

Influences of Dialogic Reading on the Language Development of Toddlers

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This practice-based research synthesis is focused on the characteristics of dialogic reading that help to develop and enhance the emergent literacy and language development of children 3 years of age or younger (a “sister synthesis” for children age 4 and 5 is in process). Researchers recently have begun to understand the dynamics of the association between social interaction and literacy development, and “joint” or “shared” book-reading styles in the home and in preschool classrooms have received more attention in the literature. This synthesis is focused on the characteristics of one shared reading practice called *dialogic reading*.

Purpose

The purpose of this practice-based research synthesis is to determine whether there is evidence to support the practice of *dialogic reading* with children age 2 and 3 as a way to facilitate early language development. Dialogic reading (the practice of infusing joint reading experiences with dialogue in order to make these experiences more interactive) is one method for promoting book reading between adults and young children. Shared reading experiences provide children with many of the skills necessary for school readiness such as vocabulary, sound structure, knowledge of the meaning of print, and knowledge of the structure of stories and language (Whitehurst et al., 1994; 1988; Zevenbergen & Whitehurst, 2003).

The conduct of this synthesis is guided by a framework that focuses on the degree to which variations in dialogic-reading practices are associated with variations in language development (Dunst, Trivette, & Cutspec, 2002). In general terms, a practice-based research synthesis differs from more traditional meta-analyses by systematically examining and unpacking the characteristics of practices that are related to differences in outcomes or consequences. Specifically, this type of analysis is focused more on an understanding of *how* the same or similar characteristics exert the same or similar observable effects and not solely on statistical or observation-based relationships between or among these variables.

Background

Experts in early childhood development emphasize shared book reading as one way parents can support their

children’s learning and readiness for school (Boyer, 1991; Ready, Edley, & Snow, 2002; Snow, Burns, & Griffin, 1998). For example, shared book reading is gaining attention as a powerful context for language development (Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996); both correlational and experimental research have provided converging evidence for the potential role of joint book reading as a powerful technique for facilitating oral language development (Crain-Thoreson & Dale, 1999; Snow et al., 1998). Dialogic reading offers one method for identifying the characteristics of joint book reading that help to promote the expressive language development of young children.

Guiding Principles of Dialogic Reading

Dialogic reading with young children, first described by Whitehurst, Falco, Lonigan, et al. (1988), is based on three principles of implementation: (1) *provocative techniques* are used to encourage the child to take an active role during story time, (2) *feedback* is encouraged in the form of modeling, corrections, and praise, and (3) *progressive change* in adult standards for the child are encouraged so that the parent or teacher is constantly encouraging the child to do just a bit more than he or she normally

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would (Arnold & Whitehurst, 1994). During typical joint or shared book reading interactions, an adult reads while a child listens; however, in dialogic reading, the child is taught gradually to become the storyteller (Whitehurst et al., 1988; Zevenbergen & Whitehurst, 2003).

Dialogic reading has been shown to produce effects on the expressive language skills of children from middle-to-upper income families (Arnold & Whitehurst, 1994; Whitehurst et al., 1988) and children from lower-income families with additional at-risk factors (Huebner, 2000a, 2000b; Lonigan & Whitehurst, 1998; Valdez-Menchaca & Whitehurst, 1992), as well as children who are typically developing (Huebner, 2000a; Whitehurst et al., 1988), and those with language delays (Crain-Thoreson & Dale, 1999; Dale et al., 1996; Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999; Valdez-Menchaca & Whitehurst, 1992).

When learning to implement dialogic reading, adults are trained how to increase the standards for a child's verbalizations over time, following the theory of a *zone of proximal development* (Rogoff, 1990; Vygotsky, 1978; Wood, Bruner, & Ross, 1976). Dialogic reading is based on the premise that language development may be accelerated if the boundaries of the proximal zone are pushed further than they might be spontaneously (Arnold & Whitehurst, 1994) and if the boundaries are based on children's levels of potential development (Reese & Cox, 1999). In a Vygotskian theoretical framework (Vygotsky, 1962), shared book reading offers both social and contextual support for the development of language (Crain-Thoreson & Dale, 1999).

Dialogic reading benefits children's receptive and expressive vocabulary (knowing how to describe something and how to verbalize this description), narrative skills (being able to understand and tell stories), letter knowledge (learning that letters are different from each other, that each letter has a name, and that specific sounds go with specific letters), and print awareness (understanding that writing follows basic rules of grammar and format) (Whitehurst et al., 1994; 1988). These language development skills are believed to be the foundation for school readiness (Bowman, Donovan, & Burns, 2001; Snow et al., 1998).

Implementing the Practice

Adults who will be reading with children are taught how to improve their shared book reading styles by implementing the practice of dialogic reading. Following training, adults use this practice to direct their book-reading activities with young children.

Adult training. Training adults how to use the dialogic-reading program for toddlers includes two sessions that occur approximately 2-3 weeks apart. Methods used to guide this instruction include video, one-to-one training, and group sessions. Group sessions are typically a

combination of modeling, role play, and corrective feedback.

Description of the Practice

During the first training session, eight characteristics of dialogic reading are identified: (1) asking "what" questions, (2) following the child's answers with questions, (3) repeating what the child says, (4) helping the child as needed (if necessary, answer the question posed to the child and have him or her repeat the adult verbalizations), (5) praising and encouraging, (6) following the child's interests, (7) slowing down and allowing the child time to respond (Crain-Thoreson & Dale, 1999), and (8) allowing all reading sessions to be fun. During the second training session, three additional characteristics of the practice are introduced: (1) asking open-ended questions, (2) expanding what the child says, and (3) emphasizing fun in order to encourage continued interest in reading.

The role of the adult is to prompt the child with questions, expand the child's verbalizations, praise the child (Arnold & Whitehurst, 1994), and allow sufficient time for the child to respond (Dale et al., 1996). Although any picture book can be used for dialogic reading, books that work particularly well are those that have clear illustrations, relatively little text, and an engaging story (Zevenbergen, n.d.).

Search Strategy

Search Terms

Identification of relevant studies was accomplished using dialogic reading, joint book reading, interactive book reading or interactive reading, shared book reading, shared book experience, picture book reading, and lap reading as search terms. The search was delimited by adding infants or toddlers or preschool children as a Boolean condition. The terms affect, emotion, social, social-emotional, and interest were also used to further restrict the search.

Sources

Psychological Abstracts online (PsycINFO), Social Sciences Citation Index (SSCI), Educational Resources Information Center (ERIC) database, Association for Science Education, Academic Search Elite, Expanded Academic ASAP, and Ingenta were the primary information databases searched for relevant studies. An online search via the Google search engine was also conducted. A secondary search was made of an EndNote bibliographic information database maintained by the Puckett Institute. Archival and hand searches of relevant professional journals augmented the computer-assisted search for relevant research on dialogic reading. Repeated sweeps of various electronic databases using established and newly identified search terms and the examination of the reference sections of identified publications were made until no further studies were located.

Selection Criteria

Studies were included in this research synthesis if they met all of the following criteria: (1) the practice of dialogic reading was the focus of investigation; (2) all 10 characteristics were incorporated during the implementation of the practice (the characteristic of allowing children sufficient time to respond emerged from the data and was not one of the original core characteristics); (3) children involved in the study were 3 years of age (chronological) or younger at the time of baseline assessment (or this population was embedded in the study population); and (4) observation, description, or measurement of language development was included as part of the study.

Exclusion criteria. Studies that were focused on children between 4 and 6 years of age were not included in this synthesis due to the nature of the intervention; that is, one set of specific techniques has been developed for reading with children 2-3 years of age (chronological) and another set has been developed for reading with children 4-5 years of age (chronological). A mirror synthesis is being developed for studies conducted on dialogic reading with the latter age group. Additionally, it was necessary to exclude four studies that appeared to have met all of the inclusion criteria during the initial phase of the search process (Sabbatini, 2001; Sybesma, 2001; Whitehurst, Fischel, Caulfield, DeBaryshe, & Valdez-Menchaca, 1989; Whitehurst et al., 1991). Close inspection of these studies revealed two reasons for exclusion: (1) although they included some of the characteristics of dialogic reading to encourage language development in children, the implementation of the intervention was modified to a significant degree to meet the focus and design of the studies (specifically, a modified dialogic-reading component was used as part of a much broader intervention designed to encourage expressive language) and/or (2) the age range of the participants was not specified in sufficient detail as to allow for isolation of children age 3 or younger.

Search Results

A total of 10 studies that included 628 participants met the selection criteria and were included in this research synthesis. In Table 1, selected characteristics of the study participants are presented. In Tables 2 and 3, research designs used in the studies, intervention variables, outcome measures, and measurements of variation in the intervention are listed.

Participants

The 628 children who participated in the studies ranged in age from 21-72 months at baseline assessment and approximately 53% of these children were male (one study did not report gender totals). The vast majority (88%) of child participants was identified as having or was considered at risk for language delays.

In addition to the child participants, 488 parents, one teacher, and 17 daycare personnel, librarians, or college student “staff” were identified as participants. Sociodemographic information collected as part of the studies indicated that most of the participating families were low-income. Only two of the studies were conducted with middle and upper-income families and one study did not report this information.

Research Designs

Nine of the ten studies included in the synthesis used randomized experimental designs. The remaining study used a matched-pair experimental design. Table 2 includes a breakdown of the group conditions included in each study.

Practices

Adult training. A total of 506 adult readers were trained to use the dialogic-reading program with the children in their care. This training was conducted through combinations of one-to-one training, video, modeling, role-play, and/or practice sessions with corrective feedback. The first training session lasted 25-60 minutes and was conducted in private homes, daycare settings, or libraries. The second training session occurred 2-4 weeks after the first and lasted 20-60 minutes. The length of the intervention ranged from 4-8 weeks, with a mean of 6 weeks.

In the home setting, parents were asked to read to their child at least once per day for 5-15 minutes (depending on the study), using the skills they had learned during the training sessions. In the daycare setting, teachers or staff members were asked to read to small groups (3-4 children) or individual children for a minimum of 10-15 minutes, a minimum of three times per week, using the skills they had learned.

Dialogic-reading intervention. Children in the experimental groups across nine studies participated in the intervention with parents, teachers, or parents and teachers. In the remaining study, the children were randomly assigned to dialogic reading and play conditions, along with a control condition. In 5 of the 10 studies, the intervention occurred in the home. In the remaining 5 studies, 3 interventions occurred in both home and daycare settings, and 2 interventions occurred in daycare settings alone.

Treatment fidelity. Some form of adult-reading treatment fidelity information was reported in all of the studies included in this synthesis. In some cases, the authors simply indicated that adult readers completed logs of dialogic-reading activities. In other cases, adult readers were required to tape record some or all of the reading sessions to ensure compliance with the intervention. In two studies, pretest and posttest reading sessions were videotaped. The most compelling form of treatment fidelity occurred in studies in which an independent observer coded these

audiotapes to establish adherence to the treatment condition.

Outcomes

Although all of the studies included adult learning as part of the intervention process, only one of the studies included adult-level outcomes (that of measuring parental stress). The only other way the adult readers were assessed was according to whether they complied with the intervention (see Table 4).

All children were assessed for language-development outcomes, using standardized instruments (see Table 3). Pretest and posttest measurement included assessment of mean length of utterances and expressive language. These assessments were used in 8 of the 10 studies included in this synthesis. One of the remaining studies included length of utterances, along with measures of verbal and total engagement as well as additional language inventories (McCarthy, 1972). The remaining study measured phrase length, vocabulary, and grammar.

Synthesis Findings

Table 4 summarizes the findings related to language development that were reported across studies. In addition, this table includes information regarding alternative explanations and threats to internal and external validity for each of the studies included in this synthesis.

Results

Language development. Across all of the studies, the children who participated in the experimental conditions experienced positive gains in expressive language development. The practice was generally effective in as little as 4 weeks, but the more time spent implementing the practice, the better the effect on expressive language development. Specifically, the mean length of spoken phrases increased and children in dialogic-reading groups demonstrated greater expressive vocabulary scores. All follow-up assessments indicated maintenance of the gains identified during the studies. Further, there was evidence to indicate a positive change in parent-child reading style when the parents involved complied with the characteristics of the intervention. Even more compelling was the finding that parents with greater behavioral change were likely to have children with greater behavioral or language change (Dale et al., 1996).

At the same time, it is important to distinguish the gains achieved according to the context of the intervention. Children in home-plus-daycare conditions demonstrated the greatest gains, followed by children in home conditions, and finally, children in daycare conditions. Further, the findings suggest that one-to-one reading conditions led to more positive outcomes than small-group reading sessions, especially with children who had or were

at risk for language delays.

One of the most provocative findings from this synthesis is the need for parents to be patient throughout the process of implementing the characteristics that have been described (Crain-Thoreson & Dale, 1999; Dale et al., 1996). Previous studies that measured parent response patterns to children's utterances indicated that typically, parents (or other adult readers) waited two seconds or less for children to respond before prompting them further (Yoder & Davies, 1990; Yoder, Davies, Bishop, & Munson, 1994). Allowing children more time for response (Crain-Thoreson & Dale, 1999; Dale et al., 1996), especially children with language delays, appears to provide them with an advantage that may be integral for increasing comprehension and language development.

Rival explanations. Any interpretation of the positive outcomes that have been obtained is limited by the general absence of a control group, participant self-selection, the limited ways in which the examination of fidelity of parent implementation was measured (despite the advantages of contingent-responsive conversation during dialogic book reading, parents may differ in implementation styles of this practice), the findings of the fidelity measures (e.g., variability in teacher compliance with the intervention), and the fact that researchers did not separate the effects of dialogic reading from increased frequency of reading and children's familiarity with the books used during posttesting. However, despite threats to the generalizability of this practice, synthesis findings support the effectiveness of this intervention if the identified characteristics are incorporated.

Conclusion

The link between early shared reading and acquisition of literacy skills, coupled with the observed differences in patterns of literacy exposure in the lives of children from lower and higher SES groups, "suggests that shared reading may provide one means of intervention to improve the early literacy skills of at-risk children from lower income families" (Lonigan et al., 1999, p. 307). Based on the findings from this synthesis, dialogic reading does appear to have good potential for helping to increase the language development of very young children and, thus, increase the "readiness" with which they enter school. This practice appears to be an important scaffolding of parent-child opportunities for early literacy development. The behavioral change in parents that occurred while sharing book-reading time with children, coupled with the expressive language gains demonstrated by the children who participated in the studies, provides an early childhood intervention that is worth implementing.

The studies included in this synthesis clearly indicated that most parents are quite capable of encouraging

and teaching language skills to their toddlers when they are provided with strategies and tools that are likely to produce positive outcomes (Scher, 1998). The characteristics of dialogic reading are straightforward and easy to demonstrate and understand (Huebner, 2000b).

Implications for Practice

Findings reported in this synthesis have a number of implications for practice. First, implementation of the practice of dialogic reading should include training adults how to use the eight skills introduced in the first training session and the three demonstrated in the second training session. This can be achieved effectively using one-to-one as well as video-based methods. While only one study reviewed for this synthesis included the need to be patient and provide children with adequate time to respond, this characteristic appears to be important for implementing this practice with children who are at risk for or experiencing language delays.

Second, before this intervention is implemented, it is important to recognize that dialogic reading works best with children who are “talkers” (have a vocabulary of at least 50 different words). Further, the intervention should be monitored to make sure it has been tailored to meet the levels of individual children. While both typically developing children and children with or at risk for language delays can benefit from this intervention, the studies included in this synthesis demonstrate how these two groups benefit in different ways, achieving different gains. Additionally, it is important to emphasize that gains are made in the development of language skills, not reading achievement.

Finally, the skills introduced work best with children age 2-3. The mirror synthesis that reports on this practice for children age 4-5 is based on a higher-level, more abstract foundation that has not been found to be successful with younger children. Conversely, when the characteristics of dialogic reading included in this synthesis are used with older children, they do not have as great an impact. Having said that, this *is* a developmental practice; the skills used with children who are 4 or 5 are dependent on mastering the skills described in this synthesis.

References

Arnold, D. H., Lonigan, C. J., Whitehurst, G. J., & Epstein, J. N. (1994). Accelerating language development through picture book reading: Replication and extension to a videotape training format. *Journal of Educational Psychology, 86*, 235-243.

Arnold, D. S., & Whitehurst, G. J. (1994). Accelerating language development through picture book reading: A summary of dialogic reading and its effects. In D. K. Dickinson (Ed.), *Bridges to literacy: Children, fami-*

lies, and schools (pp. 103-128). Oxford, UK: Blackwell.

Bowman, B. T., Donovan, M. S., & Burns, M. S. (Eds.). (2001). *Eager to learn: Educating our preschoolers*. Washington, DC: National Academy Press.

Boyer, E. L. (1991). *Ready to learn: A mandate for the nation*. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

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.

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.

Dunst, C. J., Trivette, C. M., & Cutspec, P. A. (2002). Toward an operational definition of evidence-based practices. *Centerscope, 1*(1), 1-10. Available at <http://www.evidencebasedpractices.org/centerscope/centerscopevol1no1.pdf>.

Huebner, C. E. (2000a). Community-based support for preschool readiness among children in poverty. *Journal of Education for Students Placed at Risk, 5*, 291-314.

Huebner, C. E. (2000b). Promoting toddlers' language development through community-based intervention. *Journal of Applied Developmental Psychology, 21*, 513-535.

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., & Whitehurst, G. J. (1998). Relative efficacy of parent and teacher involvement in a shared-reading intervention for preschool children from low-income backgrounds. *Early Childhood Research Quarterly, 13*, 263-290.

McCarthy, D. (1972). *Manual for the McCarthy Scales of Children's Abilities*. New York: Psychological Corporation.

Ready, T., Edley, C., Jr., & Snow, C. E. (Eds.). (2002). *Achieving high educational standards for all: Conference summary*. Washington, DC: National Academy Press.

Reese, E., & Cox, A. (1999). Quality of adult book reading affects children's emergent literacy. *Developmental Psychology, 35*, 20-28.

Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.

Sabbatini, H. L. (2001). *The effects of dialogic reading on the early reading abilities of preschoolers*. Unpublished master's thesis, University of Arkansas for

- Medical Sciences, Fayetteville, AR.
- Scher, P. J. (1998). Shared-reading intervention [Comment]. *Early Childhood Research Quarterly, 13*, 291-292.
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Sybesma, T. K. (2001). *A bridge to literacy: Dialogic storybook reading during dyadic storybook reading episodes*. Unpublished master's thesis, Bethel College, St. Paul, Minnesota.
- 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.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT Press.
- Whitehurst, G. J., Arnold, D. S., Epstein, J. N., Angell, A. L., Smith, M., & Fischel, 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., Falco, F. L., Lonigan, J. E., Fischel, J. E., DeBaryshe, M. C., Valdez-Menchaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental Psychology, 24*, 552-559.
- Whitehurst, G. J., Fischel, J. E., Caulfield, M., DeBaryshe, B. D., & Valdez-Menchaca, M. C. (1989). Assessment and treatment of early expressive language delay. In P. R. Zelazo & R. G. Barr (Eds.), *Challenges to developmental paradigms: Implications for theory, assessment and treatment* (pp. 113-135). Hillsdale, NJ: Erlbaum.
- Whitehurst, G. J., Fischel, J. E., Lonigan, C. J., Valdez-Menchaca, M. C., Arnold, D. S., & Smith, M. (1991). Treatment of early expressive language delay: If, when, and how. *Topics in Language Disorders, 11*(4), 55-68.
- Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem-solving. *Journal of Child Psychology and Psychiatry, 17*, 89-100.
- Yoder, P. J., & Davies, B. (1990). Do parental questions and topic continuations elicit replies from developmentally delayed children? A sequential analysis. *Journal of Speech and Hearing Research, 33*, 563-573.
- Yoder, P. J., Davies, B., Bishop, K., & Munson, L. (1994). Effect of adult continuing wh-questions on conversational participation in children with developmental disabilities. *Journal of Speech and Hearing Research, 37*, 193-204.
- Zevenbergen, A. A. (n.d.). *Dialogic reading: A shared picture book reading intervention for preschoolers*. Retrieved April 2, 2003, from <http://www.google.com/search?q=cache:PxHjMSZIK6wC:www.whitehurst.sbs.sunysb.edu/pubs/zevenpaper.pdf+dialogic+reading+shared+picture+book&hl=en&ie=utf-8>.
- Zevenbergen, A. A., & Whitehurst, G. J. (2003). Dialogic reading: A shared picture book reading intervention for preschoolers. In A. van Kleeck, S. A. Stahl, & E. B. Bauer (Eds.), *On reading books to children: Parents and teachers* (pp. 177-200). Mahwah, NJ: Erlbaum.

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Table 1
Characteristics of the Study Participants

Study	Sample Size	Child Age (Months)	Child Gender		SES	Adult Participants			Child Diagnosis (Language Development)
			Male	Female		Parents	Teachers	Staff	
Arnold, Lonigan, Whitehurst et al. (1994)	64	24-34	31	33	Upper & middle	64	-	-	Typically developing
Crain-Thoreson & Dale (1999)	32	39-66	22	10	Lower	10	-	7	Mild to moderate language delays
Dale et al. (1996)	33	36-72	24	9	NR	33	-	-	Mild to moderate language delays
Heubner (2000a)	61	24-47	28	33	Lower	58	-	9	Typically developing and mild to moderate language delays
Heubner (2000b)	129	24-35	79	50	Lower & middle	129	-	-	Typically developing and at risk for language delays
Lonigan, Anthony, & Bloomfield et al. (1999)	95	25-64	44	51	Lower	-	NR	NR	Mild to moderate language delays
Lonigan & Whitehurst (1998)	91	33-60	42	49	Lower	91	NR	NR	Mild to moderate language delays
Valdez-Menchaca & Whitehurst (1992)	20	27-35	8	12	Lower	-	1	1	Moderate to severe language delays
Whitehurst, Arnold, Epstein et al. (1994)	73	36-41	55	18	Lower	73	NR	-	Moderate to severe language delays
Whitehurst, Falco, Lonigan et al. (1988)	30	21-35	NR	NR	Upper & middle	30	-	-	Typically developing
Totals or Ranges	628	21-72	333	265	Lower to upper	488	1	17	Typically developing to severe language delays

NR = Not reported (In these studies the number of males and females, the SES status, and the number of teachers and/or staff members were not reported.)

SES = Socioeconomic status

Table 2
Research Design, Length of Intervention, and Treatment Condition for Adult Readers

Study	Research Design	Length of Intervention (Weeks)	Location of Training	Treatment Condition for Training Adult Readers
Arnold, Lonigan, Whitehurst et al. (1994)	Randomized experimental design (dialogic reading vs. control)	4	Lab or home	Video, didactic instruction, modeling
Crain-Thoreson & Dale (1999)	Randomized experimental design (dialogic reading/home vs. dialogic reading/daycare vs. control)	8	Daycare	Video, modeling, role-play
Dale et al. (1996)	Randomized quasi-experimental design (dialogic reading vs. conversational program)	6-8	NR	Video, group discussion
Heubner (2000a)	Randomized experimental design (dialogic reading vs. control)	6	Public library	Video, didactic instruction, direct feedback
Heubner (2000b)	Randomized experimental design (dialogic reading vs. control)	6	Daycare	Video, group discussion, role-play, direct feedback
Lonigan, Anthony, & Bloomfield et al. (1999)	Randomized experimental design (dialogic reading vs. shared reading vs. control)	6	NR	Video, modeling, role-play
Lonigan & Whitehurst (1998)	Randomized experimental design (dialogic reading/school vs. dialogic reading/home vs. dialogic reading/school plus home vs. control)	6	Daycare	Video, group discussion, role-play, direct feedback
Valdez-Menchaca & Whitehurst (1992)	Matched-pair experimental design (dialogic reading vs. control)	6	Daycare	NR
Whitehurst, Arnold, Epstein et al. (1994)	Randomized experimental design (dialogic reading/school vs. dialogic reading/school plus home vs. control)	6	Daycare	Video, practice session with direct feedback
Whitehurst, Falco, Lonigan et al. (1988)	Randomized experimental design (dialogic reading vs. control)	4	University (lab) setting	Didactic instruction, modeling, direct feedback

NR = Not reported

Table 3
Interventions, Outcome Measures, and Treatment Fidelity

Study	Independent /Intervention Variables	Treatment Location	Outcome Measures	Treatment Fidelity
Arnold, Lonigan, Whitehurst et al. (1994)	Individual, picture book dialogic-reading session administered by a parent at least 4 times per week for 10 minutes per session	Home	PPVT-R EOWPVT-R ITPA-VE ITPA-GC Reynell Expressive Scale Reynell Developmental Language Scales	Adult readers completed a checklist calendar to record frequency of reading. At least four DR sessions per week were tape recorded.
Crain-Thoreson & Dale (1999)	Individual, picture book dialogic-reading session administered by a parent or school staff member (teacher, librarian, teacher's aide, school nurse) at least 4 times per week for 10 minutes per session	Home or preschool	MLU PPVT-R EOWPVT-R	Adult readers completed logs of DR activities. Pretest and posttest reading sessions were video taped and coded for compliance.
Dale et al. (1996)	Individual, picture book dialogic-reading session administered by a parent for at least 5 minutes Individual CLPP sessions administered by a parent for at least 10 minutes	Home	MLU Measure of verbal engagement Measure of total engagement McCarthy Scales of Children's Abilities GCI Preschool Language Assessment Inventory	Adult readers completed logs of DR activities. Adults were asked to tape record random reading sessions; however, due to poor recording quality and failure to date tapes, data were not analyzed.
Heubner (2000a)	Modified individual, dialogic-reading intervention with parents using: <i>wh</i> -questions, open-ended questions, corrective feedback, and praise on a daily basis	Home	Phrase length CDI/SF II CDI/SF II Form B	Adult readers completed logs of DR activities.
Heubner (2000b)	Modified individual, dialogic-reading intervention with parents using: <i>wh</i> -questions, open-ended questions, corrective feedback, and praise (amount of time and frequency not reported)	Home	MLU-5 PPVT-R EOWPVT-R ITPA-VE PSI R-Denver Prescreening Developmental Questionnaire Reading Exposure Questionnaire	Parents were asked to tape record at least one reading session per day. Families were contacted weekly to answer questions, problem solve, and remind them to keep reading.
Lonigan, Anthony, & Bloomfield et al. (1999)	Small group, dialogic-reading sessions administered by trained undergraduate volunteers for 10-15 minutes every day	Daycare	PPVT-R EOWPVT-R ITPA-VE WJ-LC Measures of phonological sensitivity (4)	Volunteer readers completed a log of DR activities. Reading sessions were tape recorded and coded for presence or absence of program behaviors.
Lonigan & Whitehurst (1998)	Small group (no greater than 5 children), picture book dialogic-reading session administered by a teacher for 10 minutes per group per day, 5 times per week Individual, picture book dialogic-reading session administered by a parent on a voluntary basis	Home and daycare	MLU PPVT-R EOWPVT-R ITPA-VE Measure of verbal production	Parents and teachers were asked to complete a log of DR activities. Weekly visits to daycare centers to collect teacher logs, check compliance, and provide guidance
Valdez-Menchaca & Whitehurst (1992)	Modified individual, picture book dialogic-reading sessions administered by a graduate student teacher using <i>wh</i> - questions, open-ended questions, corrective feedback, and praise for 10-12 minutes per day, 5 days per week	Daycare	Measure of spontaneous verbalizations PPVT-R EOWPVT-R ITPA-VE	Reading sessions were tape recorded and coded for presence or absence of program behaviors.

Table 3, continued

Study	Independent/Intervention Variables	Treatment Location	Outcome Measures	Treatment Fidelity
Whitehurst, Arnold, Epstein et al. (1994)	Individual, picture book dialogic-reading session administered by a parent daily Small group (no greater than 5 children), picture book dialogic-reading administered by a teacher for 10 minutes per group per day, 5 times per week	Home or daycare	Our Word PPVT-R EOWPVT-R ITPA-VE	Parents and teachers completed reading and activity logs. No fidelity measures were completed by parents.
Whitehurst, Falco, Lonigan et al. (1988)	Individual, picture book dialogic-reading session administered by a parent 3-4 times per week	Home	MLU PPVT-R EOWPVT-R ITPA-VE	All reading sessions were tape recorded.

CDI/SF II = MacArthur Short Form Vocabulary Checklist: Level II

DR = Dialogic reading

EOWPVT-R = One-Word Vocabulary Test-Revised

ITPA-GC = Illinois Test of Psycholinguistic Abilities-Grammatical Closure Subscale

ITPA-VE = Illinois Test of Psycholinguistic Abilities-Verbal Expression

McCarthy Scales of Children's Abilities General Cognitive Index

MLU = Mean length of utterance

NM = Not measured

NR = Not reported

Our Word = Nonstandardized expressive vocabulary test

PLAI = Preschool Language Assessment Instrument (total appropriate responses)

PPVT-R = Peabody Picture Vocabulary Test-Revised

PSI = Parenting Stress Index

WJ-LC = Woodcock-Johnson Psychoeducational Battery-Listening Comprehension Subtest

Our Word: nonstandardized expressive vocabulary test

PSI: Parenting Stress Index

NR: Not reported

NM: Not measured

Table 4
Relationship Between Practice and Outcomes, Major Synthesis Findings, and Threats to Validity

Study	Primary Findings (Language Development)	Rival Explanations/ Major Threats to Validity
Arnold, Lonigan, Whitehurst et al. (1994)	Parents reported more children combining words Length of spoken phrases increased	Because the program was voluntary, parents attracted to the intervention were those most likely to conform. Not possible to separate effects from intervention from other influences
Crain-Thoreson & Dale (1999)	Children in dialogic-reading group used a greater number of different words than did the conversation program group. Adult readers became more responsive to children by slowing down, decreasing their verbatim reading and information statements, and increasing their questions and expansions of children's utterances. The more the adult readers adopted the dialogic style of reading, the more the children's linguistic performance improved from pretest to posttest.	Study did not include a no-treatment control group. Small sample size may have led to low power in the statistical significance of analyses. Children in all three groups showed similar language growth; therefore, one might argue that the observed changes in expressive language production were associated with maturation, effects of their early childhood preschool program, test-retest effects, or statistical regression rather than dialogic reading.
Dale et al. (1996)	Changes occurred more in play episode than in book reading. Parents with greater behavioral change were likely to have children with greater behavioral or language change. Lower functioning children responded to DR with increased verbal engagement and vocabulary learning; higher functioning children used input as a source for gaining in MLU and grammar.	Design called for an interval of 6-8 weeks, but some were as long as 10-11 weeks. Fidelity could not be established to the degree anticipated.
Heubner (2000a)	Dialogic reading led to favorable changes in parent-child reading style and children's expressive language. Three-month follow-up indicated expressive vocabulary growth was maintained.	Families and children at greatest socioeconomic risk were underrepresented in the study (approximately 10%).
Heubner (2000b)	Children in DR group had greater expressive vocabulary scores than did children in the regular reading group. DR achieved the goal of changing the interactive behavior of parents and children. Three-month follow-up confirmed findings	In this study, it was not possible to assess change in vocabulary as measured by the CDI/SF II because many children grew beyond the age range and language age equivalencies provided by comparison data; therefore, actual language gains could not be established.
Lonigan, Anthony, & Bloomfield et al. (1999)	Results favoring DR were found on the measure of descriptive use of language, whereas results favoring typical shared reading were found on measures of listening comprehension and alliteration detection. Results suggest that group reading interactions may not be sufficient to produce broad improvements in children's oral language skills.	Claims of increases in phonological sensitivity should be interpreted with caution because the effect was found on only one of our measures regarding this variable and the overall performance of children in all groups was at or near chance levels. Results of this study include only the short-term outcomes of relatively brief interventions.
Lonigan & Whitehurst (1998)	Children in center-based conditions experienced more growth in vocabulary; children in home-only group experienced more growth in descriptive language. Children in home-plus-daycare DR group had higher expressive vocabulary scores than control children. Center based produces smaller effects than home based.	Substantial variability in teacher compliance with DR intervention schedule Only 60% of parents returned reading logs. Centers did not continue intervention characteristics beyond study.

Table 4, continued

Study	Primary Findings (Language Development)	Rival Explanations/ Major Threats to Validity
Valdez-Menchaca & Whitehurst (1992)	Children in DR group had greater expressive and receptive vocabulary than children in the play group.	<p>Adult reader was an advanced Ph.D. student who met with students individually; this does not reflect actual training, motivation, and available time of daycare workers.</p> <p>Standardized measures were not culturally sensitive.</p> <p>Researchers did not separate the effects of DR with an increased frequency of reading and children's familiarity with the book used at posttest.</p>
Whitehurst, Arnold, Epstein et al. (1994)	<p>Children in DR groups had greater expressive vocabulary scores than play group.</p> <p>Children who received DR at daycare and at home had greater scores than children who received intervention at daycare only.</p> <p>Six-month follow-up indicated expressive vocabulary growth was maintained.</p>	<p>Substantial variability in teacher compliance with DR program schedule, moderating program effects</p> <p>Centers did not continue intervention characteristics beyond study.</p>
Whitehurst, Falco, Lonigan et al. (1988)	<p>Children in DR group had greater expressive vocabulary scores than did children in the regular reading group.</p> <p>Nine-month follow-up indicated expressive vocabulary growth was maintained.</p>	<p>Results possibly caused by a Hawthorne Effect of experimental-group parents knowing they were in a special program.</p> <p>Possibility of pre-existing differences in the experimental- and control-group children that occurred despite random assignment</p>

DR = Dialogic reading
MLU = Mean length of utterance