10

Preschool-Based Prevention of Reading Disability

Realities versus Possibilities

DAVID K. DICKINSON

ALLYSSA MCCABE

NANCY CLARK -CHIARELLI

In this chapter, we address the topic of learning disabilities from a prevention perspective, highlighting the importance of early childhood classrooms as settings that have the potential to reduce the incidence of learning disabilities. This approach is consistent with that articulated by the National Research Council in *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, 1998), which highlighted the centrality of high-quality early childhood programs in the prevention of reading difficulties. First, we set the stage by reviewing trends in the incidence of learning disabilities. We emphasize the centrality of language-related issues and the heavy overrepresentation of children from low-income and non-English-speaking homes among the learning disabled. Although some of these children no doubt suffer from significant biologically based impairments, we argue that, if provided strong support for language starting in the preschool years and continuing into the primary grades, many need never be identified as being learning disabled. Drawing on our own work, we discuss the

potential beneficial effects of preschool classrooms, but report data that point to the shortcomings in language support in far too many preschool classrooms. Such findings, we suggest, may help explain some of the current patterns of overrepresentation of children from low-income and non-English-speaking homes among the ranks of the learning disabled. We conclude with data that hold promise for the value of professional development as one means to enhance teachers' classroom support for language and early literacy.

THE PROBLEMATIC REALITY

Reading difficulties are numerous and increasing in frequency. Furthermore, much evidence suggests that they begin early in life and that many are preventable in theory. In the 1999-2000 school year, over half (50.5%) of the students receiving special education services in this country were categorized as having specific learning disabilities (U.S. Department of Education, 2002). This

translates into 2,871,966 students, an estimated 90% of whom are identified as having reading difficulties (Lyon, 1995). The etiology of many such cases is not due to hearing impairment, Down syndrome, autism, or any other known physical source, so many cases may well be preventable. These large numbers fuel concerns that growing numbers of children are failing at one of life's most important tasks-learning to read.

Whereas these estimates document the number of students *identified* as learning disabled, other sources suggest that as many as 20% of all children experience significant 9ifficulty learning to read (American Speech-language-Hearing Association, 2002; Shaywitz, Escobar, Shaywitz, Fletcher, & Makuch, 1992), and another 20% do not read fluently enough to read for pleasure (Moats, 1999, 2000). Recent results from the 2000 National Assessment of Educational Progress (NAEP) confirm that there is a problem, because more than one-third (37%) of fourth graders are considered to be below a basic level (National Center for Education Statistics, 2001). When these results are examined relative to race/ethnicity, the picture becomes even more dismal. There is a vast discrepancy between the achievement of white, non-Hispanic students and their black and Hispanic peers. Whereas the 2000 data reveal that 40% of white students are at or above the proficient achievement level, only 12% of black students and 16% of Hispanic students are at these levels. Sadly, this gap in performance is not a new phenomenon, because this profile of differential performance levels has shown no change since 1992 (National Center for Education Statistics, 2001). In short, large numbers of children are not able to read at a level considered to be proficient--a finding that has helped make literacy a national priority.

These achievement gaps have early origins in the type of language directed to children of different socioeconomic classes. Hart and Risley (1995) amply documented extremely large and stable differences in the amount and quality of oral language directed to children of different social classes, as well as the long-term impact of such differ-

ences. For example, children of professional families hear almost three times as many utterances per hour and over twice as many different words per hour as do children of parents on welfare. Moreover, whereas more than 80% of the feedback to 13- to 18-month-old children of professional families was positive, almost 80% of the feedback to welfare peers was negative.

Particularly disheartening is the fact that impoverished early linguistic experience results in limited early literacy skills, which in turn often translate into persistent deficits. Research has shown strong evidence of stability in relative levels of reading performance between kindergarten and seventh grade (Tabors, Snow, & Dickinson, 2001), and between first grade and the end of high school (Cunningham & Stanovich, 1997). Children who are identified as being poor readers in the early grades remain poor readers throughout their school careers Juel, 1988; Shaywitz et al., 1992; Torgesen, 1998). Moreover, once children fall behind, most of the compensatory education they receive has negligible results (McGill-Franzen & Allington, 1991). In fact, after children reach grade 3, reading difficulties are far less amenable to remediation (Good, Simmons, & Smith, 1998). Some have argued that because the success rate of remediating reading difficulties is so low, identification and intervention must start early (National Reading Panel, 2000).

RESPONDING TO THE CHALLENGES

Although research has identified a range of daunting problems, there is hope. Several strands of work suggest that the vast majority of children who show signs of early reading difficulty are capable of reading at grade-appropriate levels if they receive effective early reading instruction (Clay, 1985; Iversen & Tunmer, 1993; Pinnell, 1989; Snow et al., 1998; Wasik & Slavin, 1993). These findings support the position suggested by Clay (1987), and by Vellutino and Scanlon (1998), among others, that deficiencies in instruction, rather than cognition, may account for the prevalence of reading difficulties in our schools. In fact,

recent estimates suggest that as few as 1.5-6% of children are not amenable to remediation in the early grades (Torgesen, 2000; Vellutino & Scanlon, 1998). This very small group of children displays marked differences in phonological-processing capacities (Foorman & Torgesen, 2001; McCardle, Scarborough, & Catts, 2001). These differences are assumed to be organic and inherently neurobiological in nature, and to require long-term intervention. One theory is that such children have a core deficit localized to phonological processing, and that this deficiency is modularized, so that skills in other language areas are not able to compensate (McCardle et al., 2001; Siegel, 1998; Stanovich, 1988; Stanovich & Siegel, 1994).

Restricting Our Focus

We do not focus on those children who have neurobiological deficiencies associated with phonological processing; rather, we are concerned with the far larger group of children who are experiencing literacy problems that reflect deficiencies in instruction and limitations in language experience. Our concern is for those children with more generalized limitations in language skills. Catts, Fey, Zhang, and Tomblin (1999) estimate that as many as 70% of struggling readers with phonological-processing difficulties also evidence deficits in higher level areas of language development, such as vocabulary, syntax, and narrative development. A substantial body of research clearly substantiates that multiple areas of language are also highly predictive of reading achievement: *(1) vocabulary* (e.g., Anderson & Freebody, 1981; Bishop & Adams, 1990; Dickinson & McCabe, 2001; Dickinson, McCabe, Anastasopoulos, Peisner-Feingerg, & Poe, 2003; Hart & Risley, 1995; Scarborough, 1989; Stahl & Fairbanks, 1986; Walker, Greenwood, Hart, & Carta, 1994; see Whitehurst & Lonigan, 2001, for review); *(2) syntax* (Dickinson, 1987; Scarborough, 1990, 1991; see Scarborough, 2001, for review); and (3) *discourse* (Beals, 2001; Bishop & Edmundson, 1987; Feagans & Applebaum, 1986; Fazio, Naremore, & Connell, 1996; Menyuk et al., 1991; see Vernon

Feagans, Hammer, Miccio, & Manlove, 2001, for review).

The Case for the Importance of Strong Preschool Classrooms

A large body of accumulated research points to the conclusion that childcare experiences can have positive short- and long-term impact on children's development (Barnett, 1995, 2001). This conclusion is based on correlational and experimental research, and converging results suggest that the quality of teacher-child relationships and conversations can make particularly important contributions to children's growth.

Classroom Quality Is Important

Results of a number of correlational studies point to the importance of providing children high-quality preschool experiences. The ongoing National Institute of Child Health and Human Development (NICHD; 2000, 2002) study of the impact of childcare on children's development provides a powerful demonstration of the impact of variations in quality of care on children's language, cognitive, and emotional development. This study followed children from infancy to school entry and included 1,075 randomly selected children age 54 months. This study (2002) reported that, after taking into account family background factors, higher quality, center-based programs benefit children's language, cognitive, and social development at the end of preschool. The impact of variability in classroom quality on children's language and cognitive development was found to be reasonably large when compared to the effects of two well-established environmental factors that influence development, quality of parenting, and poverty (National Institute of Child Health and Human Development, 2002). Similarly, results from the Cost, Quality, and Outcomes Study also found beneficial effects on language, literacy, and mathematical achievement at the end of both preschool (Peisner-Feinberg & Burchinal, 1997; Peisner-Feinberg et al., 2001) and kindergarten. Similarly, Burchinal, Roberts, Hooper, and

Zeisel (2000) found a relationship between higher levels of childcare quality in the first 3 years of life and better performance on child outcomes (including cognitive, language, and communication measures).

The correlational evidence that points to the importance of the quality of preschool classrooms is bolstered by findings of two long-running experimental intervention studies. The Abecedarian project, a random-assignment, experimental intervention, provided intensive services to children throughout their preschool years and continued to provide some support for children in the elementary school years. Long-term follow-up evaluations of this intervention found evidence of beneficial effects of the preschool portion of this intervention as late as early adulthood (Campbell & Ramey, 1994, 1995). Long-term follow-up studies of the impact of the High/Scope Perry Preschool Study, another random-assignment intervention (Schweinhart, Barnes, Weikart, Barnett, & Epstein, 1993), also point to the potential long-term benefits of high-quality preschool on children's development.

Support for Language Is Key

Results from the NICHD and the Cost, Quality, and Outcomes Study suggest that high-quality teacher-child interactions may be important for improved outcomes for children, but these studies did not include a clear index of the quality of verbal interactions that children experienced. Several studies now provide converging evidence suggesting that the quality of teacher-child conversations may be of pivotal importance. One of the earliest major studies of the impact of preschool on children's language development, a large study carried out in Bermuda, examined a variety of features of classrooms, including measures of the nature of language that children experienced. A finding of particular importance to us is that children's language growth was significantly associated with the amount of time they spent talking with and listening to adults rather than children (McCartney, 1984). The most beneficial type of adult talk, called "representational" talk, commu-

nicated information and was not used to control children's behavior.

Further reason to believe that teacher-child interaction may be of considerable importance in supporting the language growth of preschool-age children comes from Huttenlocher, Vasilyeva, Cymerman, and Levine (2002), who examine the growth of 4-year-old children's syntactic skills over the course of 9 months. Huttenlocher et al. examined children's syntactic skills in the fall and spring, and also gathered information about the nature of the language children experienced in their preschool classrooms. In the fall, they found positive correlations between maternal language use and children's syntactic development, with these differences reflecting the social class background of the mothers (i.e., children from more advantaged homes displayed stronger skills). However, in their spring analyses of factors that predicted children's growth in syntactic skills, Huttenlocher et al. first examined the impact of the complexity of mothers' language use on children's syntactic development and found a positive association. Once the impact of teacher input was taken into consideration, it strongly predicted the fall-to-spring growth in syntax. Thus, classroom input can do much to bolster the syntactic skills of children most in need of support.

Myriad early interventions have been developed to improve language and literacy input to preschool and kindergarten children. One approach instructs teachers in techniques of reading interactively one-on-one and with small groups of children (Whitehurst et al., 1994). Some programs emphasize training in phonological awareness particularly (Stahl, 2001). Others focus on the use of high-quality children's literature in preschool, kindergarten, and early elementary school classrooms (Morrow & Gambrell, 2001). One widely used approach based on research on invented and developmental spelling involves having teachers engage in numerous word study activities, that are game-like in format but substantive in content (Bear, Invernizzi, Templeton, & Johnston, 1996). Numerous pullout programs have been implemented, with specific components dovetailed to meet

each child's needs (e.g., Vellutino & Scanlon, 2001).

These myriad programs are by no means unrelated to each other. For example, phonological awareness is a key aspect of word study {Bear et al., 1996}, and most such programs would be receptive to the use of good children's literature. All such emergent literacy programs involve the incorporation of large amounts of nurturant teacher verbal interaction with children, so our focus is on this common component.

Home-School Study of Language and Literacy Development

Our own work provides additional documentation of the potential contributions of classrooms to the long-term literacy development of young children from low-income homes (Dickinson & Tabors, 2001, 2002). During the preschool years, researchers visited children in their homes and classrooms, interviewed parents and teachers, and audiotaped conversations. In both homes and classrooms, mealtimes and book reading were taped, and in classrooms, teachers and children were recorded throughout the day. In the spring, kindergarten children's language and literacy skills were assessed {see Dickinson & Tabors, 2001, for details}. They continued to assess children's reading and language abilities throughout the elementary grades and into middle school, and found very strong correlations between assessments of children's skills in kindergarten and end-of-seventh-grade assessments, with seventh-grade reading comprehension correlating with kindergarten receptive vocabulary *(r = .71; p < .001)* and storytelling ability *(r = .45, p < .01)*. These findings add to existing reports of the long-term stability of literacy skills (Baydar, Brooks-Gunn, & Furstenberg, 1993; Hanson, & Farrell, 1995; Sameroff, Seifer, Baldwin, & Baldwin, 1993; Whitehurst & Lonigan, 2001). For example, Cunningham and Stanovich (1997), found that first-grade reading ability was a strong predictor of a variety of 11th grade measures of reading ability, even when measures of cognitive ability were taken into account.

When the children in this study were 4

years old, they and the lead teacher in their classroom were audiotaped for a day. These tapes were transcribed and coded in various ways. One analysis examined the impact of the quality of conversations during book reading on children in the first cohort of 4year-olds in this study. Dickinson and Smith (1994) found that during book readings, the frequency of conversations that were analytic in nature {i.e., children discussed characters' motivations, the reasons for events, and the meanings of words} helped to predict children's vocabulary scores at the end of kindergarten, after they controlled for home factors and some classroom variables. These results were replicated in analyses that included the second cohort of children {Dickinson, 2001a}.

In addition to book reading, conversations during meal-, free-play, and large group times were transcribed and coded. Two composite measures of the quality of teacher-child discourse were created from empirically and conceptually related variables. One measure examined the quality of extended discourse and included variables such as the extent to which teachers remained engaged in extended conversations with children during free play, teachers' provision of information during group times, and the frequency with which they engaged children in analytic conversations about books. A second measure included the variety of rare words used throughout the day. These measures were included in regression analyses to predict children's end-of-kindergarten levels of receptive vocabulary and early literacy. After controlling for home background variables, Dickinson (200lb) found evidence of sizable effects of classroom experiences on the end-of-kindergarten measures. The most powerful classroom predictor was the frequency and content of extended conversations between teachers and children throughout the day. The extended teacher discourse variable included teachers' efforts to engage children in analytic thinking about stories while reading books, conversations that provided new information during group times, and efforts to extend one-to-one conversations during choice time (Dickinson, 2001b). Other important variables included use of

varied vocabulary throughout the day (mealtimes, choice time, book reading, group times), evidence of a curriculum that encouraged writing, and efforts to provide new information and activities continually throughout the year. These classroom variables, in combination with home controls, accounted for 49% of the variance in children's end-of-kindergarten receptive vocabulary scores. Furthermore, the variance in children's kindergarten levels of performance at the beginning of their schooling experiences accounted for significant variance in growth trajectories at the end of fourth grade (Roach & Snow, 2000).

We conclude that children's literacy success in the early years plays a major role in determining their long-term literacy development. More importantly, the quality of preschool experiences can play an important role in helping children from less advantaged backgrounds enter school in a position to move forward successfully with literacy learning.

Typical Levels of Support for Development in Preschool Classrooms

Given that preschool classrooms have the potential to support later development, we are led to ask whether classrooms typically provide the type of support found to be beneficial to children. We address this question by examining several prior studies and by discussing new data of our own. Most indications are that far too few children receive the type of support for language and literacy development that is associated with optimal growth.

Considerable evidence points to deficiencies in the quality of support for language in many preschool classrooms. Nearly two decades ago, Tizard and Hughes (1984) compared children's home and school language experiences in British infant schools, and found that schools often were less rich language environments for working-class children. Compared with the home, adult-child conversations in school settings tended to occur less often and to be shorter. In classrooms, children tended to be less curious and to engage in *less* complex, *less* cognitively demanding conversations than

they did at home. Add to this regrettable set of findings the fact that children have to share teacher input with other children, and that they spend far less time with teachers than with their parents, and it becomes clear that preschools have not always provided the kind of language stimulation children of poverty require.

A major descriptive study of 119 classrooms across the United States was carried out in the early 1990s (Layzer, Goodson, & Moss, 1993). For this study, researchers spent a week observing interactions. They found that lead teachers engaged in one-to-one or small-group interactions with children 26% of the time, slightly less than the time (28%) when they were coded as interacting with no children at all. The extent to which teachers attended to individual children varied by setting. When the researchers considered classroom life from the point of view of children, they found that children quite often had no opportunities for individual contact with a teacher. In 20% of the classrooms observed, half or more of the children had no opportunities for individual attention from an adult during a day (Layzer et al., 1993).

Another study that examined language practices carefully was carried out in university-affiliated preschool classrooms, a location in which one would anticipate finding particularly strong classroom support for children's development. These researchers noted the frequency of interactions between teachers and children when they were in close proximity (3 feet or less apart) and found that 81 % of the time, teachers did not talk to children they were near (Wilcox-Hertzog & Kontos, 1998).

Similar descriptive data emerged from the Home-School Study of Language and Literacy development (Snow, Tabors, & Dickinson, 2001). Tapes that the children made as they went about their daily lives were coded and analyzed to determine the amount of time that children engaged in conversation with different partners. Consistent findings emerged when children were- 3 and 4 years old, even though they were typically in different classrooms. The 52 three-year-olds who were observed during free-play in their classrooms, on average, spent 21 % of their

time interacting with a teacher. When they were age 4, the 75 children who were observed spent only 17% of their time interacting with a teacher (Dickinson, 2001c).

Snow et al. (2001) also examined the transcripts of teacher-child dialogue using an automated system that allowed them to determine how often teachers used different words. They then created a "filter" for these words by putting in a list of words generally known by children (Chall & Dale, 1995) and adding common proper nouns. This "filter" was then used to sort through all the words spoken by teachers and children, resulting in a set of what Snow et al. called "rare words." Rare words were not necessarily exotic, including items such as *actually, assure, chores, ignore, punishment, ramp,* and *wisdom.* Because some of these words were used more than once, we determined how many different rare words were used. When the children were age 3, the authors found that, on average, during the 15 minutes of transcribed and analyzed free play, teachers used 12 rare words and 8 different word types; during the 15 minutes of analyzed large-group times, teachers used 13 different rare words and 8 different word types. When these same children were age 4 and in different classrooms, during free play, their teachers used 14 rare words and 9 different word types, and during large-group times, 15 words and 8 different word types. Given the huge need for vocabulary learning among many children from low-income and non-English-speaking homes, such limited variety of vocabulary exposure is problematic.

In summary, the relatively few intensive analyses of teacher-child interactions during the preschool day yield converging evidence that, in many preschools, children have relatively little access to adults for personalized conversations, in spite of the fact that the quality of conversations between teachers and children in the preschool years may play an important role in supporting growth during a critical period of development. Available data also suggest that when teachers are able to engage individuals or small groups in conversations, these interactions tend to include a relatively low density of varied vocabulary. We next report addi-

tional data that reveal patterns of teacher-child interaction, examined in terms of characteristics that studies of parent-child interaction have found to be valuable. First, we briefly discuss some of the rich work on parent-child interaction, then we return to additional consideration of teacher-child interaction.

The Role and Nature of Input: Lessons from Studies of Parent-Child Conversations

Extensive research examining the impact of adult-directed speech on multiple aspects of children's language development has demonstrated the critical importance of adult input for children's linguistic growth. From this rich research, we highlight two strands: research that examines adult conversational styles, and the impact of settings on talk.

Adult Styles of Talk

In primarily middle-class samples, parents have repeatedly been demonstrated to display stable individual differences in the language they direct to their children (Olsen-Fulero, 1982). Some parents produce more *conversation-eliciting,* or *referential language,* which means that they frequently ask questions, describe objects, request and reinforce names for things, and affirm and incorporate children's responses. Other parents produce more of what has been termed *directive,* or *expressive language,* which includes fewer nouns, more social expressions ("Say please"), more references to people, more commands and directives of the child's behavior, and more frequent negations of the child's actions (Della Corte, Benedict, & Klein, 1983; Furrow & Nelson, 1984; Goldfield, 1987; Hampson & Nelson, 1993; Nelson, 1973; see also van Kleeck, Chapter 9, this volume).

Talk to very young children is focused on the here and now, regardless of whether that here and now involves objects (referential talk) or behavior (expressive talk). As children pass the age of 2 years, however, parents turn their talk at least some of the time to events in the past. Fivush and Fromhoff (1988) differentiated between *elaborative* (talkative) and *repetitive* (less talkative) par-

ents. In a parallel investigation, McCabe and Peterson (1991) found that some parents extended topics of conversation about past events, whereas others switched topics more frequently; topic-extending input predicted more complex child narration at 3 years.

The Effect of Adult Conversational Styles on Children

The variability in how adults talk with young children has important implications for children's early language acquisition. Conversation-eliciting, referential talk is positively associated with measures of children's .advanced early language acquisition (Barnes, Gutfreund, Satterly, & Wells, 1983; Furrow, Nelson, & Benedict, 1979; Hoff-Ginsberg, 1986; Nelson, 1981; Snow, Perlman, & Nathan, 1987; Tomasello & Farrar, 1986), whereas elaborative, topic-extending talk about the past predicts narrative prowess (McCabe & Peterson, 1991; Peterson, Jesso, & McCabe, 1999). Similarly, the directive style has been negatively associated with certain measures of children's early language learning (Barnes et al., 1983; Hampson & Nelson, 1993; Nelson, 1981; Newport, Gleitman, & Gleitman, 1977), whereas the topic-switching style of narration has been negatively correlated with children's narrative skill (McCabe & Peterson, 1991).

These adult styles of input to children can be changed, and children's language development may reflect parental adoption of new ways of conversing. For example, improved parental input about the past has been demonstrated to cause stronger child oral-language skills (Peterson et al., 1999). When parents were randomly assigned to an intervention group that was asked to engage in topic-extending talk about the past with their 3-year-olds for a year, their children showed significant vocabulary improvement right away and, a year later, overall improvement in narrative skill compared to children in a control group.

Setting Effects

Although there is considerable evidence that adults have distinctive styles of conversing with children, it also is apparent that set

tings have an impact on adult conversational styles. Note that, by "setting," we refer to activities co-constructed by adult and child participants, in which there is a common organizing focus for activity. A given setting may differ considerably in external features as long as it retains the same core-organizing focus and similar roles for participants (e.g., adult-child book reading may be done at home in bed or on a bus, and may involve varied kinds of print, including fiction and nonfiction books, catalogues, and comic books). It is important to consider setting when examining discourse because of its demonstrated impact on conversations.

Haden and Fivush (1996) found no association between mothers' conversational behaviors exhibited in free play and in talking about the past with their children, suggesting differences as a function of setting. Similarly, although Hoff-Ginsberg (1991) found social-class differences in maternal conversational style, she also found setting effects that were strong and significant. Mothers' child-directed speech during reading had the greatest lexical diversity, the greatest syntactic complexity, and the highest rate of topic-continuing replies, as well as being one of the two highest settings in terms of the overall rate of maternal speech. Toy play, on the other hand, had the highest rate of directives and the lowest rate of conversation-eliciting utterances. Mealtime was lower than all other settings in the rate of maternal speech and highest, along with dressing, in the rate of conversation-eliciting utterances. Maternal speech during dressing had less lexical diversity than all other contexts.

Evidence of the impact of setting on parental conversations is important, because it points to the need to identify settings in which teachers should be helped to make special efforts to enhance the use of the type of extended cognitively rich talk that most benefits children's language and literacy development. For example, the fact that adults spontaneously tend to find mealtimes a setting that is conducive to eliciting information from children suggests that staff should make special efforts to ensure that children have adults available to converse with during mealtimes, and that adults recognize that it is their obligation to use

such times as opportunities for extended conversations.

In summary, work on parents' interactions with children establishes that adults have different ways of talking to children, but that these approaches can vary by setting and are malleable. That variation in adults' conversational styles affects children's learning provides further reason to ensure that teachers provide children with high-quality conversational experiences throughout the day.

EXAMINING MULTIPLE DIMENSIONS OF CLASSROOM DISCOURSE

Prior studies of mother-child and classroom discourse suggest that a number of features of teacher-child discourse are likely to be beneficial to children~ Children are likely to benefit when adults (1) build on and extend what they are saying, (2) engage children in talk about cognitively rich topics (e.g., non-present topics, hypothetical or explanatory talk, talk about language), (3) use varied vocabulary, and (4) sustain a conversation about a single topic. Furthermore, based on prior work (Dickinson, 1991, 1994, 2001b, 200le) and the research on parents, it is apparent that conversations are influenced by features of the classroom setting.

Our Approach

In an effort to capture these multiple dimensions that affect conversations, a time-sampling tool, the Teacher-Child Verbal Interaction Profile (TCVI; Dickinson, Howard, & Haines, 1998) was developed.(1) Using this tool, researchers observed teachers for 30-second intervals and, in the following 30 seconds, coded that interaction. The dimensions they coded include the following:

1. *Teacher engagement:* Teacher is present and engaged or teacher is not engaged. A teacher was coded as being "engaged" if she interacted with one or more children either through verbal means or by indicating through eye gaze or body posture that she was listening or observing children. Teachers who were physically ab-

sent, talking with other adults, or emotionally or physically unavailable were coded as "not engaged."
2. *Physical position:* Teacher is sitting, standing, or moving.
3. *Content:* Nonpresent talk, control, ongoing activities, preferences and feelings, literacy and math, general knowledge.
4. *Vocabulary:* Talk about the meanings of words or intentional efforts to define words.
5. *Conversational balance:* Teacher dominates the conversation, or the conversation is balanced between teacher and children, and/or a child sets the topic.
6. *Amount of teacher talk:* Minimal talk (5 seconds or less per interval) or more talk.
7. *Topic development:* A topic is established and pursued in a manner that adds additional details or depth (e.g., teacher elicits follow-up information about a birthday party).
8. *Activity:* Art, sand/water, writing/dictation, dramatic play/puppets, manipulation of materials/puzzle solving, science activity, book reading, blocks, computer games.

Here, we sample selectively from this rich database to provide an additional portrait of the structure of conversations in preschool classrooms.

Our data come from observations of 61 lead teachers, nearly all of whom were working in Head Start classrooms, 71 % of whom had less than a bachelor's degree. Ten of these teachers were observed two different times, yielding 71 observations. During each visit, we observed teachers for at least sixteen 30-second intervals in one of two settings: mealtime or free play. Coding began once the observer determined that the activity had officially started and continued until the activity ended, or until the requisite number of intervals was obtained. Reliability of coding TCVI was assessed separately for each dimension. When dichotomous decisions were involved, percent agreement was used to assess reliability, whereas when data were coded with a system with more than two classifications, Cohen's kappa was employed. Agreement about dichotomous codes was 83% or bet-

ter, and Cohen's kappa scores were .85 or higher.

Because findings regarding conversation often differ by setting, we analyzed our data by setting: free play and mealtime. These settings are similar in that the teacher tends not to have a formal agenda for instruction, so that the kind of individual, conversational give and take known to aid children's language acquisition can occur.

Profile of Classroom Conversations in Preschools

The TCVI data provide a profile of multiple dimensions of conversations in preschools. In general, they suggest that along several dimensions, good teachers (defined for current purposes as the top quartile as defined by the TCVI measures) are effectively engaging children, but that the lowest quartile of teachers is much less effective.

Optimal Patterns of Teacher-Child Classroom Conversation

Ideally, teachers seek every possible opportunity to become *engaged* with individual children in their classroom. The top quartile of teachers in our sample did so; they were always engaged (see Table 10.1). Earlier, we noted that research on mother-child interaction has made eminently clear the fact that children benefit from engaging in *balanced,* back-and-forth conversations in which both partners have turns; that is, the teacher cannot dominate the talk. We coded conversations as being "balanced" if children had a significant role in the conversation.(2) The

top 25% of teachers engaged in such conversations the majority of the time, with mealtime showing special strength (67% balanced talk; see Table 10.2). In addition to having balanced, back-and-forth interactions, prior research indicates that it is most helpful for children to be engaged in conversations that stay on and *develop one topic.* Our observations reveal that sticking to and deepening a topic can be a more difficult task than one might expect, because the busy world of preschool occasions many interruptions; even the best teachers in our sample managed to do so only a little over 20% of the time (see Table 10.2).

Of course, it is not simply the structure of conversations that is important. Children also need to engage in conversations that are interesting and cognitively enriching. We coded the extent to which conversations dealt with intellectually rich content, for example, noting whether conversations involved talk about literacy, word meanings, and topics that deepened children's general world knowledge, and we called such conversations *decontextualized talk* (see Table 10.3). Decontextualized talk did not include talk designed to control children's behavior and talk that simply accompanied or described ongoing activities. Stronger teachers engaged in decontextualized talk in at least 36% of the free-play intervals and 50% of the mealtime intervals.

One value of talk about interesting, cognitively rich topics is that such conversations can include new information as teachers converse about topics connected to the classroom's curriculum. Topics of this nature were coded as "academic talk." Among the

TABLE 10.1. Teacher Engagement and Amount of Talk during 3-Second Intervals during Free Play and Meal Time in Preschool Classrooms

	Mean	SD	Maximum	75%ile	25%ile	Minimum
Teacher engaged						
Free play	93	09	100	100	91	55
Meal time	93	09	100	100	88	67
Minimal talk						
Free play	29	19	80	36	13	0
Meal time	42	25	88	60	20	0

TABLE 10.2. Conversational Structure during 30-Second Intervals in Two Classroom Settings

	Mean	SD	Maximum	75%ile	25%ile	Minimum
Teacher-child balance						
Free play	41	20	90	58	25	4
Meal time	49	22	100	67	33	8
Developed topic						
Free play	14	10	38	22	6	0
Meal time	19	17	63	29	0	0

Note. Entries are percent of *time*

top quartile of teachers, such conversational topics were seen in 18 % of the intervals coded during free play (see Table 10.3). Talk about past and future events (i.e., "nonpresent talk") and also examples of decontextualized talk were more common, especially during mealtimes, when they were found in 38% of the intervals of the top-quartile teachers. Such talk may lead to use of varied vocabulary and explicit talk about words and their meanings, but even among the teachers displaying the strongest support for language, we found that explicit discussion of vocabulary was rare (see Table 10.3).

The Biggest Challenge: Lowest Quartile Patterns of Classroom Conversation

Whereas teachers with the strongest conversational skills displayed a number of areas of strength, those in the bottom quartile, as indexed by the data for the TCVI, had weaknesses in many areas. Although they were coded as being "engaged" in 88% of the mealtime intervals observed, this engagement was coded as being "minimal" (i.e., less than 5 seconds in duration) in 20% of the intervals. Thus, they were *actively* engaged in interactions with children during only about two-thirds of the intervals. Typically, during such uninvolved intervals, teachers simply sat quietly and ate, giving no indication of being involved with the children sitting around them. During free play, the bottom-quartile teachers were actively engaged in verbal interactions during only about three-quarters of the intervals coded (see Table 10.1).

Furthermore, the bottom-quartile group showed discouraging patterns in the structure and content of their conversations. Teachers in the lowest quartile dominated

TABLE 10.3. Conversational Content during 30-Second Intervals in Two Settings

	Mean	SD	Maximum	75%ile	25%ile	Minimum
New vocabulary						
Free play	1	2	0.9	3	0	0
Meal time	0.9	3	13	0	0	0
Academic talk(a)						
Free play	12	9	40	18	5	0
Meal time	3	7	31	5	0	0
Nonpresent talk(b)						
Free play	14	11	45	20	6	0
Meal time	22	19	67	38	7	0
Decontextualized talk(c)						
Free play	27	16	66	36	18	0
Meal time	34	21	80	50	17	0

Note. Entries are percent of *time*.
(a)Includes talk about language, mathematics, and general knowledge.
(b)Includes talk about past and future events.
(c)Includes "academic talk," "nonpresent," pretending, and personal preferences and feelings.

the conversation three-quarters of the time during free play, and two-thirds of the time during mealtimes (see Table 10.2). Thirty seconds is a long time for a child to be a mute audience for a talkative teacher. The extent to which such interactions represent important missed opportunities is particularly evident if one considers how few opportunities a given child has to converse with a teacher in the course of a day. The bleak picture continues when we discover that, among this bottom quartile of teachers, conversations that extend a topic were found in 6-7% or less of the observed intervals and contained decontextualized talk 18% or less of the time (see Table 10.2.).

Talk about Vocabulary

Across all teachers, there was almost no explicit talk about language. We found evidence that teachers were making intentional efforts to define or talk about the meanings of words in less than 1 % of the free-play and mealtime intervals (see Table 10.3). When we looked across all of the observed intervals within a classroom, in only 8% of free-play conversations and 11 % of mealtime conversations did we find even one intentional effort to talk about the meanings of words; that is, in about 90% of the classrooms, *intentional talk about words never occurred* during the time we observed a given setting. This limitation in teacher-child discourse is of concern because, as noted previously, research sug-

gests that significant numbers of low-income children are exposed to relatively limited amounts of varied vocabulary in their homes (Hart & Risley, 1995; Tabors, Beals, & Weizman, 2001). Thus, a strong Head Start preschool program would be one in which teachers make frequent intentional efforts to expose children to new vocabulary at school.

Why Is There So Much Low-Quality Teacher-Child Classroom Discourse?

The lack of supportive conversations may reflect how various settings are organized (e.g., teachers circulate during mealtimes). Given earlier observations about the negative impact of teacher movement on conversations (Dickinson, 1991), we examined teacher positioning and found considerable variation among teachers. Prior studies have found that children's mealtime conversations are better when teachers are present and sitting (Cote, 2001; Dickinson, 1991); therefore, it is interesting to note that during mealtimes in the bottom quartile of classrooms, teachers were seated only slightly more than half of the time (56%; see Table *IDA).* Some teachers also were moving (15%) or standing (50%), often during many free-play intervals. Such physical positioning reduces their availability to children. Where teachers are and how they position themselves reflect complex issues connected to staffing, and strategies used for group management and for the division

TABLE 10.4. Teacher Positioning Talk during 30-Second Intervals during Free Play and Meal Time in Preschool Classrooms

	Mean	SD	Maximum	75%ile	25%ile	Minimum
Teacher sitting						
Free play	55	22	97	75	38	9
Meal time	73* * *	23	100	91	56	11
Teacher standing						
Free play	35**	21	85	50	19	0
Meal time	22	20	89	36	0	0
Teacher moving						
Free play	10*	10	47	15	3	0
Meal time	5	10	40	8	0	0

Note. Entries are percent of rime.

*p < .05; **p < .001; ***p < .0001.

of responsibilities among teachers.

Although our descriptive data merely indicate what is happening during these two settings, such data can provide a starting point for fruitful discussions among staff regarding what should be happening during mealtimes and other conversational settings. The patterns in conversations that we observed also likely reflect the fact that many teachers are not aware of the importance of engaging in sustained conversations (Dickinson, 1991, 1994). Lacking such knowledge or encouragement to make the needed effort to engage in effective conversations, their interactions with children tend to be driven by other powerful factors, such as fatigue, a personal preference to eat quietly, or concerns with socialization (e.g., teaching manners) or behavior management concerns. In addition, the low frequency of intellectually engaging talk also suggests that, in some classrooms, content learning is not a high priority; children and teachers are not consistently talking about topics that will expand children's knowledge of the world, while building their spoken language skills. The limited amount of explicit talk about vocabulary likely reflects, in part, the previously noted restriction in the richness of the content of conversations, again, due to a lack of awareness of the importance of conversation to children's development.

In summary, we know that preschool classrooms hold the potential to provide important stimulus to the language and early literacy development of children from low-income homes, and that such support might provide the boost that some children need to avoid falling into a cycle of academic struggle that could lead them to become classified among the large number of children with learning disabilities. Yet careful examination of patterns of teacher-child conversations continue to indicate that considerable numbers of low-income children are not receiving optimal support for language growth in preschool. We now turn to a brief discussion of possible hopeful avenues for those interested in turning preschool classrooms into truly effective settings for the prevention of later learning difficulties.

HOPEFUL DIRECTIONS

We consider possible directions for future efforts to provide children the kinds of early childhood classrooms that may reduce the incidence of learning disabilities in two ways. First, we consider some pragmatic, logistical features of classrooms that, if attended to, might help elevate the quality of conversations in preschools, as well as in kindergarten and primary grade classrooms. However, we know that there are no simple routes to improvement, and we firmly believe that strong professional development must playa role in any attempt to enhance classroom quality. We support this assertion with data from an intervention that we have helped develop and assess.

Pragmatic Classroom Considerations

The TCVI included codes that enabled us to examine the relationships between the kinds of conversations teachers have with children and the features of classrooms that teachers potentially can control. We assume that; although it is very hard to be aware of fine-grained details of conversations, teachers may be able to attend to issues such as where they position themselves in the classroom. In particular, based on earlier work, we expected that better conversations would occur when teachers were stationary and, preferably, seated (Dickinson, 1991). This speculation was supported, because we found a significant positive correlation between the percentage of time teachers spent sitting and topic development during mealtime $(r = .38, p < .05)$. This finding is complemented by the equally strong but negative correlation between topic development and the percentage of time teachers spent standing during mealtime $(r = -.41, p < .01)$.

The content of teachers' talk also was related to their physical position. We found that cognitively rich talk, as defined earlier, was significantly positively correlated with the percentage of time teachers spent sitting during free play $(r = .36, p < .01)$ and mealtimes $(r = .38, p < .01)$. In addition, it was significantly *negatively* correlated with percentage of time teachers spent standing during free play $(r = -.28, P < .05)$ and mealtimes

(r = -.43, *p* < .001). Thus, we propose that simply encouraging teachers to sit down and talk at length with children is congruent with classroom dynamics and will benefit children's development of discourse and vocabulary (Peterson et al., 1999).

Moreover, teachers developed a topic more often when they were engaged in talking about nonpresent subjects, notably, narratives about past events, pretend play, and future talk *(r =* .55 for nonpresent talk, *p* < .0001). Similarly, nonpresent talk correlated with developing a topic *(r = .*53, *p* < .0003). Simply encouraging teachers to elicit longer narratives when talking with children about past events or entering into (though not dominating) pretend play, or planning or hypothesizing about the future, will benefit children in need of linguistic stimulation.

Contrary to our expectations, we found little evidence of consistent relationships between our indicators of high-quality conversations and activity settings during free play. This null result suggests that what is most important is that teachers understand and make intentional efforts to engage in sustained, productive conversations. In order for this to become a priority, teachers need strong professional development and mentoring support as they strive to acquire new ways of interacting with children.

Professional Development

It is clear that despite the potential that early childhood settings hold for enhancing young children's language and literacy development, many classrooms are falling far short of providing optimal support for children. Our data suggest that a key variable is likely the teacher's awareness of what constitutes good conversations, and her energetic efforts to engage in such conversations regularly with all children. In an effort to help preschool teachers better support children's early literacy development, Dickinson and numerous colleagues at the Center for Children and Families at Education Development Center (EDC) developed an intervention called the Literacy Environment Enrichment Program (LEEP). Now given as an academic course that is taken by teams of teachers and supervisors, LEEP has been de

livered to teachers throughout New England and in North Carolina. It introduces teachers and their supervisors to basic information about language and literacy development, and grounds this information in classroom practice. Teachers tryout new strategies, and both teachers and supervisors are encouraged to reflect on classroom instruction. As teachers are learning to link theory to practice in their classrooms, supervisors are helped to adopt effective methods to coach teachers.

To determine the impact of LEEP, we employed a comparison-group design in which LEEP and comparison-group classrooms were observed before and after the LEEP training, and children in these classrooms were assessed with a battery of tools that evaluated their language and literacy skills. We now have analyzed the impact of LEEP when delivered in two ways: (1) through face-to-face, institute-style delivery (two 3-day sessions) and (2) using interactive television in combination with the support of a website. For the latter, technology-assisted version of LEEP (T-LEEP), there were 10 sessions, with the first and last sessions being extended days that were conducted primarily face-to-face, with eight 3-hour interim sessions. In both cases, a team that included a classroom teacher and her supervisor took the course.

Analysis of the Institute form of delivery included 40 LEEP teachers and 231 children in their classrooms, and 62 comparison group teachers and 328 children in their classrooms. We conducted analyses of the impact of LEEP on classroom practices by controlling for the classroom's quality ratings in the fall prior to the intervention, and for information about the teacher (e.g., education, years of experience, racial background). We found strong evidence that teachers who participated in LEEP made sizable improvements in the quality of their support for language and literacy. We also examined our data for evidence of the impact of teacher participation in LEEP on the learning of children in their classrooms. After we controlled for variables, such as age, parental education, gender, and preintervention scores on our assessments, we found that, on average, children whose teachers

had been in LEEP had better scores on assessments of vocabulary, phonological awareness, and early literacy. Analyses of the T-LEEP have recently been conducted with the use of hierarchical linear modelling (HLM) to take into account the variation among children that is not related to classroom factors. Using this approach, we found strong evidence of both significant effects of participation in T-LEEP on children's receptive vocabulary scores, and modest impact on their literacy and phonemic awareness skills (Clark-Chiarelli et al., 2002; Dickinson, Anastasopoulos, Miller, Caswell, & Peisner-Feinberg, 2002).

We have, of course, the most information on our own approach. However, we wish to emphasize that our approach incorporates many of the components on which other professional development approaches focus; that is, LEEP incorporates instruction in the importance of, and techniques for, interactive reading one-on-one and with small groups of children, which is the focus of Whitehurst and his colleagues (1994). LEEP also includes substantial training in ways that teachers can foster phonological awareness (see Stahl, 2001, for review). LEEP explicitly endorses the use of high-quality children's literature, which is advocated by such researchers as Morrow and Gambrell (2001). LEEP also instructs teachers about invented spelling and other aspects of emergent writing, which are the focus of the approach developed by Bear et al. (1996). As we said earlier, most emergent literacy approaches are aware of and incorporate aspects of other approaches.

CONCLUSIONS

We have presented an argument that has a mixture of encouraging and discouraging news. The bad news includes the fact that, in the United States at present, large numbers of children are being identified as having learning problems, most of which involve reading difficulties. This distressing information is partly counterbalanced by the realization that it may be possible to avoid such problems for many of these children if they receive strong classroom sup-

port, preferably beginning in the preschool years. However, when we look carefully at interactions in many classrooms that serve those children at risk for academic failure, we find that the kinds of beneficial language interactions are few and far between, especially in classrooms of less-skilled teachers.

We also have found that professional development can enhance classroom language and literacy practices, and bolster children's growth in these areas, but much work remains to be done. First and most importantly, we have far to go to achieve the required magnitude of instructional improvement to stimulate early language and literacy skills if we are truly to set children who are most at risk on a path to success. We have explored several ways of delivering professional development, though we have yet to know what is the most optimal format. Quite possibly, we will find that the optimal format differs depending on factors such as whether instruction occurs in urban or rural areas, or whether it is directed toward better or less well-trained teachers going into the program.

In addition to finding effective ways to deliver high-quality professional development, we believe that if we are to substantially elevate the performance levels of children, we also need to provide teachers with better curricular support. Based on our examination of the characteristics of conversations that have the most beneficial effects on children, we believe that by helping teachers engage in productive conversations throughout the day, the optimal curriculum would bolster skills central to language and literacy (e.g., letter knowledge, phonemic awareness), while also building children's knowledge of the world and greatly expanding their vocabularies and spoken language skills.

In summary, we believe that the approach to enabling teachers to provide children the support they need for optimal development must combine a strong curriculum that provides guidance and structure, yet allows teachers the time and flexibility they need to engage children in extended conversations. For teachers to make the most of any curriculum and to use "teachable moments" effectively, they also need professional development geared to helping them understand

why such interactions are powerful. For over 30 years, language researchers have known that children acquire language best when adults supply them with names for whatever they are interested in exploring. What matters is the *size* of a child's vocabulary, not whether it contains words describing rocks or vehicles or dinosaurs. No single program can specifically anticipate what any particular child or group of children might be interested in discussing. Only a teacher can respond to his or her students' emerging curiosity by supplying words. Only responsive, lively teachers can prevent reading difficulties by building children's vocabularies, phonological awareness, and love of stories read and told.

ACKNOWLEDGMENTS

NOTES

1. We thank Ann Wolfe for her work on the analyses of this complex data set.
2. This is defined as follows: "the child initiates the conversation or has a significant amount of participation in the interaction (i.e., speaks more than once; speaks for a significant proportion of the conversation). There should be some occasion when different speakers take turns. . . . It could apply when there is a series of several questions asked by the teacher and the teacher listens to the child's response attentively" (Dickinson et al., 1998, p. 6). .

REFERENCES

American Speech-Language-Hearing Association. *(2002). Communication facts: Special populations: Literacy-- 2002 edition/.* Retrieved February 14, 2003, from *http://professional.asha.org/resources/ factsheets/literacy. cfm*

Anderson, R. C, & Freebody, P. (1981). Vocabulary knowledge. In J. Guthrie (Ed.), *Comprehension and teaching: Research reviews* (pp. 77-1] 7). Newark, DE: International Reading Association.

Barnes, S., Gutfreund, M., Satterly, D., & Wells, G. (1983). Characteristics of adult speech which predict children's language development. *Journal of Child Language, 10, 6-84.*

Barnett, W. S. (1995). Long-term effects of early child-hood programs on cognitive and school outcomes. *The future of children: Long-term outcomes of early childhood programs,* 5(3), 25-50. Los Altos, CA: Center for the Future of Children, the David and Lucile Packard Foundation.

Barnett, W. S. (2001). Preschool education for *eco*nomically disadvantaged children: Effects on reading achievement and related outcomes. In S. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy development* (pp. 421-443). New York: Guilford Press.

Baydar, N., Brooks-Gunn, J., & Furstenberg, F. F. (1993). Early warning signs of functional illiteracy: 'Predictors in childhood and adolescence. *Child Development,* 64, 815-829.

Beals, D. E. (2001). Eating and reading: Links between family conversations with preschoolers and later language and literacy. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language* (pp. 75-92). Baltimore: Brookes.

Bear, D. R., Invernizzi, M., Templeton, S., & Johnston, F. (1996). *Words their way: Word study for phonics, vocabulary, and spelling.* Columbus, OH: Merrill.

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 and Allied Disciplines,* 31, 1027-1050.

Bishop, D. V. M., & Edmundson, A. (1987). Language-impaired 4-year-olds: Distinguishing transient from persistent impairment. *Journal of Speech and Hearing Disorders,* 52, 156-173.

Burchinal, M. R., Roberts, J. E., Hooper, S., & Zeisel, S. A. (2000). Cumulative risk and early cognitive development: A comparison of statistical risk models. *Developmental Psychology,* 36, 793-807.

Campbell, F. A., & Ramey, C. T. (1994). Effects of early intervention on intellectual and academic achievement: A follow-up study of children from low-income families. *Child Development, 65,* 684-698.

Campbell, F. A., & Ramey, C. T. (1995). Cognitive and school outcomes for high-risk African-American student in middle adolescence: Positive effects of early intervention. *American Educational Research Journal,* 32, 743-772.

Catts, H. W., Fey, M. E., Zhang, X., & Tomblin, J. B. (1999). Language basis of reading and reading disabilities: Evidence from a longitudinal investigation. *Scientific Studies of Reading,* 3, 331-361.

Chall, J. & Dale, P. (1995). *Readability revisited: The new Dale-Chall readability formula.* Cambridge, MA: Brookline. .

Clark-Chiarelli, N., Dickinson, D., Peisner-Feinberg, E., Anastasopoulos, L., Caswell, L., Sprague, K., et al. (2002, November). *The impact of the technology enhanced language environment enrichment program (T-LEEP): A collaboration among Education Development Center, Inc., Center for Applied Linguistics and Frank Porter Graham Child Development Center.* Poster session presented at the IERI Principal Investigator Conference, Alexandria, VA.

Clay, M. M. (1985). *The early detection of reading difficulties* (3rd ed.). Portsmouth, NH: Heinemann.

Clay, M. M. (1987). Learning to be learning disabled. *New Zealand Journal of Educational Studies, 22,* 155-173.

Cote, L. (2001). Language opportunities during mealtimes in preschool classrooms. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning language with litera*cy (pp. 205-222). Baltimore: Brookes.

Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology,* 33, 934-945.

Della Corte, M., Benedict, H., & Klein, D. (1983). The relationship of pragmatic dimensions of mothers' speech to the referential-expressive distinction. *Journal of Child Language, 10, 35-44.*

Dickinson, D. K. (1987). Oral language, literacy skills and response to literature. In J. Squire (Ed.), *The dynamics of language learning: Research in the language arts* (pp. 147-183). Urbana, IL: National Council of Teachers of English.

Dickinson, D. K. (1991). Teacher stance and setting: Constraints on conversation in preschools. In A. McCabe & C. Peterson (Eds.), *Developing narrative structure* (pp. 255-302). Hillsdale, NJ: Erlbaum.

Dickinson, D. K. (1994). Features of early childhood classrooms that support development of language and literacy. In J. Duchan, L. Hewitt, & R. Sonnenmeier (Eds.), *Pragmatics: From theory to practice* (pp. 185-201). Englewood Cliffs, NJ: Prentice-Hall.

Dickinson, D. K. (2001a). Book reading in preschool classrooms: Is recommended practice common? In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 175-203). Baltimore: Brookes.

Dickinson, D. K. (2001b). Putting the pieces together: The impact of preschool on children's language and literacy development in kindergarten. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 257-287). Baltimore: Brookes.

Dickinson, D. K. (2001c). Large-group and free-play times: Conversational settings supporting language and literacy development. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 223-255). Baltimore: Brookes Company.

Dickinson, D. K., Anastasopoulos, L., Miller, c., Caswell, L., & Peisner-Feinberg, E. (2002, April). *Enhancing preschool children's language, literacy and social development through an in-service profes-sional development approach.* Paper presented at the annual conference of the American Educational Research Association, New Orleans, LA.

Dickinson, D. K., Howard, c., & Haines, R. (1998). *Teacher-Child Verbal Interaction Profile.* Unpublished coding manual. Newton, MA: Education Development Center.

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

Dickinson, D. K., McCabe, A., Anastasopoulos, L., Peisner-Feinberg, E., & Poe, M. (2003). The comprehensive language approach to early literacy: The interrelationships among vocabulary, phonological sensitivity, and print knowledge among preschool-aged children. *Journal of Educational Psychology,* 95, 465-481.

Dickinson, D. K., & Smith, M. W. (1994). Long-term effects of preschool teachers' book readings on low-income children's vocabulary and story comprehension. *Reading Research Quarterly,* 29, 104-122.

Dickinson, D. K., & Tabors, P. O. (2001). *Beginning literacy with language: Young children learning at home and school.* Baltimore: Brookes.

Dickinson, D. K., & Tabors, P. O. (2002, March). Fostering language and literacy in classrooms and homes. *Young Children,* pp. 10-18.

Fazio, B. B., Naremore, R. c., & Connell, P. J. (1996). Tracking children from poverty at risk for specific language impairments: A 3-year longitudinal study. *Journal of Speech and Hearing Research, 39,* 611-624.

Feagans, L., & Appelbaum, M. I. (1986). Validation of language subtypes in learning disabled children. *Journal of Experimental Psychology,* 78, 358-364.

Fivush, R., & Fromhoff, F. A. (1988). Style and structure in mother-child conversations about the past. *Discourse Processes,* 11, 337-355.

Furrow, D., & Nelson, K. (1984). Environmental correlates of individual differences in language acquisition. *Journal of Child Language,* 11, 523-534.

Furrow, D., Nelson, K., & Benedict, H. (1979). Mothers' speech to children and syntactic development: Some simple relationships. *Journal of Child Language,* 6, 423-442.

Goldfield, B. A. (1987). The contributions of child and caregiver to referential and expressive language. *Applied Psycholinguistics,* 8, 267-280.

Good, R. III, Simmons, D. c., & Smith, S. (1998). Effective academic interventions in the United States: Evaluating and enhancing the acquisition of early reading skills. *School Psychology Review, 27,* 740-753.

Haden, C. A., & Fivush, R. (1996). Contextual variation in maternal conversational styles. *Merrill-Palmer Quarterly,* 42, 200-227.

Hampson, J., & Nelson, K. (1993). The relation of maternal language to variation in rate and style of language acquisition. *Journal of Child Language, 20,* 313-342.

Hanson, R. A., & Farrell, D. (1995). The long-term ef-

fects on high school seniors of learning to read in kindergarten. *Reading Research Quarterly, 30,* 908-933.

Hart, B., & Risley, T. (1995). *Meaningful differences in the everyday lives of American children.* Baltimore: Brookes.

Hoff-Ginsberg, E. (1986). Function and structure in maternal speech: Their relation to the child's development of syntax. *Developmental Psychology, 22,* 155-163.

Hoff-Ginsberg, E. (1991). Mother-child conversation in different social classes and communicative settings. *Child Development,* 62, 782-796.

Huttenlocher, J., Vasilyeva, M., Cymerman, E. & Levine, S. (2002). Language input and child syntax. *Cognitive Psychology, 45,* 337-374.

Iversen, S., & Tunmer, W. (1993). Phonological processing skills and the Reading Recovery program. *Journal of Educational Psychology, 85,* 112-126.

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

Layzer, J. **I.,** Goodson, B. D., & Moss, M. (1993). *Life in preschool: Vol.* 1. *Final report to the U.* S. *Department of Education.* Cambridge, MA: Abt Associates, Inc.

Lyon, G. R. (1995). Research initiatives in learning disabilities: Contributions from scientists supported by the National Institute of Child Health and Development. *Jamal of Child Neurology,* 10(Suppl. 1), S 120-S 126.

McCabe, A., & Peterson, C. (1991). Getting the story: A longitudinal study of parental styles in eliciting narratives and developing narrative skill. In A. McCabe & C. Peterson (Eds.), *Developing narrative structure* (pp. 217-254). Hillsdale, NJ: Erlbaum.

McCardle, P., Scarborough, H. S., & Carts, H. W. (2001). Predicting, explaining, and preventing children's reading difficulties. *Learning Disabilities Research and Practice,* 16, 230-239.

McCartney, K. (1984). Effect of quality of day care environment on children's language development. *Developmental Psychology, 20(2}, 244-260.*

McGill-Franzen, A., & Allington, R. (1991). The gridlock of low reading achievement: Perspectives on practice and policy. *Remedial and Special Education,* 12, 20-30.

Menyuk, P., Chesnick, J., Liebergott, J. W., Korngold, B., D'Agostino, R., & Belanger, A. (1991). Predicting reading problems in at-risk children. *Journal of Speech and Hearing Research,* 34, 893-903.

Moats, L. (2000). *Speech to print: Language essentials for teachers.* Baltimore: Brookes.

Moats, L. C. (1999). *Teaching reading is rocket science: What expert teachers of reading should know and be able to do.* Washington, DC: American Federation of Teachers.

Morrow, L. M., & Gambrell, L. B. (2001). Literature based instruction in the early years. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 348-360). New York: Guilford Press.

National Institute of Child Health and Human Development Early Child Care Research Network. (2000). The relation of child care to cognitive and language development. *Child Development,* 71, 960-980.

National Institute of Child Health and Human Development Early Child Care Research Network. (2002). Early child care and children's development prior to school entry: Results from the NICHD study of early child care. *American Educational Research journal,* 39(1), 133-165.

National Center for Education Statistics. (2001). *The nation's report card: Fourth-grade reading 2000.* Jessup, MD: U.S. Department of Education.

National Reading Panel. (2000). Report of the National Reading Panel. Washington, DC: National Institute of Health and Development.

Nelson, K. (1973). Structure and strategy in learning to talk. *Monographs of the Society for Research in Child Development,* 38(Serial No. 149).

Nelson, K. (1981). Individual differences in language development: Implications for development and language. *Developmental Psychology,* 17, 170-187.

Newport, E. **L.,** Gleitman, H., & Gleitman, L. R. (1977). Mother, I'd rather do it myself: Some effects and non-effects of maternal speech style. In C. E. Snow & C. Ferguson, (Eds.), *Talking to children: Language input and acquisition* (pp. 109-150). Cambridge, UK: Cambridge University Press.

Olsen-Fulero, L. (1982). Style and stability in mother conversational behavior: A study of individual differences. *Journal of Child Language,* 9, 543-564.

Peisner-Feinberg, E. S., & Burchinal, M. R. (1997). Relations between preschool children's child-care experiences and concurrent development: The Cost, Quality, and Outcomes Study. *Merrill-Palmer Quarterly,* 43,451-477.

Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R. M., Culkin, M. **L.,** Howes, c., Kagan, S. **L.,** et al. (2001). The relation of preschool quality to children's cognitive and social developmental trajectories through second grade. *Child Development, 72,* 1534-1553.

Peterson, C., Jesso, B., & McCabe, A. (1999). Encouraging narratives in preschoolers: An intervention study. *Journal of Child Language,* 26, 49-67.

Pinnell, G. S. (1989). Reading recovery: Helping at risk children learn to read. *Elementary School Journal, 90, 161-184.*

Roach, K. A., & Snow, C. E. (2000, April). *What predicts 4th grade reading c0l11prehension?* Paper presented at the annual conference of the American Education Research Association, New Orleans, LA.

Sameroff, A. J., Seifer, R., Baldwin, A., & Baldwin, C. (1993). Stability of intelligence from preschool to adolescence: The influence of social and family risk factors. *Child Development, 64; 80-97.*

Scarborough, H. (1989). Prediction of reading dysfunction from familial and individual differences. *Journal of Educational Psychology,* 81, 101-108.

Scarborough, H. (1990). Very early language deficits in dyslexic children. *Child Development, 61,* 1728-1734.

Scarborough, H. (1991). Early syntactic development of dyslexic children. *Annals of Dyslexia, 41,* 207-220.

Scarborough, H. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 97-110). New York: Guilford Press.

Schweinhart, L. j. Barnes, H. V., Weikart, D. P., Barnett, W. S., & Epstein, A. S. (1993). *Significant benefits: The High/Scope Perry Preschool Study through age* 27 [Monographs of the High/Scope Educational Research Foundation, No. 10]. Ypsilanti, MI: High/Scope Press.

Shaywitz, S. E., Escobar, M. D., Shaywitz, B. A., Fletcher, J. M., & Makuch, R. W. (1992). Evidence that dyslexia may represent the lower tail of a normal distribution of reading ability. *New England Journal of Medicine,* 326, 145-150.

Siegel, L. S. (1998). Phonological processing deficits and reading disabilities. In J. L. Metsala & L. C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 141-161). Mahwah, NJ: Erlbaum.

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

Snow, C. E., Perlman, R., & Nathan, D. (1987). Why routines are different: Toward a multiple-factors model of the relation between input and language acquisition. In K. Nelson & A. van Kleeck (Eds.), *Children's Language* (Vol. 6, pp. 65-97). Hillsdale, NJ: Erlbaum.

Snow, C. E., Tabors, P.O., & Dickinson, D. K. (2001). Language development in the preschool years. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 1-26). Baltimore: Brookes.

Stahl, S. A., & Fairbanks, M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research,* 56, 72-110.

Stahl, S. A. (2001). Teaching phonics and phonological awareness. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 333-347). New York: Guilford Press.

Stanovich, K. (1988). The right and wrong places to look for the locus of reading disabilities. *Annals of Dyslexia,* 27, 91-103.

Stanovich, K. E., & Siegel, L. S. (1994). Phenotypic performance profile of children with reading disabilities: A regression-based test of the phonological-core variable- difference model. *Journal of Educational Psychology,* 86, 24-53.

Tabors, P.O., Beals, D. & Weizman, Z. O. (2001). "You know what oxygen is?": Learning new words at home. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 93-110). Baltimore: Brookes.

Tabors, P.O., Snow, C. E., & Dickinson, D. K. (2001). Homes and schools together: Supporting language and literacy development. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 313-334). Baltimore: Brookes.

Tomasello, M., & Farrar, M. J. (1986). Joint attention and early language. *Child Development, 57,* 1454-1463.

Torgesen, J. K. (1998, Spring/Summer). Catch them before they fall. *American Educator,* pp. 32-41.

Torgesen, J. K. (2000). Individual differences in response to early intervention in reading: The lingering problem of treatment resisters. *Learning Disabilities Research and Practice,* 15, 55-64.

U.S. Department of Education. (2002). *Twenty-third annual report to Congress on the implementation of the Individuals with Disabilities Education Act.* Jessup, MD: Education Publications Center.

Vellutino, F. R., & Scanlon, D. M. (1998, April). *Research in the study of reading disability: What have we learned in the past four decades?* Paper presented at the annual conference of the American Educational Research Association, San Diego, CA.

Vellutino, F. R., & Scanlon, D. M. (2001). Emergent literacy skills, early instruction, and individual differences as determinants of difficulties in learning to read: The case for early intervention. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 295-321). New York: Guilford Press.

Vernon-Feagans, L., Hammer, C. S., Miccio, A., & Manlove, E. (2001). Early language and literacy skills in low-income African American and Hispanic children. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 192-210). New York: Guilford Press.

Walker, D., Greenwood, C., Hart, B., & Carta, J. (1994). Prediction of school outcomes based on early language production and socioeconomic factors. *Child Development,* 65, 606-621.

Wasik, B. A., & Slavin, R. E. (1993). Preventing early reading failure with one-to-one tutoring: A review of five programs. *Reading Research Quarterly, 28,* 178-200.

Whitehurst, G. J., Epstein, J. N., Angell, A. C., 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., & Lonigan, C. J. (2001). Emergent literacy: Development from pre-readers to readers. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 11-29). New York: Guilford Press.

Wilcox-Herzog, A., & Kontos, S. (1998). The nature of teacher talk in early childhood classrooms and its relationship to children's play with objects and peers. *Journal of Genetic Psychology, 159(1),* 30-44.