DOCUMENT RESUME

ED 450 418 CS 217 469

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|---|---|
| AUTHOR | Lonigan, Christopher J.; Whitehurst, Grover J. |
| TITLE | Getting Ready To Read: Emergent Literacy and Family Literacy. |
| SPONS AGENCY | National Inst. of Child Health and Human Development (NIH), Bethesda, MD.; Administration for Children and Families (DHHS), Washington, DC.; Pew Charitable Trusts, Philadelphia, PA. |
| PUB DATE | 1998-12-01 |
| NOTE | 33p. |
| CONTRACT | 1HD-RO3-36067-01A1; 91-01249-000; 90-CD-0957; 90-YD-0026 |
| AVAILABLE FROM | For full text: http://www.dr.sbs.sunysb.edu/pubs/evenstartchapter.html. |
| PUB TYPE | Information Analyses (070) |
| EDRS PRICE | MF01/PC02 Plus Postage. |
| DESCRIPTORS | *Beginning Reading; Early Intervention; *Emergent Literacy; *Family Literacy; Literature Reviews; Preschool Education; Program Evaluation; Reading Readiness; Reading Research; *Student Needs |
| IDENTIFIERS | Even Start; Policy Implications |

ABSTRACT

A recent analysis of Even Start, the federal family literacy program, has concluded that the relative emphasis in many local programs has shifted too far toward background issues of family functioning and too far away from focused efforts to enhance literacy skills (Haslam, 1998). In keeping with this analysis, the time seems to be right for a renewed emphasis on children's literacy within family literacy programs. Noting that the last decade has seen an explosion of research in the development of reading in children and on the precursors within the preschool period of reading readiness which has provided fundamental insights into the nature of reading, this paper seeks to present a brief survey of this new knowledge base, with the particular aim of highlighting work that is relevant to family literacy programs. The paper focuses on examining research on emergent literacy and its components. The data examined indicate that there are a number of interventions for preschool and early grade school children that make a significant impact on the key emergent literacy skills of children. The paper then discusses policy implications for family literacy programs. Contains a figure and 167 references. (NKA)

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# Getting Ready to Read: Emergent Literacy and Family Literacy

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December 1, 1998

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Preparation of this work was supported in part by grants to Christopher J. Longian from the National Institute of Child Health and Human Development (1HD RO3 36067-01A1) and the Administration for Children and Families (XXXX) and to Grover J. Whitehurst from the Pew Charitable Trusts (91-01249-000) and the Administration for Children and Families (90-CD-0957) (90-YD-0026). Views expressed herein are the authors' and have not been cleared by the grantors.

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## Getting Ready to Read: Emergent Literacy and Family Literacy

Family literacy programs are intergenerational interventions that aim to improve family functioning and family prospects by enhancing child and adult literacy. Interventions include teaching of literacy-related skills to parents and to children independently, as well as efforts to enhance children's literacy through involving parents as partners in their

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children's literacy development. An example of independent teaching of literacy-related skills would be enrollment of the parent in a high school equivalency degree program with simultaneous enrollment of the child in a center-based preschool program that included literacy-related curriculum components. An example of a literacy partnership between parents and children would be encouragement of a home-based program of family reading aloud of books and other print materials. Family literacy programs usually include both independent and family partnership approaches to enhancing family literacy. In addition, family literacy programs typically include a variety of components that aim to enhance the background functioning of the family in which literacy development might occur. For example, a family literacy program might try to help a family obtain food stamps or medical assistance, and it might deliver instruction on ways to discipline children, or methods of handling stress, etc.

A recent analysis of Even Start, the federal family literacy program, has concluded that the relative emphasis in many local programs has shifted too far toward background issues of family functioning and too far away from focused efforts to enhance literacy skills (Haslam, 1998). In keeping with this analysis, we believe the time is right for a renewed emphasis on children's literacy within family literacy programs. The last decade has seen an explosion of research on the development of reading in children (Snow, Burns, & Griffin, 1998) and on the precursors within the preschool period of reading readiness (Whitehurst & Lonigan, 1988). This research has provided fundamental insights into the nature of reading and has given educational and family program specialists powerful new tools and approaches to deploy in task of preventing reading difficulties in children. Our goal in this chapter is to provide a brief survey of this new knowledge base, with the particular aim of highlighting work that is relevant to family literacy programs.

## Background on the Importance of Reading

Reading skills provide a critical foundation for children's academic success. Children who read well read more and, as a result, acquire more knowledge in numerous domains (Cunningham & Stanovich, 1998; Echols, West, Stanovich, & Zehr, 1996; Morrison, Smith, & Dow-Ehrensberger, 1995). Nagy and Anderson (1984, p. 328) estimated that the number of words read in a year by a middle-school child who is an avid reader might approach 10,000,000 (about 1200 times the number of words in this chapter), compared to 100,000 for the least motivated middle-school reader. By virtue of the sheer volume read, increased knowledge of the vocabulary and content domains (e.g., science or history) included in the texts would be expected. In contrast, children who lag behind in their reading skills receive less practice in reading than other children (Allington, 1984), miss opportunities to develop reading comprehension strategies (Brown, Palincsar, & Purcell, 1986), often encounter reading material that is too advanced for their skills (Allington, 1984), and acquire negative attitudes about reading itself (Oka & Paris, 1986). Such processes may lead to what Stanovich (e.g., 1986) has termed a "Mathew effect," (i.e., the rich get richer while the poor get poorer) such that those children with poor reading skills fall further and further behind their more literate peers in reading as well as in other

academic areas (Chall, Jacobs, & Baldwin, 1990), which become increasing dependent on reading across the school years.

Although the development of skilled reading occurs without significant problems for the majority of children, an estimated one in three children experience significant difficulties in learning to read (Adams, 1990). There is strong continuity between the skills with which children enter school and their later academic performance. Those children who experience early difficulties in learning to read are unlikely to catch-up to their peers (Baydar, Brooks-Gunn, & Furstenberg, 1993; Stevenson & Newman, 1986; Tramontana, Hooper, & Selzer, 1988). For instance, Juel (1988) reported that the probability that children would remain poor readers at the end of the fourth grade if they were poor readers at the end of the first grade was .88. Children who enter school with limited reading-related skills are at high risk of qualifying for special education services. In fact, the majority of school-age children who are evaluated for special education services are referred because of unsatisfactory progress in reading (Lentz, 1988).

## Emergent Literacy

Whereas more traditional approaches to the study of reading often take as their starting point children's entry to the formal school environment, an emergent literacy approach conceptualizes the acquisition of literacy as a developmental continuum with its origins early in the life of a child, rather than an all-or-none phenomenon that begins when children start school. An emergent literacy approach departs from other perspectives on reading acquisition in suggesting there is no clear demarcation between reading and prereading. Current inquiry into emergent literacy represents a broad field with multiple perspectives and a wide range of research methodologies. Our approach in this chapter is to highlight those areas of emergent literacy thatin which research has shown to bea clear linked with later reading and that might be most relevant for the design of family literacy programs.

### Emergent Literacy: A Definition

The study of emergent literacy includes the skills, knowledge, and attitudes that are presumed to be developmental precursors to conventional forms of reading and writing (Sulzby, 1989; Sulzby & Teale, 1991; Teale & Sulzby, 1986) and the environments that support these developments (e.g., shared book reading; Lonigan, 1994; Whitehurst et al., 1988). The conceptual model that is typical of research and intervention efforts within the emergent literacy domain is that individual differences in emergent literacy are causally and powerfully connected to individual differences in reading achievement.

## The Two Domains of Literacy and Emergent Literacy

Whitehurst & Lonigan (1998) have proposed that emergent and conventional literacy consist of two interdependent sets of skills and processes: outside-in and inside-out, as represented in Figure 1. The outside-in units in the figure represent children's

understanding of the context in which the writing they are trying to read occurs. The inside-out units represent children's knowledge of the rules for translating the particular writing they are trying to read into meaningful sounds (i.e., letter knowledge, phonological processing skills, and vocabulary).

For example, imagine a child trying to read the sentence, "She sent off to the very best seed house for five bushels of lupine seed" (p. 21 from "Miss Rumphius" by Barbara Cooney, New York: Puffin Books, 1982). The ability to decode the letters in this sentence into correct phonological representations (i.e., being able to say the sentence) depends on knowing letters, sounds, links between letters and sounds, punctuation, sentence grammar, and cognitive processes, such as being able to remember and organize these elements into a sequence. These are inside-out processes, which are based on and keyed to the elements of the sentence itself. However, a child could have the requisite inside-out skills to read the sentence aloud and still not read it successfully. What does the sentence mean? Meaningful comprehension of all but the simplest of writing depends on knowledge that cannot be found in the word or sentence itself. Who is the "she" referred to in the sentence above? Why is she sending away for seed? Why does she need five bushels? What is lupine? In short what is the narrative, conceptual, and semantic context in which this sentence is found, and how does the sentence make sense within that context? Answering these questions depends on outside-in processes, which require knowledge of the world, semantic knowledge, and knowledge of the written context in which this particular sentence occurred. Outside-in and inside-out processes ultimately are both essential to reading and work simultaneously in readers who are reading well.

## Components of Emergent Literacy

Elsewhere we have reviewed research on emergent literacy with respect to each of the elements in Figure 1 (Whitehurst & Lonigan, 1998). Here we will focus on two outside-end elements (oral language, print motivation) and two inside-out elements (phonological processing and letter knowledge) about which the evidence is strongest. Additional emergent literacy skills have been described, including understanding the conventions of print (e.g., left-to-right and top-to-bottom orientation of print, difference between pictures and print on a page; Clay, 1979) and the functions of print (e.g., that print tells a story or gives directions; Purcell-Gates, 1996; Purcell-Gates & Dahl, 1991), faculty with environmental print (e.g., recognizing product names from signs and logos), as well as emergent reading and emergent writing (i.e., pretending to read or write; Pappas & Brown, 1988; Purcell-Gates, 1988; Sulzby, 1986, 1988). However, evidence for the independence or predictive significance of these abilities behaviors is either negative or currently lacking. That is, although these abilitiesbehaviors are sometimes associated with later reading when considered in isolation, research either has not generally supported a direct causal link between them and later decoding skills (Gough, 1993; Masonheimer, Drum, & Ehri, 1984) or has found that these behaviors appear to be better conceptualized as proxy measures for letter knowledge, phonological sensitivity, and oral language, and reflect more exposure to print and other literacy-related activities , or both (e.g., Lonigan,

Burgess, & Anthony, 1998; Purcell-Gates, 1996).

Oral Language Skills

Reading is a process of translating visual codes into meaningful language. In the earliest stages, reading in an alphabetic system involves decoding letters into corresponding sounds and linking those sounds to single words. A substantial body of research has demonstrated positive correlations and longitudinal continuity between individual differences in oral language skills and later differences in reading (e.g., Bishop & Adams, 1990; Butler, Marsh, Sheppard, & Sheppard, 1985; Pikulski & Tobin, 1989; Scarborough, 1989; Share, Jorm, MacLean, & Mathews, 1984). In other words, children who have larger vocabularies and greater understanding of spoken language have an easier time with reading. TWhereas the connection between oral language and reading is clear for outside-in skills that are measured with reading comprehension tasks (see below). S, some studies also indicate that level of vocabulary skill has a significant impact on decoding skills very early in the process of learning to read but that its influence fades with development (e.g., R. Wagner et al., 1997).

Although the effect of a child's vocabulary skill on the development of reading decreases as a child moves from the earliest stages of reading, when the child is learning to sound out single words, to later stages of reading, A child's A child's semantic and syntactic abilities assume greater importance later in the sequence of learning to readise sequence of learning to read, when the child is reading for meaning, than early in the sequence, when the child is learning to sound out single words (e.g., see Gillon and Dodd, 1994; Mason, 1992; Share and Silva, 1982; Snow, Barnes, Chandler, Hemphill, & Goodman, 1991; Tunmer & Hoover, 1992; Tunmer, Herriman, & Nesdale, 1988; Vellutino, Scanlon, & Tanzman, 1991). In addition to the influence of vocabulary knowledge and the ability to understand and produce increasing complex syntactic constructions on children's literacy skills, Snow and colleagues (e.g., Dickinson & Snow, 1987; Dickinson & Tabors, 1991; Snow, 1983) have proposed that children's understanding of text and story narratives is facilitated by the acquisition of decontextualized language. Decontextualized language refers to language, such as that used in story narratives and other written forms of communication, that is used to convey novel information to audiences who may share only limited background knowledge with the speaker or who may be physically removed from the things or events described. In contrast, contextualized uses of language rely on shared physical context, knowledge, and immediate feedback. Children's decontextualized language skills are related to conventional literacy skills such as decoding, understanding story narratives, and print production (e.g., Dickinson & Snow, 1987).

Oral language also appears to have an influence on the acquisition of a key inside-out skill, phonological sensitivity, as defined below. Studies of both preschool (e.g., Burgess & Lonigan, 1998; Chaney, 1992; Lonigan, Burgess, Anthony, & Barker, 1998) and early elementary school children (e.g., Bowey, 1994; R. Wagner, Torgesen, Laughon, Simmons, & Rashotte, 1993; R. Wagner et al., 1997) have demonstrated significant

concurrent and longitudinal associations between children's vocabulary skills and their phonological sensitivity skills. Children's memory for words in early childhood appears to progress from global (e.g., "homework" or "interesting") to segmented representations (e.g., "home" - "work" or /in/ /ta r/ /ɛ st/ /ing/) as a result of vocabulary growth (see Metsala & Walley, 1998, for review). As children learn more words, it becomes more efficient to remember words in terms of their constituent parts rather than as wholes. Children who have small vocabularies may be limited in their phonological sensitivity because their memory for words has not moved from global to segmented. These findings suggest that vocabulary development may set the stage for the emergence of phonological sensitivity (Fowler, 1991; Metsala & Walley, 1998).

Print Motivation

Because reading is a skill that improves the more it is practiced and because most of the opportunities to practice reading come in the form of reading for pleasure, children's motivation to interact with print materials would be expected to influence the rate of their literacy development. This might be as true of the development of emergent literacy as the development of formal literacy. Several studies have attempted to assess preschool children's interest in literacy, or print motivation, using a variety of methods such as parent-report of child interest, parent-report of the frequency of requests for shared reading (Lonigan, 1994), examining the proportion of time children spend in literacy-related activities relative to nonliteracy activities (e.g., Lomax, 1977; Thomas, 1984), or by examining the degree of children's engagement during shared-reading (Crain-Thoresen & Dale, 1992). Some evidence suggests that these early manifestations of print motivation are associated with higher levels of emergent literacy skills and later reading achievement (e.g., Crain-Thoreson & Dale, 1992; Payne, Whitehurst, & Angell, 1994; Thomas, 1984; Scarborough & Dobrich, 1994). A child who is interested in literacy is more likely to facilitate shared-reading interactions, notice print in the environment, ask questions about the meaning of print, and spend more time reading once he or she is able. During the school years, higher levels of print motivation may lead children to do more reading on their own, resulting in greater growth in reading achievement (Cunningham & Stanovich, 1991, 1998; Stanovich & West, 1989: West, Stanovich, & Mitchell, 1993).

Phonological Processing Skills

Within the past two decades, a strong consensus has emerged concerning a key factor in the acquisition of reading and spelling in alphabetic languages. Research with a variety of populations and using diverse methods has converged on the finding that phonological processing skills play a critical role in the normal acquisition of reading (Adams, 1990; R. Wagner & Torgesen, 1987). Phonological processing refers to activities that require sensitivity to, or manipulation of, the sounds in words. Prior research has identified three interrelated clusters of phonological processing abilities: phonological sensitivity, phonological access to lexical store, and phonological memory (R. Wagner & Torgesen, 1987).

Phonological sensitivity refers to sensitivity to and ability to manipulate the sound structure of oral language. For example, phonological sensitivity might be revealed by a child's ability to (e.g., identifying words that rhyme, blending spoken syllables or phonemes together to form a words, deleteing syllables or phonemes word sounds from spoken words to form a new words)., or count the number of phonemes in a spoken word. Example: Phonological sensitivity can be subdivided into two interrelated abilities, analysis and synthesis. Analysis skills reflect a child's ability to break words or syllables into smaller segments (i.e., deletion or counting tasks), and synthesis skills reflect a child's ability to blend smaller segments into syllables and words (i.e., blending tasks). The developing phonological sensitivity of young children progresses from sensitivity to large and concrete units of sound (i.e., words and syllables), to subsyllabic units of onset (i.e., the initial consonant or consonant cluster in a syllable) and rime (i.e., the vowel and final consonant or consonant cluster in a syllable) to small and abstract units of sound (i.e., phonemes; e.g., Adams, 1990; Fox & Routh, 1975; Lonigan et al., 1998). Well-developed phonological sensitivity likely promotes the development of decoding skills because graphemes in written language correspond to speech sounds at the level of phonemes.

Phonological memory refers to short-term memory for sound-based information. The coding of information in a sound-based representation system for temporary storage (Baddeley, 1986) and is typically measured by immediate recall of verbally presented material. For example, phonological memory might be assessed by having a child repeat nonwords of increasing length (e.g., "weem," "nokyisms" repetition of nonwords), repeat increasingly longer sentences (e.g., "The big dog," "The cat in the hat stood on the chair."), or repeat lists of digits that increase in length (e.g., "4...3," "5...2...8...4"). Efficient phonological memory might enable children to maintain an accurate representation of the phonemes associated with the letters of a word while decoding and, therefore, devote more cognitive resources to decoding and comprehension processes.

Phonological access to lexical store, or phonological naming, refers to the efficiency of retrieval of phonological informationcodes from permanent memory. Two measures of phonological naming have been used, isolated naming and serial naming. In isolated naming, the child is presented with a picture of a single object and the time to begin a pronunciation is measured. Performance on serial naming tasks for In older children , phonological access to lexical store is typically measured as the time it takes for rate at which all individual elements in an array of letters, digits, or colors to can be named. In younger children, performance on a serial naming task might be measured by asking the child to name a sequence of pictures of objects (e.g., rat, man, house, tree, snake) as fast as she or he can. Efficiency in phonological access to lexical store might influence the ease with which a child can retrieve the phonological informationcodes associated with letters, word segments, and whole words, and increase the likelihood that he or she can use phonological information in decoding (Bowers & Wolf, 1993; Wolf, 1991).

These phonological processes are strongly related to subsequent decoding abilities (e.g., the ability to sound out words) (decoding), and, in the absence of intervention, individual differences in these processes are highly stable from the late preschool period forward (Burgess & Lonigan, 1998; Lonigan, Burgess, & Anthony, 1998; Torgesen & Burgess, 1998; R. Wagner, Torgesen, & Rashotte; 1994; R. Wagner et al., 1993, 1997). For example, R. Wagner et al. (1997) reported that year-to-year stability coefficients for their latent phonological sensitivity variable ranged from .83 (from kindergarten to first grade) to .95 (from second grade to third grade and from third grade to fourth grade).

Poor phonological processing skills areis the hallmark of poor readers. There is a core phonological deficit (i.e., sensitivity or access) in nearly all poor readers, and there are deficits in other reading-related skills (e.g., vocabulary) in some poor readers depending on the degree to which their level of reading is discrepant from their level of general cognitive and academic functioning (Stanovich, 1988; Stanovich & Siegel, 1994; Torgesen, in press). In other words, a poor reader may exhibit low levels of phonological processing skills compared to his or her same-age peers, but have oral language skills and general cognitive abilities that are consistent with age expectations (i.e., the condition typically referred to as dyslexia). In contrast, a poor reader may exhibit low levels of phonological processing skills, oral language, and general cognitive abilities compared to his or her same-age peers (i.e., a condition sometimes referred to as garden-variety poor reading). Both types of poor readers have deficient phonological processing. Children who have what is sometimes called with a double deficit (i.e., poor performance on deficits in both phonological sensitivity and phonological access tasks relative to same-aged peers) tend to be at the very bottom of the distribution of reading ability (Bowers, 1995; Bowers & Wolf, 1993; McBride-Chang & Manis, 1996).

The majority of work concerning prereaders' phonological processing skills has examined preschool phonological sensitivity. Individual differences in preschool and kindergarten children's phonological sensitivity are causally related to early reading acquisition (e.g., Bradley & Bryant, 1983; 1985; Bryant, MacLean, Bradley, & Crossland, 1990; Stanovich, Cunningham, & Cramer, 1984). Children who are better at detecting rhymes, syllables, or phonemes are quicker to learn to read, and this relation is present even after variability due to factors such as IQ, vocabulary, memory, and social class are removed statisticallypartialed (Bryant et al., 1990; MacLean, Bryant, & Bradley 1987; Raz & Bryant, 1990; R. Wagner & Torgesen, 1987; R. Wagner et al., 1994, 1997). Moreover, experimental demonstrations that training children in phonological sensitivity positively effects reading support a causal relation between phonological sensitivity and early reading skills (e.g., Bradley & Bryant, 1985; Brady, Fowler, Stone, & Winbury, 1994; Byrne & Fielding-Barnsley, 1991a, 1993). For example, Byrne & Fielding-Barnsley (1991a) taught preschool children to identify a limited number of phonemes in the initial and final positions of words. These children scored higher on measures of phonological sensitivity than a control group and their abilities to decode words also was higher.

Letter Knowledge

Knowledge of the alphabet at school entry is one of the single best predictors of eventual reading achievement (Adams, 1990; Stevenson & Newman, 1986). In alphabetic writing systems, decoding text involves the translation of units of print (graphemes) to units of sound (phonemes), and writing involves translating units of sound into units of print. At the most basic level, this task requires the ability to distinguish letters. A beginning reader who cannot recognized and distinguish the individual letters of the alphabet will have difficulty learning the sounds those letters represent (Bond & Dykstra, 1967; Chall, 1967; Mason, 1980). In some cases, the task of learning letter-sound correspondence is facilitated by letter names that are the same as one of the phonemes that the letter represents. For example, the name of the letter "e" is the sound made by that letter in words like "be." In other cases letter names are different from the phonemes those letters map onto. For example, the word "not" would be pronounced as "en-ot" if the name of the letter "n" wasere the sound linked to that letter. The potentially confusing nature of letter name to sound correspondence has led developers of some curriculum materials to avoid letter names entirely when teaching children (e.g., Lindamood, 1995; McGuinness, 1997), preferring instead to teach directly that different letter shapes makes different sounds; for example, the letter shape "a" makes two sounds (long a and short a)) ( Lindamood, 1995; McGuinness, 1997).

To date, no research has evaluated the degree to which teaching the conventional names for letters is helpful or harmful to children compared to leaving out letter names and teaching the connection between letter shapes and sounds directly. Although teaching direct shape to sound correspondence is appealing from the perspective of simplifying the child's learning task, nearly all alphabet materials for prereaders focus on conventional letter names, and most children begin the formal task of learning to read with this background knowledge. Moreover, studies of early development of decoding and phonological sensitivity have generally found that letter-name knowledge is a stronger predictor of growth in these skills than is letter-sound knowledge (e.g., Burgess & Lonigan, 1998; R. Wagner et al., 1994). Letter names do provide relevant information about the sounds they represent (e.g., the /t/ in tee, /k/ in kay), and beginning readers appear to use this information in reading and writing (Ehri & Wilce, 1985; Read, 1971; Treiman, 1993).

In addition to its direct role in facilitating text decoding, letter knowledge appears to play an influential role in the development of phonological sensitivity, both prior to and after the initiation of formal reading instruction. Higher levels of letter knowledge are associated with children's abilities to detect and manipulate phonemes (e.g., Bowey, 1994; Johnston, Anderson, & Holligan, 1996; Stahl & Murray, 1994) but not rhyme and syllables (Naslund & Schneider, 1996). R. Wagner et al. (1994, 1997) reported the results of a longitudinal study that explicitly tested the influence of letter knowledge on subsequent phonological sensitivity development., Tand they found that individual differences in kindergarten and first-grade letter knowledge were significantly related to measures of phonological sensitivity one and two years later. Similarly, Burgess and

Lonigan (1998) found that preschool children's letter knowledge was a unique predictor of growth in phonological sensitivity across one year.

Despite these strong links between letter knowledge and later reading, interventions that teach children letter names alone do not seem to produce large effects on reading acquisition (Adams, 1990). As noted below, interventions designed to promote emergent inside-out skills are most powerful when training in both phonological sensitivity and letter knowledge is included in the intervention (e.g., Bradley, & Bryant, 1985). For example, combining training in phoneme identity by classifying words based on their initial sounds (e.g., bat, ball, beach, bell, and bill all start with the /b/ sound) with training to identify the initial letter of words (i.e., words that start with the /b/ sound like bat, ball, and beach, begin with the letter "b") appears to produce stronger effects on subsequent reading skills than the sound categorization training alone.

## Social Class Differences in Emergent Literacy

Because family literacy programs typically focus on families from low-income backgrounds, it is relevant to ask whether social class and reading difficulties are related as well as whether there are differences in environments that may support the development of emergent literacy skills. According to the 1991 Carnegie Foundation report, Ready to learn: A mandate for the nation, 35% of children in the United States enter public schools with such low levels of the skills and motivation that are needed as starting points in our current educational system that they are at substantial risk of early academic difficulties. These data indicate that there is a significant mismatch between what many children bring to their first school experience and what schools expect of them if they are to succeed. This problem, often called school readiness, is strongly linked to family income. When schools are ranked by the median socioeconomic status (SES) of their students' families, SES correlates .68 with academic achievement (White, 1982). The National Assessment of Educational Progress (1991) has documented substantial differences in the reading and writing ability of children as a function of the economic level of their parents. SES is also one of the strongest predictors of performance differences in children at the beginning of first grade (Entwisle & Alexander, cited in Alexander & Entwisle, 1988, p. 99). These performance differences have been reported in reading achievement and a number of the emergent literacy skills outlined previously.

Children from low-income families are at risk for reading difficulties (e.g., Dubrow & Ipolito, 1994; Juel, Griffith, & Gough, 1986, Smith & Dixon, 1995). These children are more likely to be slow in the development of oral language skills (e.g., Juel et al., 1986; Lonigan & Whitehurst, 1998; Whitehurst, 1996), letter knowledge, and phonological processing skills prior to school entry (Bowey, 1995; Lonigan et al., 1998; MacLean et al., 1987; Raz & Bryant, 1990). These differences in phonological processing skills relate to later differences in word decoding skills between children from higher and lower SES backgrounds (e.g., Raz & Bryant, 1990).

There are large social class differences in children's exposure to experiences that might support the development of emergent literacy skills. Ninio (1980) found that mothers from lower SES groups engaged in fewer teaching behaviors during shared-reading than mothers from middle-class groups. Numerous studies have documented differences in the pattern of book ownership and frequency of shared-reading between lower versus higher SES families (e.g., Anderson & Stokes, 1984; Feitelson & Goldstein, 1986; Heath, 1982; McCormick & Mason, 1986; Raz & Bryant, 1990; Teale, 1986). Adams (1990, p. 85) estimated that a child from a typical middle-income family enters first grade with 1,000 to 1,700 hours of one-on-one picture book reading, whereas a child from a low-income family averages just 25 hours.

Environments that Encourage the Development of Emergent Literacy

Given the strong link between emergent literacy and later literacy, and the clear evidence that children from low-income homes have relatively low levels of emergent literacy compared to their peers from middle-income families, what can be done to improve the outside-in and inside-out skills of prereaders from low-income families?

Oral language outcomes. The prototypical and iconic aspect of home literacy, shared book reading, provides an extremely rich source of information and opportunity for children to learn language in a developmentally sensitive context (e.g., DeLoache & DeMendoza, 1987; Ninio, 1980; Pellegrini, Brody, & Sigel, 1985; Sénéchal, Cornell, & Broda, 1995; Wheeler, 1983). For instance, Wells (1985) found that approximately 5% of the daily speech of 24-month-old children occurred in the context of storytime. Ninio and Bruner (1978) reported that the most frequent context for maternal labeling of objects was during shared reading. Shared reading and print exposure foster vocabulary development in preschool children (e.g., Cornell, Sénéchal, & Broda, 1988; Elley, 1989; Jenkins, Stein, & Wysocki, 1984; Sénéchal & Cornell, 1993; Sénéchal, LeFevre, Hudson, & Lawson, 1996; Sénéchal, Thomas, & Monker, 1995), and print exposure has substantial effects on the development of reading skills at older ages when children are already reading (e.g., Allen, Cipielewski, & Stanovich, 1992; Anderson & Freebody, 1981; Cunningham & Stanovich, 1991, 1998; Echols et al., 1996; Nagy, Anderson, & Herman, 1987).

Sénéchal et al. (1996) reported that other aspects of the home literacy environment (e.g., number of books in the home, library visits, parents' own print exposure) were related to children's vocabulary skills; however, only the frequency of library visits was related to children's vocabulary after controlling for the effects of children's print exposure. Payne et al. (1994) found that adult literacy activities in low-income households (e.g., the amount of time a parent spends reading for pleasure) were not significantly related to children's oral language, which was best predicted by activities that directly involved the child (i.e., frequency of shared reading, number of children's books in the home, frequency of library visits with child). Other aspects of adult-child verbal interactions have also been implicated in the acquisition of some emergent literacy skills. For example, Dickinson and Tabors (1991; see also Beales, DeTemple, & Dickinson, 1994) reported

that features of conversations among parents and children during meals and other conversational interactions (e.g., the proportion of narrative and explanatory talk) contributed to the development of children's decontextualized language skills.

A number of interventions have been developed to enhance children's oral language skills through shared reading. The most widely researched and validated of these interventions is called dialogic reading (Whitehurst & Lonigan, 1998). Dialogic reading involves several changes in the way adults typically read books to children. Central to these changes is a shift in roles. During typical shared-reading, the adult reads and the child listens, but in dialogic reading the child learns to become the storyteller. The adult assumes the role of an active listener, asking questions, adding information, and prompting the child to increase the sophistication of descriptions of the material in the picture book. A child's responses to the book are encouraged through praise and repetition, and more sophisticated responses are encouraged by expansions of the child's utterances and by more challenging questions from the adult reading partner. For 2- and 3-year-olds, questions from adults focus on individual pages in a book, asking the child to describe objects, actions, and events on the page (e.g., "What is this? What color is the duck? What is the duck doing?"). For 4- and 5-year-olds questions increasingly focus on the narrative as a whole or on relations between the book and the child's life (e.g., "Have you ever seen a duck swimming? What did it look like?"). Video tapes to train parents and teachers of preschoolers to engage in dialogic reading are available (Washington Research Institute, 1998; Whitehurst, 1990a, b; Whitehurst, Arnold, & Lonigan, 1990).

Dialogic reading has been shown to produce larger effects on the oral language skills of children from middle- to upper-income families than a similar amount of typical picture book reading (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Whitehurst et al., 1988). Studies conducted with children from low-income families attending child care demonstrate that child care teachers, parents, or community volunteers using a six-week small-group center-based or home dialogic reading intervention can produce substantial positive changes in the development of children's language as measured by standardized and naturalistic measures (Lonigan, Anthony, Bloomfield, Dyer, & Samwel, in press; Lonigan & Whitehurst, 1998; Valdez-Menchaca & Whitehurst, 1992; Whitehurst, Arnold, et al., 1994) that are maintained six months following the intervention (Whitehurst, Arnold, et al., 1994). A large scale longitudinal study of the use of dialogic reading over a year of a Head Start program for four-year-olds showed large effects on emergent literacy skills at the end of Head Start that were maintained through the end of kindergarten; however, these positive effects did not generalize to reading scores at the end of second grade (Whitehurst, Epstein, et al., 1994, Whitehurst et al., in press).

Phonological processing skills. Most existing studies do not support a direct link between shared reading and growth in phonological skills (e.g., Lonigan, Dyer, & Anthony, 1996; Raz & Bryant, 1990; Whitehurst, 1996; but see Burgess, 1998). For example, Lonigan et al. found that growth in preschool phonological sensitivity was related to parental involvement in literacy activities in the home such as ....., but growth in phonological

sensitivity was not associated with shared reading frequency. Similarly, Sénéchal, LeFevre, Thomas, and Daley (1998) reported that kindergarten and first grade children's written language knowledge (i.e., print concepts, letter knowledge, invented spelling, word identification) was associated with parental attempts to teach their children about print but not exposure to storybooks. In contrast, children's oral language skills were associated with storybook exposure but not parents' attempts to teach print. Some evidence suggests that exposure to alphabet books may increase children's letter knowledge and phonological processing skills (e.g., Baker, Fernandez-Fain, Scher, & Williams, 1998; Murray, Stahl, & Ivey, 1996). Some studies find a relation between experiences with word games in the home and the development of phonological processing (e.g., Fernandez-Fain & Baker, 1997), but other studies have not (e.g., Raz & Bryant, 1990).

Although it has received less attention, children's writing also may facilitate their development of letter knowledge and phonological sensitivity. Any form of phonetic writing requires knowledge of both letter sounds and phonological features of words. That is, although a child may spell the word "bike" as BK, this spelling reveals knowledge of the sounds coded by the letters b and k as well as two of the three phonemes in the word. Spelling words encourages children to analyze words into smaller units of sound and to link those sounds to letters. Clarke (1988) studied the effects of invented spellings in two first grade classrooms. In these classrooms, children were encouraged to invent spellings of words for which they did not know the correct spelling. Compared to children in two classrooms where traditional spelling was emphasized, Clarke found that children in the invented spelling classrooms spent more time writing, wrote longer stories containing a greater variety of words, and scored higher on a standardized spelling test, and a decoding task.

Experimental studies of programs designed to teach children phonological sensitivity show positive effects on children's reading and spelling skills (e.g., Ball & Blackman, 1988; Bradley & Bryant, 1985; Lundberg, Frost, & Petersen, 1988; Torgesen, Morgan, & Davis, 1992; Uhry & Shepherd, 1992). Phonological sensitivity training programs that have included letter knowledge training (e.g., Ball & Blackman, 1988; Bradley & Bryant, 1985) produced larger gains than phonological sensitivity training alone (R. Wagner, 1996). The majority of these programs teach children how to categorize objects on the basis of certain sounds (e.g., initial phonemes). Other programs explicitly teach children phonemic analysis and synthesis skills. For example, Torgesen et al. (1992) found that a seven-week group training program that taught children both analysis (e.g., identify initial, final, or middle sounds in words) and synthesis skills (e.g., say words after hearing their phonemes in isolation) did what?. For example, for analysis, children might be asked to decide which of the words "hut," "bat," "mop," "bar" ended with the same last sound, say the first sound in the words "run," "bun," "sun," or identify which of the words "cup," "cut," "cat," had the same middle sound. For synthesis, children might be asked to blend the sounds, /t/... /r/... /u/... /k/, spoken individually into the word "truck," Training in both analysis and synthesis resulted in larger gains in both phonological sensitivity and a

reading analogue task than training in synthesis skills alone. Both training groups performed better than a group of control children who had listened to stories, engaged in discussions about the stories, and answered comprehension questions for an equivalent period.

Whereas most phonological sensitivity training studies have been conducted with children at the beginning stages of learning to read (i.e., kindergarten or first grade), Bryne and Fielding-Barnsley (1991a) found that preschool children (mean age = 55 months) exposed to 12 weeks of their Sound Foundations program (Bryne & Fielding-Barnsely, 1991b) demonstrated greater increases in phonological sensitivity than a group of control children exposed to storybook reading and a semantic categorization program, and some of these gains were maintained through the first and second grades (Bryne & Fielding-Barnsley, 1993; 1995). This intervention program consisted of teaching children six phonemes in the initial and final positions of words by drawing attention to the sound in words, discussing how the sound is made by the mouth, reciting rhymes with the phoneme in the appropriate position, and encouraging children to find objects in a poster that had the sound in the initial (or final) position. Worksheets in which children identified and colored items with the phoneme in the correct position were used, and the letter for the phoneme was displayed. A final stage of training introduced children to two card games that required matching objects on the basis of initial or final phonemes.

Preliminary evidence also points to the potential effectiveness of software designed to teach phonological sensitivity skills to children (Barker & Torgesen, 1995; Foster, Erickson, Foster, Brinkman, & Torgesen, 1994; Olson, Wise, Ring, & Johnson, 1997; Wise, Olson, Ring, & Johnson, 1998). For instance, Foster et al. (1994) conducted two experiments in which preschool and kindergarten children were randomly assigned to receive either their standard school curriculum or between five and eight hours of exposure to DaisyQuest (Erickson, Foster, Foster, Torgesen, & Packer, 1992), a computer program designed to teach phonological sensitivity in the context of an interactive adventure game. Children in the experimental group in both studies demonstrated significant and large gains in phonological skills compared to the children in the no-treatment control group. The obtained effect sizes on tests of phonological sensitivity compared favorably to longer teacher-led programs with older children (e.g., Torgesen et al., 1992). In a second study, Barker and Torgesen (1995) examined the effectiveness of the DaisyQuest program with a group of 54 at-risk first grade children who were randomly assigned to either an experimental or control group. Children in the experimental group received approximately eight hours of exposure to the program, and children in the control group received an equal amount of exposure to computer programs designed to teach early math skills or other reading skills. Exposure to the DaisyQuest program produced significant and large improvements in children's phonological sensitivity and word identification skills compared to the control groups.

The potentially facilitative role of family involvement in children's literacy learning does not end with a child's school entry. In fact, the Even Start legislation provides for the

provision of family literacy services up to age seven. However, most existing programs have focused on the preschool period. Several interventions designed to promote parent's involvement in and coordination with their children's reading instruction have been developed. For instance, Morrow and colleagues have reported the results of a family involvement program for inner-city children and their families (Morrow, 1992; Morrow & Young, 1997). In this program, families were provided with materials similar to those in use at their children's schools and instructions for a variety of shared reading, writing, and story telling activities that they could employ with their children. In a randomized evaluation of this program, Morrow and Young (1997) found significant effects on children's performances on a story retelling and rewriting task, and on teachers' reports of children's reading and writing ability and interest.

## Summary and Conclusions

These data indicate that there are a number of interventions for preschool and early grade school children that make a significant impact on the key emergent literacy skills of children.

Much of the early childhood and parenting interventions in family literacy programs are based on broad-based models such as High/Scope (e.g., Weikart, Deloria, Lawser, & Wiegerink, 1970), Parents as Teachers (M. Wagner & Clayton, 1998), or HIPPY (Baker & Piotrkowski, 1996). Some of these programs have good evidence for efficacy (Barnett, 1995), whereas others do not (Baker & Piotrkowski, 1996; M. Wagner & Clayton, 1998). We believe that the research reviewed previously in this chapter indicates that early childhood and parental programs can be further optimized to improve emergent literacy skills. The addition of programs such as dialogic reading or phonological sensitivity interventions do not require a complete reengineering of the preschool curriculum. Instead, these programs can be integrated into existing curriculum.

Research indicates that for some aspects of emergent literacy interventions, center-based and home-based approaches need to be integrated. For instance, in an evaluation of dialogic reading for low-income children attending subsidized child care, Whitehurst, Arnold et al (1994) found that a combined home and school program was superior to a school program alone. Similarly, Lonigan and Whitehurst (1998) found that both a combined home and school program and a home only program of dialogic reading was more effective than a school program alone, and Whitehurst, Epstein et al. (1994) found that higher levels of parent involvement with dialogic reading in the home produced larger effects on children's oral language skills.

Most evaluations of emergent literacy interventions have been of relatively short-term effects. Whitehurst's results show that even for interventions that produce significant improvement in children's skills, a catch-up or equalization effect reduces the tangible impact of the program over time (Whitehurst et al., in press). Rather than conceptualizing these interventions as providing an inoculation against later reading difficulties, it is

probably more reasonable to view these interventions as providing building blocks for additional educational experiences, reading acquisition, and academic success. Single-faceted interventions are unlikely to overcome the myriad of emergent literacy delays experienced by many children from low-income families.

Research with older children and our own experiences with preschool populations suggest that simply providing parents or teachers with materials to support emergent literacy will be insufficient. Training and the provision of a motivational context that supports a sustained focus on emergent literacy also are important. For instance, in the studies of Morrow and colleagues (e.g., Morrow & Weinstein, 1986), provisions of materials alone to parents were insufficient to produce substantial involvement with their children's literacy programs. As highlighted by Morrow and Young (1997) when parents were provided with the materials to use as well as instruction in how to use those materials with their children, parental involvement was higher and children's skills improved more. In our own work, we have no doubt that materials, instruction, and motivation are key elements to successfully sustaining involvement by parents and teachers.

## Policy Implications for Family Literacy Programs

Evidence concerning the development of emergent literacy skills suggests a sequenced approach to emergent literacy intervention. That is, oral language skills appear to provide the basis for the development of phonological processing skills. Similarly, letter knowledge is critical both for the development of decoding skills and for the development of phonological sensitivity. Consequently, it is likely that family literacy programs for young children (i.e., 2 to 4 years of age) should focus mainly on improving children's oral language skills. Inside-out skills such as letter knowledge and phonological sensitivity need to be taught explicitly in the late preschool and early grade school period. Finally, developing and maintaining children's and parents' positive attitudes toward literacy should be a continuing focus across family literacy programs. This last step can best be accomplished by use of literacy materials and interaction techniques that are engaging and available to both children and parents (e.g., Tracey & Morrow, 1998).

High quality and frequent one-on-one language interactions are needed to develop strong oral language skills (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). Family literacy programs can incorporate these interactions using staff, parents, and volunteers. Interventions such as dialogic reading can provide a valuable and proven means of increasing children's oral language skills, particularly in the outside-in domain of emergent literacy (e.g., narrative skills) in the context of literacy materials.

The addition of components that target the inside-out skills of letter knowledge and phonological sensitivity to center-based intervention is both critical and relatively straightforward. As reviewed above, there are a number of programs with demonstrated efficacy for children in late preschool to the first grade. Such programs include teacher-directed training programs (Adams et al., 199x; Bryne and Fielding-Barnsley,

1991b) and computer programs like DaisyQuest (Erickson et al., 1992). Computer programs designed to teach phonological sensitivity may be more efficient in that they require less teacher time to implement, provide one-on-one instructional activities, allow children to explore and learn at their own pace, and may constitute more developmentally appropriate practice than teacher-directed programs. Preschool environments rich with literacy-related materials and activities available to children provide the contexts in which children can explore reading and writing (Tracey & Morrow, 1998; Neuman & Roskos, 1993). This, in turn, provides a learning context for program staff to teach children letter knowledge, letter-sound correspondence, and other print concepts during children's self-directed activities.

Including program content for parent education components to target these inside-out skills is less straightforward. As noted above, evidence for a linkage between activities in the home and the development of inside-out skills indicates that direct efforts to teach these skills are required. However, research with from middle-income families suggests that these parents of preschool children tend to make use of naturally occurring opportunities to teach their children about print (i.e., incidental learning; Baker et al., 1998). Because many of these children live in environments where text is prevalent and used frequently, the children have manya lot of opportunities to engage in literacy-related activities. In these contexts, parents can make use of incidental teaching opportunities to teach their children about the components and meaning of print.

Helping parents create these literacy-rich environments in the home should be a focus of family literacy programs. Helping parents utilize these literacy environments in a way that is maximally beneficial for children also needs to be a focus. That is, parents likely will require explicit instruction and practice in identifying, promoting, and using incidental teaching opportunities. Instruction and practice on providing scaffolding experiences around print and using a strategy of "guided discovery" rather than a more didactic approach should be provided. Among the materials that are likely to facilitate children's acquisition of inside-out emergent literacy skills are alphabet books. Such books tend to create more talk about print than do traditional storybooks (e.g., Bus & van IJzendoorn, 1988); however, these books are often not present in low-income households (McCormick & Mason, 1986) and infrequently afford opportunities for children to link alphabet shapes to sounds

Programs that specifically coordinate children's literacy instruction in school and parent involvement a home can produce significant effects (Morrow & Young, 1997). Adaptations of the principles imbedded in the shared-reading approach of dialogic reading program might usefully be extended to early text reading by children to link with the reading curriculum in early elementary school As noted above, in dialogic reading, the adult or parent serves as a coach to facilitate children's telling of the story. The type of help provided to the child is keyed to the skills already demonstrated by the child (i.e., scaffolded), builds on previous readings of the book, and follows the child's interest both within a book and in choice of books. Extended from picture books to a text-based books

for older childrenapproach, parents could provide children with guidance for decoding the text in the book, use repeated readings of the book across time to reinforce and build on prior success, and track and sustain children's interest in what is read.

Providing help for correct decoding might take the form of hints, clues, and strategies rather than corrective feedback. Parents in family literacy programs are likely to benefit from coaching and practice on how to participate in this type of guided discovery read aloud experience, how to provide hints and strategies (e.g., identifying individual letter sounds, sounding out words, varying vowel sounds, identifying similar words that the child can read, comprehension monitoring) that scaffold their children's current abilities, and how to focus on the multiple strands in the text (e.g., words, narrative, relations to child). This approach is likely to maintain children's interest in reading and be a more positive and rewarding experience than simply receiving corrective feedback.

## Conclusions

Knowledge of an empirically supported emergent literacy model can be used to strengthen the impact of family literacy programs. Although evaluations of family literacy programs have demonstrated some positive effects, as reviewed in this volume (e.g., St. Pierre, 1998) and elsewhere (St. Pierre, Layzer, & Barnes, 1995; St. Pierre, Swartz et al., 1995), most evaluations have been focused on broader outcomes than the emergent literacy skills critical for children's reading success (i.e., oral language, letter knowledge, and phonological processing), and the effects have been quite modest. Most existing family literacy programs provide high quality general early childhood education, parent education, and adult education (St. Pierre, Swartz et al., 1995). The evidence reviewed above suggest a number of specific foci that should be incorporated into these programs to achieve maximal impact in breaking the cycle of illiteracy and poverty in the families served by family literacy programs. We advocate establishing a research agenda to determine the most effective components of family literacy programs. The evidence reviewed concerning crucial components of children's emergent literacy skills and the program modules suggested above provide a first step in identifying key outcome measures and program components that can be used to increase significantly the impact of family literacy programs.

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Figure Captions
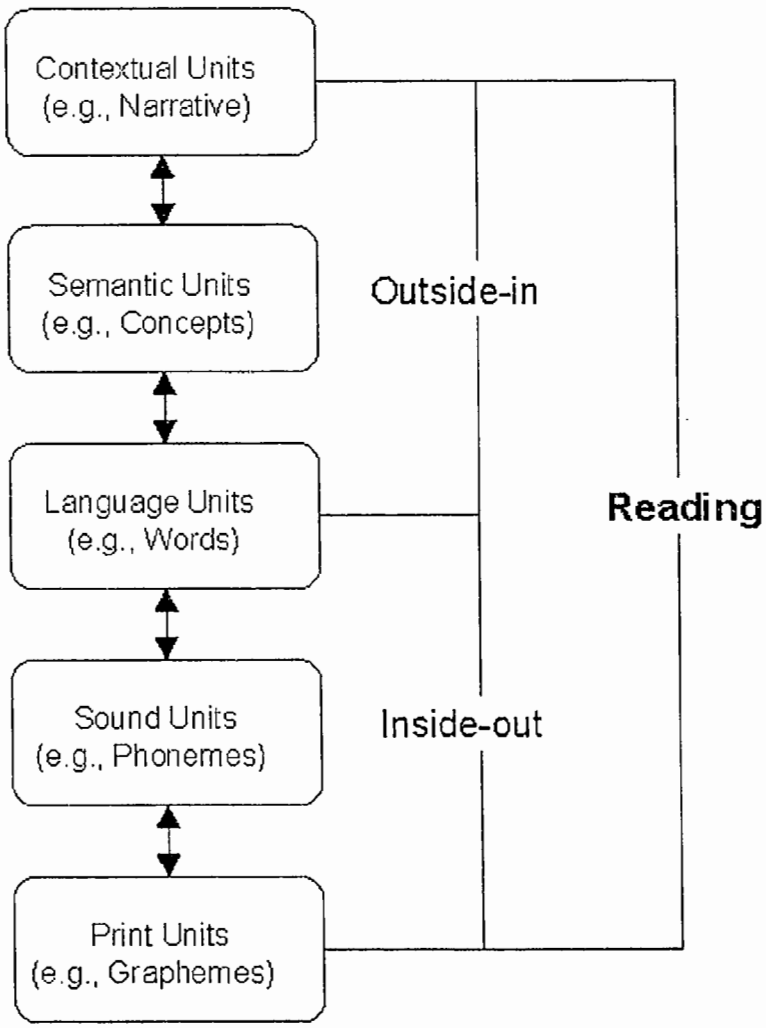
Figure 1. Fluent reading involves a number of component skills and processes. A reader must decode units of print (letters or graphemes) into units of sound (phonemes) and units of sound into units of language (words and sentences). This is an inside-out process. However, being able to say a written word or series of written words is only a part of reading. The fluent reader must understand those auditory derivations, which involves placing them in the correct conceptual and contextual framework. This is an outside-in process. The bidirectional arrows in the figure illustrate that there is cross talk between different components of reading. For example, the sentence context affects the phonological rendering of the italicized letters in these two phases: "a lead balloon," "lead me there."