, Layzer, Simon, & Dwyer, 2009). Three of the top set of predictors are closely linked to

children's knowledge of the alphabetic code—letter knowledge, ability to attend to sounds, and early writing—and the remainder are processing abilities such as the rapidity with which an individual accesses or recalls verbal information such as color names, letters, and digits. The second group, introduced in the executive summary as “potentially important variables” (NELP, 2008, p. viii), includes oral language, three items related to knowledge of print—concepts of print, print knowledge, and reading readiness—and visual processing. Hundreds of intervention studies also were reviewed, and the panel found that the interventions designed to foster code-related abilities have moderate to large effects, whereas those that target language have modest effects at best.

We do not contest these findings. When children are learning to read, language is not as strong a direct predictor of beginning reading as are code skills. Moreover, language is far more difficult to improve than are code-related skills. However, these two findings must not be interpreted as meaning that language is less important than code skills. What concerns us is that a naïve reading of the report could lead policy makers, textbook manufacturers, and teachers to focus narrowly on code-based skills such as letter knowledge and phonemic awareness to the exclusion of a concentration on language learning. This would be a grave mistake. Such a move would be short sighted and would undermine the early and long-term reading abilities of the very children most in need of educational supports, those from low-income homes and from families who speak languages other than English at home.

Indirect Effects of Early Language on Reading

We are reminded of an old joke told by Urie Bronfenbrenner to illustrate how correlational data can yield erroneous inferences about causation: A man who was becoming inebriated nightly noticed with a flash of insight that he had consumed scotch and soda one night, rye and soda the next night, and finally bourbon and soda. He then vowed to stop drinking soda. So it is with the meta-analysis conducted here. It examined the direct effects of precursor abilities on later reading. But it failed to consider that language is the underlying factor influencing reading via a multitude of indirect pathways. Interventions and precursor variables were coded only for evidence that they had a direct impact on a particular literacy outcome. As a result, the panel did not examine whether an outcome such as improved language ability in kindergarten fostered reading outcomes like decoding. The lack of attention to indirect effects was a by-product of the analytic method that tallies direct effects. Had the authors wished to describe more fully the role of language, they could have reviewed reports of indirect effects in the second chapter where longitudinal correlational data were reported. They could have found a way to highlight language as an essential factor far more critical to reading than is indicated by its “second tier” status and by the other skills with which it is grouped.

By way of example, the report failed to discuss how language ability in the preschool years indirectly affects later reading. Language has this impact by supporting phonemic awareness (the ability to attend to the smallest units of sound that reflect differences in word meanings), which in turn fosters reading. Language also supports early decoding, the ability to translate

letters into the sounds they represent, which in turn fosters later decoding and comprehension. Evidence for these two assertions was available when the report was written. A longitudinal study by Storch and Whitehurst (2002), a study that was included in the NELP literature review, reported indirect effects from kindergarten through Grade 4. The authors found a moderate-sized indirect effect (.43) of language on fourth-grade reading. This effect was the combination of the relationship between oral language to code-related skills and code-related skills to later reading. Storch and Whitehurst summarized their findings by saying, “Importantly, our model demonstrates that the relationship between oral language and reading skill in the early stages of reading development is mediated by code-related skills, such as phonological processing and print concepts” (p. 943).

Studies completed since 2003, the point when the panel stopped reviewing the literature, reinforce the importance of indirect pathways from early language to later reading. Analysis of the data from 1,137 children in the National Institute of Child Health and Human Development (NICHD) child care study (NICHD Early Child Care Research Network, 2005) found a small direct effect of language at age 3 on decoding in first grade ($B = .10$) and modest indirect effects on Grade 3 decoding ($B = .33$) and reading ($B = .36$). Prekindergarten code-related skills also predicted Grade 3 reading, but their effects were indirect and were mediated by first-grade decoding and vocabulary, both. A longitudinal study of 90 children during their first 2 years of schooling also found parallel developmental pathways among abilities linked to decoding and those that supported reading comprehension (Muter, Hulme, Snowling, & Stevenson, 2004). The authors concluded, “Whereas word recognition seems critically dependent on phonological processes (particularly phonemic sensitivity and letter knowledge), *reading comprehension appears to be dependent on higher level language skills (vocabulary knowledge and grammatical skills)*” (italics added; p. 675). Thus becoming a competent reader who understands *text* requires age-appropriate language skills.

Evidence exists that the indirect effects of language on reading may be even more substantial between infancy and later preschool. The report focused on correlations between preschool abilities and subsequent reading and overlooked the effects of language on other precursor abilities between birth and school entrance. The most noteworthy oversight resulted in failure to acknowledge the contribution of early language to the emergence of phonological awareness. When the report was being written, a seminal description of emergent literacy conceptualized oral language as providing a platform for the development of phonological awareness (Whitehurst & Lonigan, 1998), a position that was echoed and extended by a subsequent review and data (Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, & Poe, 2003). Also, in the 1990s the hypothesis was advanced that the acquisition of increasing numbers of words with similar phonological and articulatory patterns results in a reorganization in how words are stored in the brain (Metsala, 1999; Metsala & Walley, 1998). Instead of being stored as single units, words begin to be decomposed and stored as smaller units, allowing greater access to sound units smaller than words. After 2003, the closing date for consideration of research, additional research pointed to the role of early language ability in the emergence of phonological

awareness. For example, a study of 56 children who were followed from infancy into first grade found evidence of direct effects of language on phonological awareness and indirect effects on decoding (Silven, Poskiparta, Niemi, & Voeten, 2007).

In recent years evidence has accumulated pointing to other avenues through which language and environmental supports for language may affect reading (Snow, Burnes, & Griffin, 1998). By the second year of life, the ability to rapidly understand words predicts (a) children's ability to learn new vocabulary, (b) children's ability to comprehend language (Fernald, Perfors, & Marchman, 2006), and (c) the speed with which children access verbal information at age 8 (Marchman & Fernald, 2008). Note that this last finding links early language abilities to two of the three process variables that the report ranked as strong predictors of later reading. Of special importance to educators are recent findings that these early language processing abilities are associated with the amount of language children hear (Hurtado, Marchman, & Fernald, 2007, 2008).

Another possible indirect means by which language may affect reading is through its association with children's emerging ability to regulate their behavior and attention. Considerable evidence points to the importance of self-regulation to academic success (Blair, 2002; Diamond, Barnett, Thomas, & Munro, 2007; Duncan et al., 2007), and some evidence suggests that as language capacities emerge in the preschool years they may begin to play a role in this self-regulatory ability (reviewed by Dickinson, McCabe, & Essex, 2006).

The Time-Frame Problem: Language Has Pervasive Long-Term Effects on Reading

Providing an accurate description of the impact of language on reading is challenging because, in addition to operating through indirect as well as direct channels, it affects language-related competencies throughout life. Moreover, the nature of its effects shifts as reading competence develops. Thus the effects of language are pervasive, occurring across decades, not simply during the relatively narrow window of time examined in detail by the panel.

Perhaps the most remarkable aspect of the relationship between language and reading is the duration of the effect that language has on reading. For example, observational studies have linked language experiences and associated language and then reading ability from age 2 to fourth grade (Walker, Greenwood, Hart, & Carta, 1994), from age 3 through third grade (NICHD Early Child Care Research Network, 2005), from kindergarten through eighth grade (Catts, Adlof, & Weismer, 2006; Dickinson & Tabors, 2001), and from first grade through high school (Cunningham & Stanovich, 1997).

Two carefully conducted studies that randomly assigned infants to control or intervention conditions demonstrated that early intervention can bolster language skills in ways that translate into improved reading success at least through the teenage years. In the Abecedarian study, children were provided enriched preschools from birth until school entry (Campbell & Ramey, 1994, 1995). Cognitive and academic test scores collected up to age 21 revealed that the intervention led to high IQ scores and reading abilities. Mediation analyses demonstrated that the effects on reading were the result of the improved IQ scores. Because IQ is strongly linked to verbal ability, it is logical to

conclude that these lasting effects were mediated by language. A separate study that randomly assigned low-birth-weight children to an intervention that started in infancy or to a control condition followed these children to age 16 (McCormick et al., 2006). Children in the intervention group had better language and reading abilities than did those in the control group. The effect sizes for these studies were moderate to small, in line with the overall pattern of results found by the panel. But the *duration* of the effects elevates their significance.

Not only are effects of language long lasting, but the role of language increases as children gain facility decoding text. When children move into the later elementary grades and middle school, language and associated world knowledge come to the fore as the abilities most associated with skilled reading. Whereas early reading ability is closely linked to code-related abilities, models of reading comprehension in the elementary to middle school years place primary weight on language ability (Catts et al., 2006; Hoover & Gough, 1990; Vellutino, Tunmer, Jaccard, & Chen, 2007). Note that we are pointing to studies that relate language abilities measured among older children with concurrent reading; thus we are pointing to data that fall outside the age range addressed by the report. Therefore this is not a critique of the report per se; rather, it is a further development of our rationale for why language, in contrast to other predictors, becomes increasingly important with age. The prominence of language in later reading and the fact that early language learning abets more later language learning (reviewed by Dickinson & Freiberg, 2009; Penno, Wilkinson, & Moore, 2002) means that, for children at risk of educational failure, early and intensive language support is critical (Biemiller, 2006; Biemiller & Boote, 2006). Thus intervention studies that target language and background knowledge can be effective in creating the backdrop for literacy even though they may be more difficult to conduct and relatively fewer in number than interventions on code-related abilities. Early childhood programs that build vocabulary and conceptual knowledge make lasting contributions to later language and comprehension abilities.

Code Skills Are Easier to Teach; Language and Background Knowledge Are Harder

The report focused on the developmental epoch when code-related skills develop rapidly. The primary thrust of early school instruction is founded on the premise that skills such as letter knowledge, the ability to analyze the sounds of language into discrete units, and the ability to link sounds to symbols can develop rapidly with proper instruction. It is reassuring, but not especially surprising, that the NELP review found extensive evidence that interventions during the preschool and kindergarten years successfully promote these skills. Improvements in these code skills directly translate into enhanced reading ability.

In contrast, language is an entrenched, slowly acquired, and highly complex ability that includes multiple component skills and is related to semantic knowledge (e.g., Golinkoff & Hirsh-Pasek, 1999; Hirsh-Pasek & Golinkoff, 1996), another slow-developing competence that is associated with long-term reading comprehension. As Paris (2009) argued, code-related skills show rapid growth during the preschool to first-grade years and reach asymptote in the early primary grades. In contrast, we are

constantly acquiring new language and associated world knowledge, factors that play a pivotal role in reading comprehension (McKeown, Beck, & Blake, 2009; Neuman & Celano, 2006; Willingham, 2006–2007). Although the bulk of the research has been aimed at more easily modified, short-term interventions for code-related skills, the studies that have been done on language and cognitive interventions included distinct populations, with many language-focused studies targeting children with the diagnosis of specific language impairment. Because the effects of interventions and their nature are likely to vary according to children's developmental levels and language abilities, conclusions drawn from a heterogeneous collection of interventions must be treated with caution. The fact that language is hard to modify, and may require earlier and longer term interventions, does not mean that we minimize its importance.

Speaking Out for Language and Its Relation to Reading

Taken together, our argument is that the NELP report has the unfortunate and unintended outcome of minimizing the crucial contribution of oral language to reading. The report overlooked the fact that language is *unique* among precursor abilities in its pervasiveness for both early and later reading competencies and for the duration of its effects on reading comprehension as code breaking turns into meaning making. The underrepresentation of the importance of language may have resulted, in part, from the developmental period that the panel was directed to examine and from the decision to tally direct effects and use them as the sole metric for determining the relative importance of predictor variables.

How do we ensure that teachers and policy makers recognize the full weight of oral language development as they prepare children for success in reading? The solution is to explicitly recognize that oral language and background knowledge should be viewed as Tier 1 skills that must not be neglected if we want to build strong readers. Their placement in Tier 2 of the NELP report feeds a narrow view of reading competence that will at best allow young children to become decoders who cannot later map the words they uncover into the rich linguistic fabric that is text. *Teaching and testing code skills is relatively easy compared with changing the broader, more complex set of oral language skills.* But researchers are beginning to conduct the detailed research needed to identify what works best. Sensitive, cost-effective strategies for assessing language and background knowledge by practitioners might be lacking at the moment, but research points to strategies for enhancing language growth (Dickinson & Porche, in press; Harris, Golinkoff, & Hirsh-Pasek, in press; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002; Vasilyeva, Huttenlocher, & Waterfall, 2006; Wasik & Bond, 2001; Wasik, Bond, & Hindman, 2006).

The NELP report has advanced our understanding of the code-related skills that are important for learning to read and allowed us to see the enormous gains that research has made in this area of the learning sciences. *Where the NELP report falls short is in the weighting of the findings and in the implications of those findings for the role of language in the reading process.* By creating an “empirically based” ranking of skills that is not sensitive to the

limitations of the method employed, the report emphasizes code skills above language and background knowledge. The potential for negative effects on classroom practice is made evident by *Early Beginnings* (Goodson et al., 2009), the guide for practitioners written by other authors to communicate the report's findings to a broad audience. It listed the results in the same two clusters, calling special attention to the first grouping and presenting the second group as a list without interpretive comment.

Although the examples include effective practices supportive of language, in an era of accountability when code-related skills are most familiar and readily assessed there is significant risk that the report will lead to a narrowing of the focus of instruction. Thus, although this presentation of the data might not have been intended as constraining the instructional practices in early childhood classrooms, the consequences could be serious. The skilled decoder of the Greek sentence presented earlier must move beyond the sounds to uncover meaning. Early literacy development is more than code-based instruction. Rather, it is the integral connection of code, content, and language structure.

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