Topics in Early Childhood Special Education

http://tec.sagepub.com

Promising Interventions for Promoting Emergent Literacy Skills: Three Evidence-Based Approaches

Laura M. Justice and Paige C. Pullen

Topics in Early Childhood Special Education 2003; 23; 99
DOI: 10.1177/02711214030230030101

The online version of this article can be found at:
http://tec.sagepub.com/cgi/content/abstract/23/3/99

Published by:
Hammill Institute on Disabilities

and

SAGE
http://www.sagepublications.com

Additional services and information for *Topics in Early Childhood Special Education* can be found at:

Email Alerts: http://tec.sagepub.com/cgi/alerts

Subscriptions: http://tec.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

Promising Interventions for Promoting Emergent Literacy Skills:

Three Evidence-Based Approaches

Laura M. Justice
and
Paige C. Pullen
University of Virginia

The decade of the 1990s saw a tremendous increase in research studying the value of emergent literacy intervention, particularly for meeting the needs of children at risk. Such studies have documented the positive effects of adult–child shared storybook reading, literacy-enriched play settings, and structured phonological awareness curricula for enhancing the emergent literacy skills of young children. This article defines emergent literacy, discusses the meaning of evidence-based practice, and describes three promising evidence-based approaches for emergent literacy intervention.

Emergent literacy, which describes the knowledge of and skills in reading and writing that young children obtain prior to achieving conventional literacy, provides a foundation for higher-level literacy skills. Preschool children who are experiencing difficulties in emergent literacy development are at an increased risk for entering elementary school without an adequate literacy foundation. Unfortunately, children who start off slowly in literacy development rarely catch up with their peers (Juel, 1988), indicating the considerable difficulty in ameliorating literacy difficulties once they occur. The challenge for educators thus is to develop effective emergent literacy interventions to reduce this reading failure spiral.

Recent years have seen a remarkable increase in studies examining the efficacy and effectiveness of various emergent literacy intervention approaches. Approaches with empirically demonstrated efficacy or effectiveness may be characterized as *evidence-based*. A significant amount of supportive empirical evidence exists for three approaches: *adult–child shared storybook reading, literacy-enriched play settings,* and *teacher-directed structured phonological awareness (PA) curricula*. This article describes these three types of promising interventions. The article is organized to first define emergent literacy and identify key principles for guiding intervention practices. Evidence-based practice is then defined, and the three approaches are presented. This article describes the level of empirical support for the effectiveness of interventions of that type for promoting emergent literacy skills in young children.

Emergent Literacy

Emergent literacy is the precursory knowledge about reading and writing that children acquire prior to conventional literacy instruction and that they bring to the task of learning to read. For most children, the bulk of this knowledge is acquired within the preschool years, prior to formal schooling (Dickinson & McCabe, 2001; Watkins & Bunce, 1996). Emergent literacy is best represented as a sociocultural process whereby emergent literacy development is highly influenced by the social and cultural contexts in which children are reared. Emergent literacy encompasses a broad array of skills representing early reading and writing behaviors, knowledge, and interests. This includes, for instance, understanding the function and form of print and the relationship between oral and written language (Goodman, 1986; Justice & Ezell, 2001), recognizing words as discrete elements of both print and speech (Bowey, Tunmer, & Pratt, 1984; Tunmer, Bowey, & Grieve, 1983), and showing sensitivity to the phonological structure underlying oral and written language (Ball, 1997; Bradley & Bryant, 1983; Lonigan, Burgess, Anthony, & Barker, 1998). This diverse base of knowledge, all of which reflects the child's task of uncovering

Address: Laura M. Justice, 242 Ruffner Hall, Curry School of Education, University of Virginia, Charlottesville, VA 22904; e-mail: lmj2t@virginia.edu

pro-ed

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

the implicit, underlying structure of oral and written language, is acquired by most children incidentally and gradually during the years preceding formal literacy instruction.

Several risk factors can make young children vulnerable to experiencing difficulties in acquiring critical emergent literacy fundamentals. These include exhibiting a developmental disability (e.g., oral language impairment, mental retardation, hearing impairment), having a parent with a history of reading disability, speaking a language or dialect that differs from the local academic curriculum, and/or living in a household in which experiences with oral and written language are infrequent. For children in such circumstances, a preventive model of emergent literacy intervention is needed to encourage timely attainment of the skills that will serve as the foundation for later literacy achievements (Justice, Invernizzi, & Meier, 2002; Snow, Burns, & Griffin, 1998).

A number of studies have focused on identifying the emergent literacy skills most predictive of later reading achievement (Badian, 1998, 2000; Catts, Fey, Zhang, & Tomblin, 1999, 2001; Lonigan et al., 1998; O'Connor & Jenkins, 1999; for a review, see Scarborough, 1998). A primary purpose of such research has been to inform models of early intervention so that they might address those skills most critically linked to later literacy success. Two highly interrelated yet theoretically distinct domains of emergent literacy knowledge—*phonological awareness* and *written language awareness*—have emerged as particularly important to models of identification and early intervention (Justice & Ezell, 2001; van Kleeck, 1998).

Two Developmental Domains: Phonological and Written Language Awareness

Phonological awareness describes young children's implicit and explicit sublexical knowledge regarding the sound structure of oral language (Bradley & Bryant, 1983; Lonigan et al., 1998), whereas written language awareness refers to young children's implicit and explicit knowledge concerning the nature of written language (Badian, 2000; Justice & Ezell, 2001). Areas of knowledge in each of these domains are described in Table 1. A number of studies have suggested that preschool children's skills in phonological awareness and written language awareness independently account for significant proportions of variance in later reading ability, are mutually influenced and emerge reciprocally, and make unique contributions to later reading (Badian, 1998; Chaney, 1992; Dickinson & Snow, 1987; Justice & Ezell, 2001; Lonigan et al., 1998; see Whitehurst & Lonigan, 1998). Conceptually, children's knowledge in both areas arises from similar contexts and activities, primarily adult-mediated interactions with oral and written language embedded within meaningful, contextualized early childhood experiences (Bus, 2001). Likewise, both written language awareness and phonological awareness are strongly associated with children's oral language competence, specifically, metalinguistic skills (Chaney, 1992, 1994; Lomax & McGee, 1987). Together, these two domains serve as the foundation for subsequent successful attainment of the alphabetic principle and fluent, skilled reading ability.

For many children in the emergent years of literacy achievement, sophisticated levels of knowledge in both domains are acquired effortlessly and rapidly through primarily incidental means. Particularly important to the process are frequent, informal, and naturalistic interactions with written and oral language within the broader context of supportive, mediated opportunities with adult caregivers (Kaderavek & Justice, 2002; Watkins & Bunce, 1996). Nevertheless, emergent literacy development may be delayed for children who are experiencing developmental difficulties and for children with a familial history of reading disability (Bishop & Adams, 1990; Boudreau & Hedberg, 1999; Saint-Laurent, Giasson, & Couture, 1998). Children reared in impoverished circumstances, as well as children acquiring English as a second language or speaking a nonstandard dialect, also have an increased risk for difficulties (Chaney, 1994; Lonigan et al., 1998). Such findings suggest the importance of supporting emergent literacy growth in youngsters at risk to facilitate their transition to conventional literacy instruction.

Intervention Principles

Early childhood professionals have been encouraged to take a proactive stance with respect to (a) identifying children at risk for early and later literacy problems and (b) structuring instructional activities that efficiently and effectively optimize emergent literacy achievements. The following are three principles for emergent literacy prevention and intervention activities:

1. *Intervention activities should address both written language awareness and phonological awareness*. Educators should view emergent literacy as an integrated package encompassing diverse areas of knowledge and skills. Although phonological awareness difficulties are a core deficit in reading disability (Brady, 1997; Rack, Snowling, & Olson, 1992; Torgesen, Wagner, & Rashotte, 1994), phonological awareness by itself is insufficient for reading acquisition (Stanovich, 2000). A report by the National Reading Panel (2000) described phonological awareness as a "means to an end," that is, necessary to make sense of the alphabetic principle but not all that is required. Intervention in the early years should take an expanded view of emergent literacy knowledge to address both phonological and written language awareness as well as other important associated areas (e.g., vocabulary knowledge, motivation).

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

TABLE 1. Knowledge Bases in Written Language and Phonological Awareness

Domain	Specific skill/description
Written language awareness	• **Alphabet features:** discriminates letters on basis of distinctive features
	• **Alphabet names:** recognizes or names letters of the alphabet
	• **Book handling:** understands the way books are handled and organized
	• **Concept of word in print:** recognizes words as distinct from other print categories (e.g., letters, sentences)
	• **Environmental print:** "reads" functional, contextualized print within the environment
	• **Print concepts:** understands features of print in books and environment (e.g., directionality)
	• **Print forms:** understands the various genres or types of print
	• **Print function:** understands that print is a communication device
	• **Print terms:** uses or understands literate vocabulary (e.g., word, spell)
	• **Writing:** produces writing to communicate symbolically
Phonological awareness	• **Alliteration awareness:** recognizes common sounds across words in initial (*bug, bat*), medial (*mad, hat*), or final (*tip, flop*) position
	• **Blending:** combines smaller oral language units into larger units, such as phonemes (f-r-o-g to *frog*), syllables (flow-er to *flower*), and onset/rime (b-oat to *boat*)
	• **Phoneme identity:** identifies a particular phoneme in a word (e.g., *mat* starts with /m/)
	• **Rhyme awareness:** produces or comprehends rhyme patterns (e.g., *up—cup*)
	• **Segmenting:** breaking larger oral language units into smaller units, such as phonemes (*bat* to b-a-t), syllables (*hamburger* to ham-bur-ger) and onset/rime (*cup* to c-up)
	• **Syllable awareness:** recognizes syllable boundaries in spoken language (e.g., *butterfly* is three syllables)
	• **Word awareness:** recognizes word boundaries in spoken language (e.g., *He is Sam* is three words)

2. *Intervention activities should include naturalistic, embedded opportunities for knowledge attainment as well as explicit exposure to key concepts (i.e., an "explicit-embedded balance").* Emphasizing an explicit-embedded balance means engaging children throughout the day in child-centered, contextualized, meaningful literacy activities but also providing regular, structured opportunities for teacher-directed, explicit exposure to key literacy concepts. Any emergent literacy intervention should occur in highly contextualized, meaningful, and familiar environments; activities should emphasize the use of naturally occurring artifacts and interactions in which adults are highly responsive to children's interests and activities (Kaderavek & Justice, 2002; Watkins & Bunce, 1996). Early childhood emergent literacy interventions should be designed to promote frequent quality interactions with oral and written language at school and at home. Promoting children's skills and knowledge in nonfunctional and contrived contexts in which children are only passively engaged is inconsistent with the knowledge base concerning how children acquire literacy knowledge. Nevertheless, some children require explicit, repeated, and intensive guidance to develop emergent literacy knowledge. This can be efficiently and effectively accomplished by children's participation in teacher-led activities that focus the children's attention on the forms and functions of orthography and phonology (Justice, Chow, Capellini, Flanigan, & Colton, in press; O'Connor, Jenkins, Leicester, & Slocum, 1993; Whitehurst et al., 1999).

3. *Practices should be evidence-based.* To ensure that the interventions delivered to young children effectively and efficiently increase emergent literacy knowledge, early childhood educators should rely on evidence-based practices—the use of intervention strategies and procedures that have been rigorously studied to demonstrate efficacy or effectiveness with a specific or generalized population. As Logemann (2000) argued, the use of practices for which evidence is questionable or not yet established "puts us at risk for slowing children's progress and wasting time precious to their development and learning" (p. 3).

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

Early childhood professionals may not turn to the evidence base to make decisions about children because there is a tendency to rely on one's own knowledge base and experience concerning what does and does not work. Frequently, a disconnect occurs between the questions asked by researchers and the questions to which professionals want answers (Kamhi, 1999). At the same time, programmatic research focused on establishing the value of particular approaches to emergent literacy intervention is time-consuming and expensive, and it represents an area of inquiry that has received only limited attention until recently. Currently, there is increased recognition of the importance of rigorous design, implementation, and evaluation of procedures that successfully and efficiently promote literacy in young children, particularly those children who are vulnerable for later literacy difficulties. As empirical findings emerge, practitioners and researchers must collaborate to translate these findings into educational practice.

Evidence-Based Practices in Emergent Literacy

The term *promising interventions* is used in this article to describe emergent literacy approaches with an available evidence base indicating the value of these interventions for young children, particularly children who are at risk for difficulties in this area. In this article, we describe three such approaches: adult–child shared storybook reading, literacy-enriched play settings, and teacher-directed structured phonological awareness curricula. In a recent discussion of emergent literacy in children at risk, Snow et al. (1998) advocated for these particular interventions as reflecting best practice. In addition, for each there is an emerging or established evidence base suggesting their probable efficacy or demonstrated effectiveness for encouraging emergent literacy in young children. This discussion is meant to be illustrative (rather than exhaustive), as there are additional emergent literacy intervention approaches that are not discussed in this article.

As noted previously, evidence-based practice refers to the use of intervention approaches or strategies for which there is adequate scientific evidence supporting their value for a particular or generalized population (Robey & Dalebout, 1998). On the basis of the available scientific evidence, interventions can be classified as being efficacious or effective. Selecting interventions with established efficacy or effectiveness is essential for knowing whether and to what extent benefits can reasonably be expected. To understand this distinction, the research continuum for determining intervention effectiveness needs to be described, because decisions about efficacy or effectiveness are based solely on the available scientific evidence.

The Research Continuum

Research on a particular intervention approach ideally should move purposefully along a programmatic continuum that includes (a) hypothesis-generating descriptive studies, (b) efficacy studies, and (c) effectiveness studies (Fey, 2002). As they pertain to emergent literacy, hypothesis-generating studies would involve systematic observation of children that is aimed at elucidating those factors or circumstances that appear to contribute most to literacy development in key areas. Hypotheses derived from observational research need to be tested in efficacy studies because these hypotheses are not an adequate basis for changing instruction or intervention practices. The hypotheses need to be confirmed through a series of experiments that provide convergent evidence supporting their hypothetical accuracy.

Efficacy studies, the next stage in the research continuum, represent the implementation of true experiments in which the investigator manipulates an independent variable (i.e., the intervention approach), typically within tightly controlled laboratory or clinical settings. The emphasis in efficacy research is on documenting the impact or value of the intervention approach and controlling all potential confounding influences that might lead to alternative explanations for the outcome (Fey, 2002). To this end, the emphasis in efficacy research is on ensuring internal validity, or the certainty of findings. Efficacy studies are characterized by rigid controls on internal validity, including carefully trained interventionists, a relatively small and homogenous group of participants, random assignment, carefully monitored fidelity in implementing the intervention, and short-term outcome assessment using valid and reliable behavioral measures (Fey, 2002). Pending the outcomes of several studies in which internal validity is carefully controlled and results indicate with certainty the positive impact of the intervention, investigators may move to effectiveness research.

Whereas an efficacious treatment is one that has been found to be beneficial for a certain population in a controlled setting (e.g., a laboratory), an effective treatment is one shown to be beneficial in more routine settings (Robey & Dalebout, 1998). In effectiveness studies, the emphasis shifts to documenting external validity, or the generalizability of the findings to a broader population. In effectiveness studies, experimental controls related to internal validity are loosened to examine the impact of the intervention in routine settings, such as classrooms. Effectiveness studies are characterized by (a) implementation with a fairly heterogeneous population, (b) intervention delivery by individuals without intensive training in procedures and that is not closely monitored, and (c) outcomes focused on functional skills and long-term maintenance of effects (Fey, 2002).

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

Characterizing the Evidence Base for Particular Interventions

When is a particular intervention approach viewed as being efficacious or effective? This depends solely upon the existence of an adequate base of efficacy and effectiveness studies documenting outcomes for use of the approach (see Table 2). Interventions with *probable efficacy* are those for which two or more group-design studies have shown use of the intervention to be more effective than no use of it (Lonigan, Elber, & Johnson, 1998). Using the intervention can be expected to result in reasonable benefits compared to not using it. Interventions with *demonstrated effectiveness* are those for which two or more well-conducted group-design studies by different, independent investigative teams have shown the intervention to be superior to an alternative or established intervention. Effective interventions have value over no intervention and are better than prevailing approaches.

Promising Interventions in Emergent Literacy

For each of the three promising evidence-based interventions described here there is adequate evidence in the literature showing their probable efficacy or demonstrated effectiveness for encouraging emergent literacy in young children. A general description of each approach is presented, followed by an overview of illustrative empirical evidence supporting the value of the approach for young children. Table 3 presents a more comprehensive overview of evidence supporting these interventions.

Adult–Child Shared Storybook Reading

Adult–child shared storybook reading has featured prominently in a number of recent studies investigating effective strategies for promoting oral language and emergent literacy in young children at risk (e.g., Crain-Thoreson & Dale, 1999; Cronan, Cruz, Arriaga, & Sarkin, 1996; Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996; Ezell, Justice, & Parsons, 2000). Shared storybook reading is viewed as particularly powerful because it provides an interactive context that is contextualized, authentic, meaningful, interesting, and motivating to the preschool child (Watkins & Bunce, 1996). Repeated engagement in this dynamic, highly contextualized interaction presumably facilitates the successful transmission of literacy knowledge from adult to child. A continually growing body of work has confirmed that shared storybook reading provides a potent context in which emergent literacy growth can be facilitated. Educators and parents have therefore been encouraged to increase the frequency with which young children in their care participate in shared storybook reading interactions (e.g., Snow et al., 1998). Just providing children with increased access to storybooks results in substantial gains in emergent literacy, including alphabet knowledge and print concepts (Neuman, 1999).

Although book reading alone has a positive impact on children's emergent literacy and is believed to be a primary vehicle through which children gain much of their knowledge about oral and written language, the behaviors adults use when reading with children can be modified to optimize children's literacy achievements. Adults can embed specific behaviors into the shared book read-

TABLE 2. Characterizing Childhood Interventions

Evidence classification	Research focus	Research consideration	Criteria[a]
Probable efficacy	Determine if and to what extent a specific intervention results in measurable change in highly controlled conditions; to show that receiving the intervention is better than not receiving the intervention	Internal validity: to know with highest level of certainty that it is the intervention (and not something else) that causes change	2+ group-design studies with high internal validity show intervention more effective than not receiving intervention
Demonstrated effectiveness	Determine if and to what extent a specific intervention results in change when implemented in standard conditions; to show that receiving the intervention is better than not receiving the intervention and has greater value than prevailing approaches	External validity: to know that intervention outcomes observed in efficacy studies can be obtained in general settings	2+ well-conducted group-design studies conducted by independent research teams show intervention superior to alternative or established interventions for general population

[a]Criteria from Lonigan, Elber, & Johnson (1998).

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

TABLE 3. Studies Referenced in Consideration of Promising Interventions

Participants	Intervention	Measures	Results
		Dialogic Reading	
Lonigan et al. (1999)			
Low-income preschoolers in childcare (M = 3.5 years) were randomly assigned to groups: Control (n = 32), Shared reading (n = 29), Dialogic reading (n = 34)	Daily shared or dialogic reading in small groups for 6-week period; control children received standard general education curriculum	PPVT-R, EOWPVT-R, ITPA Verbal Expression, WJ Listen Comp., oddity detection (rhyme/alliteration), blending, elision	Both reading groups (dialogic, shared reading) performed better than control group at posttest on alliteration measures, with no difference between dialogic and control; no differences across three groups for rhyme, blending, or elision; no effect sizes reported
Whitehurst, Epstein, et al. (1994)			
Low-income 3- and 4-year-old preschoolers in Head Start were randomly assigned to groups (n = 153) and followed through kindergarten and first grade; Control (n = 73), Dialogic reading (n = 94)	Treatment group received dialogic reading two to five times weekly in small groups for academic year + books sent home following parent training in dialogic reading + *Sound Foundations* curriculum in classroom for 5 months; control group children received general education curriculum	PPVT-R; EOWPVT-R; ITPA Expressive subscale; DSC (Letter Names, Segmenting, Print Concepts)	Children receiving dialogic reading performed better at end of year on writing (d = .52) and print concepts (d = .62); no difference across groups for phonological awareness
Whitehurst et al. (1999)			
(Replication of Whitehurst et al. 1994 study); Classrooms of low-income 3- and 4-year-old preschoolers in Head Start were randomly assigned to groups (n = 153)	Treatment group received dialogic reading three to five times weekly in small groups for academic year + books sent home following parent training in dialogic reading + *Sound Foundations* curriculum in classroom for 5 months; control group children received general education curriculum	HS and K: DSC; PPVT; EOWPVT-R; Grades 1 and 2: WRMT-R Word Attack, SAT-8 Word Reading	Children receiving dialogic reading performed better at end of year on writing and print concepts with no difference for phonological awareness. Follow-up at end of kindergarten for entire cohort (original + replication, N = 251) showed dialogic advantage for writing and phonological awareness (no difference for print concepts); follow-up at end of first grade showed no difference between dialogic and control groups on reading scores. Effect sizes ranged from moderate to large using Cohen's f. Head Start: EOWPVT f = .266; DSC f = .278. Kindergarten: EOWPVT f = .212; DSC f = .318. Grade 1: Word Reading f = .224; Word Attack f = .232; Grade 2: Word Reading f = .241; Word Attack f = .498
		Print Referencing	
Justice & Ezell (2000)			
Typically developing preschoolers (M = 4.5 years) were randomly assigned to groups following matching procedures. Groups: Shared reading (n = 14), Print-referencing reading (n = 14)	Shared (picture focus) reading and print-referencing reading interventions were implemented four times weekly by parents for 4-week period	Parent reading behaviors; Words in print; Alphabet knowledge; Print recognition; Word segmentation; Print concepts	Children read to with print referencing outperformed control group peers at posttest on word awareness, segmentation, and print concepts; no differences between print referencing and control for alphabet knowledge or environmental print; no effect sizes reported

(table continues)

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

(Table 3, continued)

Participants	Intervention	Measures	Results
		Print Referencing, *continued*	
Justice & Ezell (2002)			
Low-income preschoolers in Head Start (M = 4.5 years) matched for age were randomly assigned to groups: Shared reading (n = 15), Print-referencing reading (n = 15)	Shared (picture focus) and print-referencing intervention occurred three times weekly for 8 weeks at school in small groups	Print and book reading conventions; Concept of word; Alphabet knowledge; Literacy terms; Literacy Composite	Children read to with print referencing outperformed control group peers at posttest environmental print, word awareness, alphabet knowledge, and literacy composite; no differences between print referencing and control for letter orientation, print concepts, and literacy terms; effect size not reported
		Literacy-Enriched Play	
Christie & Enz (1992)			
Typically developing preschoolers (M = 4.9 years) randomly assigned to groups: Literacy-enriched play (n = 15), Literacy-enriched play with adult mediation (n = 17)	Groups received literacy-enriched play centers in their classroom for 20-week period; in the adult mediation classroom, adults provided suggestions and modeling for use of literacy props	Play observations; Concepts about print; Emergent writing; Letter recognition	Children in adult mediation group used literacy props in their play more often than those without adult mediation; no significant differences between two groups for print concepts, writing, or alphabet knowledge; no effect sizes reported
Neuman & Roskos (1993)			
Low-income preschoolers in Head Start (M = 4.2 years) in eight classrooms randomly assigned to groups by classroom: Literacy-enriched play (n = 65), Literacy-enriched play with adult mediation (n = 65), Control (n = 47)	Groups received literacy-enriched play centers in their classroom for 5-month period; in adult mediation classrooms, adults actively assisted children's use of literacy props; in the literacy-enriched classrooms with no adult mediation, adults monitored play but did not interact with children	Functional print task; Environmental print reading task	Children in adult mediation group used props in play slightly more often than those without adult mediation; control group children rarely included literacy props in play; children with adult mediation performed better on environment print tasks than literacy-enriched no mediation group, which performed better than control group; both literacy-enriched groups performed better on functional print tasks compared to control group; no effect sizes reported
Vukelich (1994)			
Low-income kindergarteners (M = 5.5 years) randomly assigned to groups by classroom: Literacy-enriched play (n = 18), Literacy-enriched play with adult mediation (n = 17), Control (n = 21)	Groups received literacy-enriched play centers in their classroom for 15-week period; in adult mediation classroom, adults actively assisted children's use of literacy props; in literacy-enriched classroom with no adult mediation, adults monitored play but did not directly interact with children	Concepts about print; Environmental print	Children with adult mediation performed better on environmental print tasks compared to the literacy-enriched no mediation group, which performed better than control group; both literacy-enriched groups performed better on functional print tasks compared to control group; there was no difference across groups for print concepts; no effect sizes reported

(table continues)

Downloaded from http://rec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

(Table 3, continued)

Participants	Intervention	Measures	Results
		PA Curricula–*Ladders to Literacy*	
O'Connor et al. (1996) [a]			
Kindergarteners with and without disabilities and children repeating kindergarten in both general and special education classrooms: PA curriculum (n = 72), Control (n = 35)	Treatment group received 6-month curriculum in small groups or whole class; control group children received the general language arts curriculum	Rhyme production; First sound segmentation; Blending phonemes; Segmenting phonemes; WJ subtests: Letter word ID; Dictation	Children receiving the PA curriculum outperformed control group children on phonological awareness tasks of blending and segmenting and on standardized measures of reading and writing; the groups did not differ for syllable deletion
Woodcock (1987)			
Kindergarteners in four Title 1 and four non–Title 1 schools: PA curriculum (n = 136), PA curriculum + decoding (n = 133), Control (n = 135)	Children in the PA curriculum classrooms received 20 weeks of daily PA whole-class activities; children in the PA + decoding classrooms received the PA curriculum as well as peer-based decoding instruction three times weekly for 16 weeks; control group children received the general language arts curriculum	Rapid letter naming; Rapid letter sounds; Segmentation; WJ subtests: Letter word ID; Sound blending; Word attack; Spelling	Children receiving the two PA curriculum variations performed comparably and outperformed control group children on phonological awareness tasks; the PA + decoding group performed better than PA and control groups on alphabetic tasks (reading, spelling), and PA and control groups were similar for these measures; similar findings were observed at 1-year follow up; effect sizes reported for several comparisons for low, average, and high achievers
		PA Curricula–*Sound Foundations*	
Byrne & Fielding-Barnsley (1991a) [a]			
Typically developing preschoolers randomly assigned to groups with minor constraints: PA curriculum (n = 64), Control (n = 62)	Intervention group received PA curriculum for 12 weeks in small groups, with one 30-min. session weekly; control group children completed vocabulary activities in small groups	Phoneme identity; Letter sounds; Reading task (10 CVC words)	Children receiving the PA curriculum performed better at posttest on phonological awareness and phonetic cue reading; no effect sizes reported
Whitehurst, Epstein et al. (1994) **and** ***Whitehurst et al. (1999)***		See above	

Note. DSC = *Developmental Skills Checklist* (CTB-McGraw-Hill, 1990); EOWPVT-R = *Expressive One Word Picture Vocabulary Test–Revised* (Gardner, 1990); ITPA = *Illlinois Test of Psycholinguistic Abilities* (Kirk, McCarthy, & Kirk, 1988); PPVT-R = *Peabody Picture Vocabulary Test–Revised* (Dunn & Dunn, 1981); SAT-8 = *Stanford Achievement Test–Eighth Edition* (Psychological Corp., 1989); WJ = *Woodcock-Johnson III Tests of Cognitive Abilities* (Woodcock, McGrew, & Mather, 2001); WRMT-R = *Woodcock Reading Mastery Test–Revised* (Woodcock, 1987).

[a]Follow-up data on these cohorts are provided in Byrne and Fielding-Barnsley (1993, 1995) and O'Connor et al. (1998).

Downloaded from http://rec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

ing context to enhance and accelerate children's emergent literacy growth. Two types of evidence-based practices that fall in this domain are *dialogic reading* and *print referencing* (see Table 4).

Dialogic Reading. An intervention approach first described by Whitehurst and associates, dialogic reading refers to adult use of *evocative* or *interactive* behaviors during storybook reading interactions with young children (e.g., Whitehurst, Arnold, et al., 1994; Whitehurst, Epstein, et al., 1994; Whitehurst et al., 1988; Whitehurst et al., 1999). When reading books with children, adults integrate a set of behaviors into their reading interactions: (a) asking open-ended questions and limiting use of yes/no (close-ended) questions; (b) following children's answers with additional questions; (c) repeating and expanding on what children say; (d) offering praise, encouragement, and feedback for children's participation; and (e) following children's interests. These behaviors are designed to increase children's engagement and active participation—that is, to create a dialogue—and to provide adult models of language targets.

A substantial research base has indicated the likely benefits of dialogic reading for supporting young children's oral language and emergent literacy achievements (e.g., Chow & McBride-Chang, 2003; Crain-Thoreson & Dale, 1999; Dale et al., 1996; Whitehurst et al., 1988; Valdez-Menchaca & Whitehurst, 1992; Whitehurst, Arnold et al., 1994). Early studies of dialogic book reading emphasized the impact of this approach upon children's oral language skills, namely, vocabulary and mean length of utterance. For the most part, dialogic-reading research has not examined its effects on emergent literacy, the exceptions being Chow and McBride-Chang (2003), Lonigan, Anthony, Bloomfield, Dyer, and Samwel (1999), Whitehurst, Epstein, et al. (1994), and Whitehurst et al. (1999).

Whitehurst, Epstein, et al. (1994) implemented a year-long emergent literacy intervention program in four Head Start centers involving 167 preschool children. Children received a multifaceted emergent literacy intervention involving frequent small-group adult–child dialogic reading. A 5-month phonological awareness program also was implemented in the classroom (*Sound Foundations,* Byrne & Fielding-Barnsley, 1991b). A comparison of the emergent literacy growth of the children receiving intervention versus the children receiving the regular Head Start curriculum showed the intervention to result in robust gains in identifying sounds and letters, understanding the form and function of print, and engaging in developmental writing. A recent replication (Whitehurst et al., 1999) provided similar findings. Lonigan et al. (1999) studied the impact of dialogic reading on emergent literacy without the additional phonological awareness curriculum for low-income preschoolers during a 12-week period. This study showed dialogic reading to have a greater influence on children's phonological awareness skills relative to the general education classroom curriculum; however, dialogic reading was found to be no different than other types of storybook reading (i.e., being read to on a regular basis by adults). Taken together, current evidence supports the probable efficacy of dialogic reading for emergent literacy, specifically when used in combination with a structured phonological awareness curriculum.

Print Referencing. Print referencing is a second book-reading strategy that can be used to encourage emergent literacy. Like dialogic reading, print referencing makes use of the adult–child shared storybook reading context

TABLE 4. Adult Storybook Reading Behaviors to Increase Emergent Literacy

Intervention approach	Specific behaviors
Dialogic reading (Whitehurst et al., 1988)	1. Ask open-ended questions (limit yes/no questions)
	2. Follow child's answers with questions
	3. Repeat and expand what the child says
	4. Give praise, encouragement, and feedback
	5. Follow the child's lead and interests
	6. Have fun
Print referencing (Ezell & Justice, 2000)	1. Ask questions about print
	2. Make comments about print
	3. Pose requests about print
	4. Point to print when talking about the story
	5. Track the print when reading

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

in a way that maximizes children's learning opportunities. With print referencing, the adult incorporates verbal and nonverbal references to print into the book-reading routine to encourage a child's explicit and implicit interactions with and attention to oral and written language. Verbal behaviors include questions about print (e.g., "Where should I start reading on this page?"), comments about print (e.g., "We know this letter—it's an A!"), and requests concerning print (e.g., "Point to the dog's words"). Nonverbal behaviors include pointing to print and tracking the print when reading (see Table 4). In using these strategies, the adult provides explicit guidance to encourage the child's exposure to key emergent literacy concepts within the context of a highly contextualized, familiar, and meaningful event.

Several studies have shown print referencing to be a promising intervention with probable efficacy for encouraging emergent literacy development in typically developing and at-risk preschoolers (e.g., Ezell et al., 2000; Justice & Ezell, 2000, 2002). Studies have shown that adult use of print referencing over relatively brief periods resulted in substantial increases in children's print awareness, word concepts, and alphabet knowledge. For instance, Justice and Ezell (2000) trained parents of typically developing 4-year-old children to embed verbal and nonverbal references to print into their shared storybook reading sessions; parents used these strategies over a 4-week period involving 16 home-based book reading sessions. Compared to a control group that completed reading sessions without print referencing, the children whose parents referenced print made significant gains in print concepts, word segmentation, and word concepts. A more recent study conducted with Head Start preschoolers showed that the use of print-referencing over 24 small-group storybook reading sessions increased children's print concepts, word awareness, and alphabet knowledge.

TABLE 5. Literacy Play Centers and Props

Center	Examples of props
Business office	telephone message forms, stationery, envelopes, wall signs, file folders
Grocery store	bank checks, wall signs, notepads, shelf labels, product containers, lists
Housekeeping	pens, pencils, & markers; sticky notes, message board, product containers
Ice cream parlor	notepads, menus, wall signs, labels
Library	pencils, books, signs, shelf labels, check-out cards, books of various genres
Veterinarian	appointment book, wall signs, magazines, patient charts, prescription form

Note. Adapted from Christie & Enz (1992).

The emergent literacy skills of the children who received print referencing were accelerated threefold over their peers in the control group in the 8-week period. Research showing preschoolers as highly responsive to adults' print-referencing behaviors (Justice, Weber, Ezell, & Bakeman, 2002) suggests that adult print referencing allows children to participate in print-focused conversations above their independent capabilities.

Literacy-Enriched Play Interventions

Similar to intervention approaches involving shared storybook reading, literacy-enriched play settings capitalize upon the use of an activity that is highly contextualized, meaningful, and familiar to the preschool child. Naturalistic, hypothesis-generating observations of young children's dramatic play have shown children's use of literacy artifacts during play to occur fairly frequently (e.g., Schrader, 1990). For instance, children who are playing at being a mother and a child might embed literacy artifacts (e.g., shopping lists, newspapers, magazines) into these routines to reflect a broad schematic and cultural context. A number of experts have asserted that children's use of such artifacts and routines both reflects and mediates their growing knowledge concerning literacy (Christie & Enz, 1992; Morrow & Rand, 1991; Roskos, 1988; Vukelich, 1991). To this end, several researchers have used the context of children's dramatic play as a means for addressing the emergent literacy needs of typically developing and at-risk children (Neuman & Roskos, 1990, 1991, 1992; Vukelich, 1991).

The general design of play-based interventions involves the deliberate integration of literacy props and materials into children's dramatic play settings in the classroom (see Table 5). Studies have shown significant increases in children's literacy-related play when literacy props are integrated into play centers, particularly when adult mediation is involved. The term *adult mediation* refers to adult scaffolding of children's interactions with literacy props during play through modeling, role playing, or conversation. Several studies have suggested that increases in literacy-related play results in a reciprocal increase in children's emergent literacy knowledge.

Studies conducted by Christie and Enz (1992), Vukelich (1994), and Neuman and Roskos (1993) have supported the probable efficacy of literacy-enriched play settings for influencing emergent literacy development. This small body of research has suggested that (a) this intervention approach, when used within the early childhood classroom, improves emergent literacy skills relative to control settings (no intervention), and (b) adult mediation is an important component of the approach. Christie and Enz (1992) conducted a 20-week intervention with middle class preschoolers. Children whose classrooms featured adult-mediated literacy-enriched play for the in-

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

tervention period engaged in greater amounts of literacy-related play following intervention relative to children who received literacy-enriched play without adult mediation.

Subsequent investigations have compared no-treatment control classrooms to literacy-enriched play settings with and without adult mediation. Literacy-enriched play interventions for low-income preschoolers and kindergarteners have resulted in positive findings for written language awareness, particularly when adults facilitated the children's literacy-based interactions (Neuman & Roskos, 1993; Vukelich, 1994). Children receiving adult-mediated play conditions interacted with literacy artifacts and engaged in literacy-related play more frequently relative to children not receiving adult mediation. Increases in literacy-related behaviors have been associated with substantial performance changes in written language awareness, particularly in alphabet knowledge and environmental print recognition.

Teacher-Led Structured Phonological Awareness Curricula

Phonological awareness is a particularly important aspect of emergent literacy. Lack of awareness of the implicit, structural, and sublexical aspects of spoken language prevents children from (a) making sense of the alphabetic principle and (b) benefiting from formal reading instruction (Uhry & Shepherd, 1997). Although many children intuitively begin to experiment with the phonological structure of oral language during the preschool years, as occurs in rhyming games, a small percentage of children have considerable and ongoing difficulties with this particular aspect of literacy growth (Torgesen et al., 1994; Wagner & Torgesen, 1987). To promote the achievement of an early foundation in phonological awareness and to possibly circumvent later problems in this area, explicit PA instruction through use of a structured curriculum is increasingly prevalent in the preschool and kindergarten classroom.

Implementation of a PA curricula typically features children's regular participation in teacher-led games and activities promoting phonological analysis and manipulation through rhyming, phoneme identity, blending, and segmenting. Several curricula examples are presented in Table 6. The value of a PA curricula has been studied for typically developing young children and children with disabilities; these studies have involved children as young as 4 years old (e.g., Brady, Fowler, Stone, & Winbury, 1994; O'Connor et al., 1993; van Kleeck, Gillam, & McFadden, 1998). The interventions used in these studies have featured children's regular involvement in teacher-led, developmentally sequenced lessons designed to promote children's explicit focus on the phonological properties of oral language. This growing body of research generally supports the influence of such instruction for increasing emergent literacy skills. Two curricula that together provide an empirical base indicating the demonstrated effectiveness of structured curricula for influencing phonological awareness are *Ladders to Literacy* (Notari-Syverson, O'Connor, & Vadasy, 1998; O'Connor, Notari-Syverson, & Vadasy, 1998a) and *Sound Foundations* (Byrne & Fielding-Barnsley, 1991b).

Ladders to Literacy. Several studies have examined the impact of *Ladders to Literacy,* a comprehensive, emergent literacy curriculum currently available in preschool and kindergarten versions (Fuchs et al., 2001; O'Connor, 1999; O'Connor, Notari-Syverson, Vadasy, 1996, 1998b). Studies examining the value of these curricula have used adaptations of the commercially available versions, for instance, by using only the phonological awareness activities. O'Connor et al. (1996) studied the use of *Ladders to Literacy* activities for kindergarten children

TABLE 6. Commercially Available Curricula for Phonological Awareness

Curriculum	Description
Ladders to Literacy (Notari-Syverson et al., 1998; O'Connor et al., 1998b)	Two volumes provide emergent literacy activities for children in preschool and kindergarten, including phonological awareness, vocabulary development, and letter knowledge; includes informal assessment activities
Phonemic Awareness in Young Children (Adams, Foorman, Lundberg, & Beeler, 1998)	Provides assessment and instructional activities in phonological awareness for children in preschool through first grade
Road to the Code: A Program of Early Literacy Activities to Develop Phonological Awareness (Blachman, Ball, Black, & Tangel, 2000)	Provides an 11-week program for developing phonological awareness and the alphabetic principle for children in kindergarten and first grade; Forty-four 15- to 20-minute lessons are provided.
Sound Foundations (Byrne & Fielding-Barnsley, 1991b)	Provides a developmentally sequenced program for preschoolers that involves weekly lessons focusing on classifying sounds using worksheets, posters, and games

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

with and without disabilities. Children receiving the curriculum for 6 months outperformed children receiving the standard kindergarten curriculum on measures of phonological blending and segmenting as well as reading and writing. Follow-up analyses by O'Connor et al. (1998a) revealed significant group differences on measures of word identification, dictation, word attack, and spelling for those children with disabilities who had received the *Ladders to Literacy* curriculum compared to the children with disabilities who had not. A recent, large-scale effectiveness study of *Ladders to Literacy* showed that children who received two variations of the curriculum performed significantly better than did children in a control group on a series of phonological awareness tasks (Fuchs et al., 2001).

Sound Foundations. A second PA curriculum for which there is adequate scientific support in the literature is *Sound Foundations* (Byrne & Fielding-Barnsley, 1991a, 1993, 1995; Whitehurst, Epstein, et al., 1994; Whitehurst et al., 1999). This curriculum uses posters, games, worksheets, and audiotapes to encourage children's awareness of sound similarities across words. Three studies by Byrne and Fielding-Barnsley (1991a, 1993, 1995) have reported the short- and long-term positive effects on PA for preschool children receiving *Sound Foundations* in small-group sessions over a 12-week period (about 30 minutes per week). Longitudinal analyses studying the ongoing effects of preschool participation in the curriculum have indicated a significant influence through second grade on word recognition, reading comprehension, and a variety of phonological awareness tasks. *Sound Foundations* has also been shown to be a valuable part of a comprehensive emergent literacy intervention in research by Whitehurst and his colleagues (Whitehurst, Epstein, et al., 1994; Whitehurst et al., 1999).

Conclusion

This article described emergent literacy and several evidence-based practices for supporting this area of development in young children. The research on dialogic reading and print referencing suggests the important contribution of relatively simple changes in adult reading style to the emergent literacy development of young children. On the basis of the available empirical research, these approaches are each viewed as having probable efficacy for influencing young children's emergent literacy development. Further research showing the advantage of dialogic reading over other styles of storybook reading upon emergent literacy is needed. For print referencing, research indicating the impact of this approach when used in routine clinical or educational settings—for instance, by preschool special educators reading with children in the classroom—needs to be conducted. Both dialogic reading and print referencing warrant further investigation to determine their specific utility for children with identified special needs.

The available research also supports the probable efficacy of literacy-enriched play settings upon children's written language awareness, particularly when adults mediate the children's interactions. Further studies that clarify the value of literacy-enriched play settings for children with disabilities are needed, because the research on literacy-enriched play has primarily involved typically developing children and children from low-income backgrounds. The influence of this approach for encouraging phonological awareness is also an important future research area.

A considerable body of research has indicated the demonstrated effectiveness of structured phonological awareness curricula for children's emergent literacy, particularly in areas of phonological awareness (e.g., rhyme, alliteration). Two well-studied curricular models—*Ladders to Literacy* and *Sound Foundations*—have been featured in a number of efficacy and effectiveness studies documenting the short- and long-term impacts of this approach on nondisabled children and children with disabilities. Although the use of structured PA curricula as a general approach is characterized as having demonstrated effectiveness, the unique value of specific curricula should continue to be studied in both laboratory and more routine settings.

The strategies and supportive research described in this article provide an illustrative overview of promising evidence-based approaches for addressing the emergent literacy needs of young children. Early in this article we presented the following three principles for intervention and practice:

1. Intervention activities should address both written language and phonological awareness.
2. Intervention activities should include naturalistic, embedded opportunities for knowledge attainment as well as explicit exposure to key concepts (an "explicit-embedded balance").
3. Practices should be evidence-based.

The approaches presented here are directly relevant to the third principle regarding use of evidence-based practices. By using a combination of evidence-based practices, including dialogic reading and print referencing, adult-mediated literacy-enriched play, and teacher-led phonological awareness curricula, educators are able to meet the first and second principles.

All children, particularly children who are at risk for difficulties in literacy development, must be given every opportunity for timely development of critical emergent

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

literacy skills. Research is increasingly providing the early childhood practitioner with rich descriptions of successful intervention strategies that have probable or demonstrated value. Too often, however, a significant gap exists between what science has shown to be effective and what is currently applied within early childhood educational settings. This occurs for many reasons, including the mismatch between questions that researchers ask and answers that educators need (Kamhi, 1999). Nevertheless, early childhood practitioners and program administrators have the essential task of ensuring the transition of knowledge from empirical evidence to successful practice. With the expanding knowledge base on effective interventions for young children, practitioners must bridge the research-to-practice gap and ensure all children a smooth transition into the world of reading and writing. ◆

REFERENCES

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.

Adams, M., Foorman, B., Lundberg, I., & Beeler, T. (1998). *Phonemic awareness in young children: A classroom curriculum*. Baltimore: Brookes.

Badian, N. A. (1998). A validation of the role of preschool phonological and orthographic skills in the prediction of reading. *Journal of Learning Disabilities, 31,* 472–481.

Badian, N. A. (2000). Do preschool orthographic skills contribute to prediction of reading? In N. Badian (Ed.), *Prediction and prevention of reading failure* (pp. 31–56). Timonium, MD: York Press.

Ball, E. W. (1997). Phonological awareness: Implications for whole language and emergent literacy programs. *Topics in Language Disorders, 17*(3), 14–26.

Bishop, D. V. M., & Adams, C. (1990). A prospective study of the relationship between specific language impairment, phonological disorders and reading retardation. *Journal of Child Psychology and Psychiatry, 31,* 1027–1050.

Blachman, B. A., Ball, E. W., Black, R., & Tangel, D. M. (2000). *Road to the code: A phonological awareness program for young children*. Baltimore: Brookes.

Boudreau, D. M., & Hedberg, N. L. (1999). A comparison of early literacy skills in children with specific language impairment and their typically developing peers. *American Journal of Speech-Language Pathology, 8,* 249–260.

Bowey, J. A., Tunmer, W. E., & Pratt, C. (1984). Development of children's understanding of the metalinguistic term word. *Journal of Educational Psychology, 76,* 500–512.

Bradley, L., & Bryant, P. E. (1983). Categorizing sounds and learning to read–A causal connection. *Nature, 301,* 419–421.

Brady, S. A. (1997). Ability to encode phonological representations: An underlying difficulty of poor readers. In B. Blachman (Ed.), *Foundations of reading acquisition and dyslexia: Implications for early intervention* (pp. 21–48). Mahwah, NJ: Erlbaum.

Brady, S., Fowler, A., Stone, B., & Winbury, N. (1994). Training phonological awareness: A study with inner-city kindergarten children. *Annals of Dyslexia, 44,* 26-59.

Bus, A. G. (2001). Joint caregiver-child storybook reading: A route to literacy development. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 179–191). New York: Guilford Press.

Byrne, B., & Fielding-Barnsley, R. (1991a). Evaluation of a program to teach phonemic awareness to young children. *Journal of Educational Psychology, 83,* 451–455.

Byrne, B., & Fielding-Barnsley, R. (1991b). *Sound foundations*. Sydney, New South Wales, Australia: Peter Leyden Educational.

Byrne, B., & Fielding-Barnsley, R. (1993). Evaluation of a program to teach phonemic awareness to young children: A 1-year follow-up. *Journal of Educational Psychology, 85,* 104–111.

Byrne, B., & Fielding-Barnsley, R. (1995). Evaluation of a program to teach phonemic awareness to young children: A 2- and 3-year follow-up and a new preschool trial. *Journal of Educational Psychology, 87,* 488–503.

Catts, H. W., Fey, M. E., Zhang, X., & Tomblin, J. B. (1999). Language bases of reading and reading disabilities: Evidence from a longitudinal investigation. *Scientific Studies of Reading, 3,* 331–362.

Catts, H. W., Fey, M. E., Zhang, X., & Tomblin, J. B. (2001). Estimating the risk of future reading difficulties in kindergarten children: A research-based model and its clinical implications. *Language, Speech, and Hearing Services in Schools, 32,* 38–50.

CBT/McGraw-Hill. (1990). *Early childhood system: Developing skills checklist*. Monterey, CA: Author.

Chaney, C. (1992). Language development, metalinguistic skills, and print awareness in 3-year-old children. *Applied Psycholinguistics, 13,* 485–514.

Chaney, C. (1994). Language development, metalinguistic awareness, and emergent literacy skills of 3-year-old children in relation to social class. *Applied Psycholinguistics, 15,* 371–394.

Chow, B. W., & McBride-Chang, C. (2003). Promoting language and literacy development through parent-child reading in Hong Kong preschoolers. *Early Education and Development, 14,* 233–248.

Christie, J. F., & Enz, B. (1992). The effects of literacy play interventions on preschoolers' play patterns and literacy development. *Early Education and Development, 3,* 205–220.

Crain-Thoreson, C., & Dale, P. S. (1999). Enhancing linguistic performance: Parents and teachers as book reading partners for children with language delays. *Topics in Early Childhood Special Education, 19,* 28–39.

Cronan, T. A., Cruz, S. G., Arriaga, R. I., & Sarkin, A. J. (1996). The effects of a community-based literacy program on young children's language and conceptual development. *American Journal of Community Psychology, 24,* 251–272.

Dale, P. S., Crain-Thoreson, C., Notari-Syverson, A., & Cole, K. (1996). Parent-child book reading as an intervention technique for young children with language delays. *Topics in Early Childhood Special Education, 16,* 213-235.

Dickinson, D. K., & McCabe, A. (2001). Bringing it all together: The multiple origins, skills, and environmental supports of early literacy. *Learning Disabilities Research & Practice, 16*(4), 186–202.

Dickinson, D. K., & Snow, C. E. (1987). Interrelationships among prereading and oral language skills in kindergarteners from two social classes. *Early Childhood Research Quarterly, 2,* 1–25.

Dunn, L. M., & Dunn, L. M. (1981). *Peabody picture vocabulary test–Revised*. Circle Pines, MN: American Guidance Service.

Ezell, H. K., & Justice, L. M. (2000). Increasing the print focus of shared reading interactions through observational learning. *American Journal of Speech-Language Pathology, 9,* 36–47.

Ezell, H. K., Justice, L. M., & Parsons, D. (2000). Enhancing the emergent literacy skills of preschoolers with communication disorders: A pilot investigation. *Child Language Teaching and Therapy, 16,* 121–140.

Fey, M. E. (2002, March). *Intervention research in child language disorders: Some problems and solutions*. Presented at the 32nd Annual Mid-South Conference on Communicative Disorders, Memphis, TN.

Fuchs, D., Fuchs, L. S., Thompson, A., Al Otaiba, S., Yen, L., Yang, N. J., et al. (2001). Is reading important in reading-readiness programs? A randomized field trial with teachers as program implementers. *Journal of Educational Psychology, 93,* 251–267.

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

Gardner, M. F. (1990). *Expressive one word picture vocabulary test–Revised*. Novato, CA: Academic Therapy Pub.

Goodman, Y. M. (1986). Children coming to know literacy. In W. H. Teale & E. Sulzby (Eds.), *Emergent literacy* (pp. 1–16). Norwood, NJ: Ablex.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology, 80,* 437–447.

Justice, L. M., Chow, S. M., Capellini, C., Flanigan, K., & Colton, S. (in press). Emergent literacy intervention for vulnerable preschoolers: Comparison of two approaches. *American Journal of Speech-Language Pathology.*

Justice, L. M., & Ezell, H. K. (2000). Enhancing children's print and word awareness through home-based parent intervention. *American Journal of Speech-Language Pathology, 9,* 257–269.

Justice, L. M., & Ezell, H. K. (2001). Written language awareness in preschool children from low-income households: A descriptive analysis. *Communication Disorders Quarterly, 22,* 123–134.

Justice, L. M., & Ezell, H. K. (2002). Use of storybook reading to increase print awareness in at-risk children. *American Journal of Speech-Language Pathology, 11,* 17–29.

Justice, L. M., Invernizzi, M. A., & Meier, J. D. (2002). Designing and implementing an early literacy screening protocol: Suggestions for the speech-language pathologist. *Language, Speech, and Hearing Services in Schools, 33,* 84–101.

Justice, L. M., Weber, S., Ezell, H. K., & Bakeman, R. (2002). A sequential analysis of children's responsiveness to parental references to print during shared storybook reading. *American Journal of Speech-Language Pathology, 11,* 30–40.

Kaderavek, J., & Justice, L. M. (2002). Shared storybook reading as an intervention context: Practices and potential pitfalls. *American Journal of Speech-Language Pathology, 11,* 395–406.

Kamhi, A. G. (1999). To use or not to use: Factors that influence the selection of new treatment approaches. *Language, Speech, and Hearing Services in Schools, 30,* 92–98.

Kirk, S. A., McCarthy, J. F., & Kirk, W. D. (1988). *Illlinois test of psycholinguistic abilities*. Urbana: University of Illinois Press.

Logemann, J. A. (2000, March). What is evidence-based practice and why should we care? *The ASHA Leader,* p. 3.

Lonigan, C. J., Anthony, J. L., Bloomfield, B. G., Dyer, S. M., & Samwel, C. S. (1999). Effects of two shared-reading interventions on emergent literacy skills of at-risk preschoolers. *Journal of Early Intervention, 22,* 306–322.

Lonigan, C. J., Burgess, S. R., Anthony, J. L., & Barker, T. A. (1998). Development of phonological sensitivity in 2- to 5-year old children. *Journal of Educational Psychology, 90,* 294–311.

Lonigan, C., Elber, J., & Johnson, S. (1998). Empirically supported interventions for children: An overview. *Journal of Clinical Child Psychology, 27,* 138–145.

Morrow, L., & Rand, M. (1991). Preparing the classroom environment to promote literacy during play. In J. F. Christie (Ed.), *Play and early literacy development* (pp. 141–165). Albany: State University of New York Press.

National Reading Panel. (2000). *A report of the national reading panel: Teaching children to read*. Washington, DC: National Institute of Child Health and Human Development.

Neuman, S. B. (1999). Books make a difference: A study of access to literacy. *Reading Research Quarterly, 34,* 286–311.

Neuman, S. B., & Roskos, K. (1990). Play, print, and purpose: Enriching play environments for literacy development. *The Reading Teacher, 44,* 214–221.

Neuman, S. B., & Roskos, K. (1991). Peers as literacy informants: A description of young children's literacy conversations in play. *Early Childhood Research Quarterly, 6,* 233–248.

Neuman, S. B., & Roskos, K. (1992). Literacy objects as cultural tools: Effects on children's literacy behaviors in play. *Reading Research Quarterly, 27,* 202–225.

Neuman, S. B., & Roskos, K. (1993). Access to print for children of poverty: Differential effects of adult mediation and literacy-enriched play settings on environmental and functional print tasks. *American Educational Research Journal, 30,* 95–122.

Notari-Syverson, A., O'Connor, R., & Vadasy, P. F. (1998). *Ladders to literacy: A preschool activity book*. Baltimore: Brookes.

O'Connor, R. E. (1999). Teachers learning Ladders to Literacy. *Learning Disabilities Research and Practice, 14,* 203–214.

O'Connor, R. E., & Jenkins, J. R. (1999). Prediction of reading disabilities in kindergarten and first grade. *Scientific Studies of Reading, 3,* 159–197.

O'Connor, R. E., Jenkins, J. R., Leicester, N., & Slocum, T. A. (1993). Teaching phonological awareness to young children with learning disabilities. *Exceptional Children, 59,* 532–546.

O'Connor, R. E., Notari-Syverson, A., & Vadasy, P. (1996). Ladders to Literacy: The effects of teacher-led phonological activities for kindergarten children with and without disabilities. *Exceptional Children, 63,* 117–130.

O'Connor, R. E., Notari-Syverson, A., & Vadasy, P. (1998a). First-grade effects of teacher-led phonological activities in kindergarten for children with mild disabilities: A follow-up study. *Learning Disabilities Research & Practice, 13,* 43–52.

O'Connor, R. E., Notari-Syverson, A., & Vadasy, P. (1998b). *Ladders to literacy: A kindergarten activity book*. Baltimore: Brookes.

Psychological Corporation. (1989). *The Stanford achievement test–Eighth edition*. Orlando, FL: Harcourt Brace Jovanovich.

Rack, J. P., Snowling, M. J., & Olson, R. K. (1992). The nonword reading deficit in developmental dyslexia: A review. *Reading Research Quarterly, 27*(1), 29–53.

Robey, R., & Dalebout, S. D. (1998). A tutorial on conducting meta-analyses of clinical outcome research. *Journal of Speech, Language, and Hearing Research, 41,* 1227–1241.

Roskos, K. (1988). Literacy at work and play. *The Reading Teacher, 41,* 562–566.

Saint-Laurent, L., Giasson, J., & Couture, C. (1998). Emergent literacy and intellectual disabilities. *Journal of Early Intervention, 21,* 267–281.

Scarborough, H. S. (1998). Early identification of children at risk for reading difficulties: Phonological awareness and some other promising predictors. In B. K. Shapiro, P. J. Accardo, & A. J. Capute (Eds.), *Specific reading disability: A view of the spectrum* (pp. 75–199). Timonium, MD: York Press.

Schrader, C. T. (1990). Symbolic play as a curricular tool for early literacy development. *Early Childhood Research Quarterly, 5,* 79–103.

Snow, C., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

Stanovich, K. E. (2000). *Progress in understanding reading*. New York: Guilford Press.

Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (1994). Longitudinal studies of phonological processing and reading. *Journal of Learning Disabilities, 27,* 276–286.

Tunmer, W. E., Bowey, J. A., & Grieve, R. (1983). The development of young children's awareness of the word as a unit of spoken language. *Journal of Psycholinguistic Research, 12,* 567–594.

Uhry, J. K., & Shepherd, M. J. (1997). Teaching phonological recoding to young children with phonological processing deficits: The effect on sight-vocabulary acquisition. *Learning Disability Quarterly, 20,* 104–125.

Valdez-Menchaca, M. C., & Whitehurst, G. J. (1992). Accelerating language development through picture book reading: A systematic extension to Mexican day care. *Developmental Psychology, 28,* 1106–1114.

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010

van Kleeck, A. (1998). Preliteracy domains and stages: Laying the foundations for beginning reading. *Journal of Children's Communication Development, 20*(1), 33–51.

van Kleeck, A., Gillam, R. B., & McFadden, T. U. (1998). A study of classroom-based phonological awareness training for preschoolers with speech and/or language disorders. *American Journal of Speech-Language Pathology, 7,* 65–76.

Vukelich, C. (1994). Effects of play interventions on young children's reading of environmental print. *Early Childhood Research Quarterly, 9,* 153–170.

Wagner, R., & Torgesen, J. (1987). The nature of phonological processing and its causal role in the acquisition of reading skills. *Psychological Bulletin, 101,* 192–212.

Watkins, R. V., & Bunce, B. H. (1996). Natural literacy: Theory and practice for preschool intervention programs. *Topics in Early Childhood Special Education, 16,* 191–212.

Whitehurst, G. J., Arnold, D. S., Epstein, J. N., Angell, A. L., Smith, M., & Fiscehl, J. E. (1994). A picture book reading intervention in day care and home for children from low-income families. *Developmental Psychology, 30,* 679–689.

Whitehurst, G. J., Epstein, J. N., Angell, A. L., Payne, A. C., Crone, D. A., & Fischel, J. E. (1994). Outcomes of an emergent literacy intervention in Head Start. *Journal of Educational Psychology, 86,* 542–555.

Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., et al. (1988). Accelerating language development through picture book reading. *Developmental Psychology, 24,* 552–559.

Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69,* 848–872.

Whitehurst, G. J., Zevenbergen, A. A., Crone, D. A. Schultz, M. D., Velting, O. N., & Fischel, J. E. (1999). Outcomes of an emergent literacy intervention from Head Start through second grade. *Journal of Educational Psychology, 91,* 261–272.

Woodcock, R. W. (1987). *Woodcock reading mastery tests–Revised*. Circle Pines, MN: American Guidance Service.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson Tests of Cognitive Abilities III*. Itasca, IL: Riverside.

Downloaded from http://tec.sagepub.com at HUNTER COLLEGE LIB on May 12, 2010