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Reading With Young Children

Nancy Ewald Jackson, Ph.D.
Cathy M. Roller, Ph.D.
University of Iowa
Iowa City, Iowa

January 1993
Number 9302

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RESEARCH-BASED DECISION MAKING SERIES

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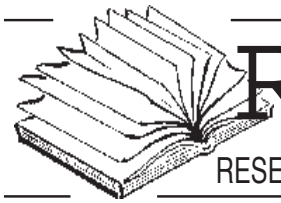

Reading

RESEARCH-BASED DECISION MAKING SERIES

THE NATIONAL RESEARCH CENTER ON THE GIFTED AND TALENTED

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January, 1993

Dear Teacher,

The report we have written, *Reading With Young Children*, is different from the other reports you may have seen in the **NRC/GT** Research-Based Decision Making Series and from most other literature in gifted education. We wrote the report the way we did because we were asked to address the concerns of teachers and parents of young children who might be precocious readers or who might be gifted in other ways.

You will notice that gifted children and precocious readers are mentioned infrequently in much of the report, although they are the focus of one main section. There are two reasons for this organization. First, what we know about the development of gifted children and precocious readers suggests that they become literate much as other children do, although they may progress much faster. Therefore, the general literature on how children learn to read and write is relevant for understanding children who are gifted in this area. Second, our experience with parents and teachers of young children suggests that individuals differ in how they feel about describing a child's performance as gifted. Some parents and teachers are reluctant to label a child or to think about a class as including some children who are gifted and others who are not. We wanted our report to be something with which a broad spectrum of parents and teachers would feel comfortable. At the same time, we tried to make the report reflect our awareness of the special characteristics and needs of young children whose literacy development is progressing unusually fast.

We have tried to make our report clear and have avoided technical language. If the parents of the children in your classes are not likely to be comfortable learning independently from a report, we hope that you will find *Reading With Young Children* useful in suggesting things you can say or demonstrate to help them understand and nurture their child's development.

Sincerely,

Nancy Ewald Jackson, Ph.D.
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Reading With Young Children

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ABSTRACT

This report provides research-based answers to questions parents and teachers often ask about how reading and writing develop from infancy to about age 6 years. The unusually rapid development of these skills in some young children is considered in a major section on precocious readers. Precocious reading ability is a form of gifted intellectual performance that may appear alone or together with other kinds of gifted performance. However, this report was not written only for those who are concerned with the development or education of gifted children. Much of the report addresses general questions about the development of reading and writing ability in young children who may have other gifts. Each major section of the report was written so that it can stand alone, and each contains a separate reference list and list of recommended resources for parents and teachers.

The research literatures summarized in this report reveal that literacy development begins very early as the 2- or 3-year-old child acquires a broad base of knowledge and skills in the context of a wide range of activities and experiences. Learning to identify and print letters and words are important parts of beginning to read and write, but early literacy development also encompasses learning about the nature of stories, the characteristics and functions of print, and the sound patterns of oral language. Aspects of reading and writing skills are likely to develop in predictable sequences, but individual children's development across skill areas may be uneven. Literacy-related activities are most likely to nurture a child's development if they are geared to the child's current level of understanding and interest. The reasons why some children become precocious readers are not well understood. Precocious readers are likely to have a solid repertoire of reading skills, but individuals differ in their relative strengths, and precocious readers may not be equally advanced in other skill areas, such as writing or reasoning. Precocious readers are likely to remain good readers, but children who have not started early often catch up. Early assessment of a child's reading and writing skills may facilitate the development of appropriate curriculum for both precocious and slow-to-develop readers.

Reading With Young Children

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EXECUTIVE SUMMARY

Teachers and parents of young children who have demonstrated intellectual gifts often are concerned, and appropriately so, about helping these children get a good start in reading. They also may wonder whether children who have learned to read at unusually early ages have a solid foundation for future learning. This report summarizes recent research on how adults can help children as they progress through the initial stages of literacy during these years. Some children progress much more rapidly than most, but the literature suggests that the same kinds of development take place in all children. Therefore, we present the literature on the development of precocious reading in the context of a general review of the literature on emerging literacy.

Because reading with young children is a significant factor in children's later reading and academic performance, it is important for adults to read with children in productive ways. A guiding principle in reading with young children is responsiveness. Children at different stages of development respond differently to story reading. Story reading early in development may consist of pointing out, naming, and discussing pictures. As the child develops, the sessions include more actual reading of the story, interspersed with responses to and talk about the story. Eventually the child may begin to take over the reading role. The optimum form of interaction is likely to evolve naturally if adults follow the child's lead and are responsive to the child (Roser & Martinez, 1985; Wells, 1986). While research is sometimes inconclusive about particular reading practices and behaviors, interactions that build on the child's interests and keep the child engaged in the story session are likely to be most productive for literacy development.

Responsiveness is also an important principle for selecting books to read with young children. Children know what they want to read at very early ages and often ask to have the same books read repeatedly. Parents and adults should honor these choices. With multiple readings, children's attention shifts among various aspects of stories such as illustrations, comprehension, and print characteristics. Rereading seems to provide opportunities for various kinds of learning (Martinez & Roser, 1985). This is not to say that adults should not choose books for children. Often children need help in exploring the many and varied possibilities that children's books offer. Adults can offer possibilities and expand children's horizons. They can encourage children to stick with a book that may seem too challenging at first. However, forcing children to read books that they do not like is ultimately counterproductive and does not provide the kind of

experience that will foster life-long reading behaviors. Adults should respect children's judgment and be responsive to their choices.

Reading with children involves much more than an adult sitting down with a book and reading the print to the child. Adult-child interactions around books include a great deal of talk that contributes to the development of vocabulary and higher-order thinking skills. Adults often share their responses to story events with children. For example, an adult might say, "Oh! I don't think I'd do that!" in response to a character's action. Adults often check children's understanding and provide background information needed to make sense of story events. Adult talk models the comprehension process and help the child understand that reading is about making sense.

Reading to children is a very important and critical aspect of literacy development, but other activities are also important. Children make important literacy discoveries from interacting with environmental print and from the oral language development that occurs in their conversations with adults. In addition, television, toys, and computer programs may contribute to early literacy development (Liebert & Sprafkin, 1980). Most successful early readers have a great deal of knowledge about letters and sounds. They know both letter names and the sounds typically associated with individual letters and letter combinations. They also understand that the uninterrupted stream of sound in a spoken word can be analyzed into segments that correspond with printed letters (Goswami & Bryant, 1990). Typically, they acquire this knowledge in informal activities, games, and the writing activities they engage in with their parents and other adults.

We used to think of the preschool years as a time when a child gets ready to learn to read. However, as researchers have learned more about the nature and meaning of children's earliest interactions with books, pencils, and paper, definitions of reading and writing have been expanded to include skills that emerge very early in life as the earliest stages in the development of literacy. This shift in how we think and write about preschoolers' literacy skills is important for parents and teachers. If we think of the ways in which a 3-year-old interacts with print as genuinely literate behavior, we are reminded of the importance of these activities. The most general lesson to be learned from recent research on emergent literacy in children of preschool age is that skills that might seem more like play than real reading and writing actually are important signs of progress in the child's gradual mastery of the complexities of being a reader and writer.

In both reading and writing development, children imitate adult behavior and move gradually from unconventional, incomplete approximations to conventional reading and writing performances. A set of loosely related skill sequences develop alongside one another, but children vary greatly in the rate of their progressions through each sequence. An individual child might not go through a sequence step-by-step or be at comparable points in the development of different skills such as identifying letters, understanding the nature of stories, and writing.

The earliest stages of development involve learning to identify print and recognize that reading and writing are special activities. For example, children's initial reading attempts may involve talking about the pictures in a book without paying any attention to print, but showing awareness that reading involves talking about something on the printed page. Eventually, children come to understand and use print when they are reading, but this skill emerges at the end of a sequence of important preliminary developments (Sulzby & Barnhart, 1992). Similarly, as children begin to write stories, the print they put on the paper may have little connection with the words that they intend to write. Gradually the word/print match develops, and writing takes more conventional forms (Bissex, 1980).

Children also need to learn to identify letters and recognize that the stream of sound they hear when a word is pronounced can be divided into a sequence of sounds that matches those letters. Children who are progressing at an average rate can identify beginning-letter sounds in words by the end of their kindergarten year (Markwardt, 1989). By the time they are in second grade, children should have developed considerable skill in sounding-out words (Byrne, Freebody, & Gates, 1992).

Precocious readers are children whose progression through the earliest stages of literacy acquisition is so exceptionally rapid that they merit special attention from researchers and school personnel. Precocious reading is in itself an instance of "high performance capability in . . . [a] specific academic field" as defined under the Jacob K. Javits Gifted and Talented Students Education Act of 1988. Many precocious readers are also gifted in their verbal and reasoning ability. However, there is no necessary connection between precocious reading and precocity in verbal reasoning.

The literature suggests that precocious readers are variable in intelligence, and that the group mean IQ is about 130, which indicates that about one half of precocious readers would not be considered gifted according to an intelligence test criterion (Jackson, 1992). Therefore, precocious readers should benefit from advanced reading instruction, but may not always be the best candidates for gifted programs that focus on more general verbal reasoning skills. On the other hand, young children who are gifted in the area of verbal knowledge and reasoning skills will not necessarily have advanced reading skills. Children with high verbal intelligence occasionally experience great difficulty in learning to read, most precocious readers have a solid repertoire of basic skills, including the ability to sound-out words, by the time they are ready to start first grade. They are likely to be especially fluent, efficient readers, spontaneously using a rapid-reading strategy that probably facilitates their ability to comprehend text. Some precocious readers may not be equally advanced in writing, and individuals vary considerably in the relative strengths and weaknesses of their component reading skills (Jackson, 1992).

Researchers have not been able to establish exactly why some children become precocious readers. Parents of precocious readers typically have interacted with their young children in ways that would be expected to support the development of literacy, but many other parents provide the same kinds of support without having their child

make exceptionally rapid progress. Parents of a precocious reader often seem to be following the lead of their child's rapidly maturing interests and skills.

In the long run, precocious readers almost always continue to be good readers, but other children may catch up once they also have broken the code of print. Experiments in which a randomly chosen group of children has been given advanced instruction in reading during their preschool years generally have not had long-term benefits (Jackson, 1992).

Conclusions

The nature of the conclusions we can draw from the research literature on early literacy development is influenced by the goals and methods of the research. Most research has been descriptive rather than prescriptive. In other words, researchers describe how children of various ages are likely to behave in situations that involve reading or writing, and they describe the range of ways in which adults are likely to interact with children in these situations. Researchers also have described which patterns of development and adult-child interaction during the preschool years are more likely than others to be associated with success in reading during elementary school.

This descriptive research does not provide a consistently strong base for prescribing guidelines about how children should develop and how adults should support their development. Nonetheless, the available research can and should influence how we think about nurturing literacy development in young children. Our beliefs about the nature of children and learning inevitably influence how we behave when we are with them and the kinds of environments we create to nurture their development.

The practices recommended in this report are those that the authors feel are logically consistent with the picture of literacy development that emerges from recent research. However, our readers should be aware that the development of literacy is a complex phenomenon that researchers are still working to understand. Our picture of literacy development has changed radically in the past twenty years, and it will continue to change as more is learned from new research and theory. Our readers are urged to act as researchers themselves, observing what happens when a recommended practice is attempted, and making changes as necessary to fit the particular needs of an individual child and set of circumstances.

Conclusion One: During the preschool years, children acquire important literacy knowledge and behaviors such as understanding that print has meaning, that writing takes particular forms, and that words can be divided into sequences of sounds.

Discussion: Children begin to engage in literate behaviors early in their preschool years. Important milestones in the acquisition of literacy include acquiring the knowledge and behaviors such as understanding that print conveys a message and that reading and

writing are useful, attainable, and enjoyable skills; knowing how to make marks on paper that look more like writing than drawing; or recognizing that the sound of a word can be divided up into a sequence of component sounds (Lomax & McGee, 1986; Mason, 1979; Sulzby, 1985).

Conclusion Two: Effective story reading is interactive and responsive to the child.

Discussion: Young children seem to learn a great deal from story-reading interactions that are not directly related to figuring out how to identify the words on the printed page. Particularly in the early preschool years, parents of young children are likely to do more talking and listening than actual reading during a story-reading session (Altwerger, Diehl-Faxon, & Dockstader-Anderson, 1985). Children are more likely to enjoy and remain attentive to story-reading if the activity is geared to their current level of understanding and gives them a chance to participate. During story-reading sessions, adults may help children learn that reading is an enjoyable activity and gradually teach them how to understand stories by voicing their own reactions to the story and engaging the child in dialogue to check his or her comprehension of and reactions to the story (Roser & Martinez, 1985). Computer programs, television programs, and toys designed to help children learn to read may be helpful (Liebert & Sprafkin, 1988; Martin, 1986; Wise, 1991), but may not engage the child's active participation and respond to the child's behavior in the flexible way a human reading partner can.

Conclusion Three: In early reading development, literacy acquisition reflects the child's developing knowledge of and about several aspects of language. In later reading development, wide-ranging knowledge of the world and the ability to express that knowledge through language becomes more critical.

Discussion: In the long run, a child's mastery of oral language is likely to be one of the most critical factors in a child's success in reading. Some aspects of oral language knowledge are important for success in beginning reading, and others become more important in the later elementary school grades as children begin to read more complex materials (Curtis, 1980; Goswami & Bryant, 1990).

Many forms of knowledge of and about language are involved in beginning reading. These include knowledge of what a *word* is and of specific word meanings and sentence forms, knowledge of how to tell and listen to a story about events from another time or place, and knowledge that the stream of sound within a word can be broken up into segments that match letters or letter sequences. Children may acquire this last form of knowledge in part from listening to and making up rhymes. Children who have been exposed to and become skilled at rhyming are likely to be better beginning readers (Bryant, Bradley, MacLean, & Crossland, 1989). For later reading development, the most important aspect of language probably is a wide-ranging knowledge of the world and the ability to express that knowledge through language (Curtis, 1980).

Conclusion Four: In early writing as in early reading, preschool children initially use unconventional forms that gradually develop into the conventional forms used by adult readers and writers. A child's early reading and writing skills may develop in somewhat parallel sequences, but there is evidence that development may be more rapid in one area than in the other.

Discussion: Recent research suggests that children are beginning to write when they announce that an almost formless scribble is "a letter to Grandma," or dictate a story for someone else to translate into print. As children begin to learn the names and sounds of letters, they may construct words and messages in their own unconventional but orderly systems (Bissex, 1980; Mann, Tobin, & Wilson, 1988). These unconventional spellings evolve gradually into conventional spelling, and using them may help the child develop understanding of the correspondence between letters and the sounds they represent. Learning to write may help a child learn to read, but the two skills develop somewhat independently, and some children make fast progress through the early stages of one skill without keeping the same pace in their development of the other (Jackson, 1992; Shanahan & Lomax, 1986).

Conclusion Five: While learning to read involves much more than learning to name letters and recognize their sounds, learning letter names and sounds and the relationships between them is an important aspect of early literacy development.

Discussion: Recent research suggests that learning to read involves much more than learning to name letters and recognize their sounds. However, the alphabet is the key to written English, and children do need to learn that key in order to succeed as readers. Children in kindergarten should know the names of the letters and be able to identify at least some sounds for letters at the beginning or end of words (Markwardt, 1989). Children who know letters names accurately and can use them efficiently are likely to be more successful at beginning to read (Ehri & Robbins, 1992; Lomax & McGee, 1986). Most children can learn letter names easily during the preschool years, but they also need to learn that letters are not just objects but symbols with a special role in written communication.

After many years of research, the evidence is clear that, in order to become skilled readers of English, children need to learn to match individual letters or letter strings with their corresponding sounds (Adams, 1990). Most children begin identifying words by recognizing part or all of their visual pattern, but those who don't master letter-sound correspondence are likely to fall behind beginning in the second grade (Byrne, Freebody, & Gates, 1992). Some children learn to sound-out words without any formal instruction, while others have great difficulty learning to do so. The ability to hear the sequence of sounds within spoken words is related to the development of ability to sound-out written words. This ability improves after children have learned to read, but to some extent it seems to be necessary for children to begin to read new words (Ehri & Robbins, 1992; Goswami & Bryant, 1990). The best way to combine instruction in sounding-out words with instruction in other important aspects of literacy probably varies from one child to another.

Conclusion Six: Reading failure in later years can be prevented by the early identification of reading difficulties, followed by appropriate instruction.

Discussion: Children progress through the early stages of literacy development at different rates during the preschool years, and some later bloomers may catch up with and surpass the earliest starters (Mills & Jackson, 1992). However, children who have physical conditions or a family history that puts them at risk for developing reading problems should have their progress monitored beginning in the preschool years (Olson, Wise, Conners, Rack, & Fulker, 1989; Scarborough, 1990). By the time children are in kindergarten, children who are behind schedule usually can be identified by their teachers. Standard tests can be helpful in evaluating a child's development and diagnosing any problems. Reading problems are easier to correct if they are identified early (Clay, 1985).

Conclusion Seven: Precocious reading is an example of giftedness as defined by the Jacob K. Javits Gifted and Talented Students Education Act of 1988.

Discussion: Some children begin identifying words and comprehending written messages at unusually early ages, occasionally before their third birthday. These precocious readers develop in normal ways, but at an accelerated pace (Jackson, 1992). By the time they have finished kindergarten, they are likely to have a solid repertoire of reading skills, with a particular strength in the speed with which they read text (Jackson, 1992; Jackson, Donaldson, & Mills, 1992). However, individual precocious readers differ considerably in their reading styles or skill patterns (Jackson, Donaldson, & Cleland, 1988; Jackson, et al., 1992). Precocious readers are likely to continue to be above-average readers, but not all will remain exceptionally advanced as some of their later-starting classmates catch up in the elementary school years (Mills & Jackson, 1990; Rescorla, Hyson, & Hirsh-Pasek, 1991). Precocious reading is an example of giftedness as defined by the Jacob K. Javits Gifted and Talented Students Education Act of 1988.

No single kind of experience or characteristic sets precocious readers clearly apart from children who have not learned to read early. As with other forms of giftedness, the emergence of precocious reading may depend on a fortunate convergence of ability, interest, and opportunity (Csikszentmihalyi & Robinson, 1986). Most precocious readers have experienced the kind of parental encouragement that is associated with the development of beginning literacy in the preschool years, but precocious readers seem to lead their parents and teachers along at a faster pace (Jackson, 1992).

Most precocious readers are children of above-average intelligence, but many would not qualify as gifted in verbal intelligence (Durkin, 1966; Jackson, 1992). Some children with extremely high IQs do not read early, although many do (Jackson, 1992). Precocious readers are gifted *as readers*. Schools can accommodate precocious readers in a variety of different ways (Jackson, 1992).

Recommendations for Parents

Because many different aspects of young children's play with books, oral language, drawing materials, and with the print they encounter in everyday life are part of literacy development, parents should be aware that all of these experiences provide the child's preparation for reading instruction in school. Giving a child a good start in reading involves much more than just teaching letter names. Parents help their child learn to read by demonstrating the importance of reading and writing in their own lives, by talking with their children, by exchanging stories, by playing games with rhymes and other word sounds, and by giving children opportunities to appreciate books at their own level.

Story Reading

Reading with young children is an activity that should begin in infancy, but a story-reading session can take many different forms depending on the child's age and level of interest. Parents can read a book by pointing out, naming, or discussing the pictures; telling the story in language the child can understand, discussing the words and letters on a page, or listening while the child tells his or her own story. The form of interaction that works best is likely to evolve naturally if parents follow the child's lead. Children may enjoy reading the same books many times, learning something a little different each time. Television, special toys, and computer programs can help a child learn to read, but they should not be asked to take the place of time spent interacting with a responsive adult.

Talking With Children

Parents should remember that everything a child learns about oral language sooner or later will help the child as a reader and writer. One can think of time spent reading storybooks with a child as one of many times in which parents and children can talk with one another and children can learn about language. Because children of preschool age are skilled and enthusiastic language learners, most will help their parents talk with them effectively if parents attend and respond to the child's cues. Telling stories about shared experiences, past and future, and helping children to tell their own stories, may help them learn that telling a story is different from ordinary conversation. Understanding storytelling may help a child learn the forms and purpose of reading and writing. Learning to attend to the sounds of words as well as to their meaning and to divide a word's sounds into parts helps prepare a child for matching sounds with letters in reading and writing.

Writing

Parents can do a variety of things to help children think of themselves as writers. They can give their young children many opportunities to express themselves on paper or at a keyboard. They can demonstrate the importance of writing by involving the child in the writing and reading of cards and letters to family or friends, making lists, and

marking household objects with the owner's name or other useful information. Children may learn letter names and corresponding sounds quite naturally as they are trying to write a word or message.

Learning Letter Names and Sounds

Children can learn letter names from reading alphabet books, from playing with magnetic letters on the refrigerator door, from watching *Sesame Street*, from their own beginning writing attempts, or by talking with adults about letters they see in the world around them. A storybook-reading session may offer opportunities to help a child learn letter names, but most such sessions work well if they are devoted to activities related to other aspects of literacy. Eventually, children need to fit their knowledge of letter names together with what they have learned about the nature and uses of print and how words, sentences, and stories are put together. Learning letter names can be a gradual process during the preschool years. Capital letters are likely to be easier for the child to learn first. Because some letter sounds are close to their names, letter names give a child an introduction to the system of letter sounds. Like other kinds of learning, learning letter names is likely to be more successful if paced to match a child's developing interests.

Although a few children begin to figure out letter-sound patterns while in their preschool years, children typically don't begin sounding-out words until some time in their kindergarten or first-grade year. Unless a child shows an unusually early interest in mastering this skill, it probably is not the most important focus of parents' literacy-related interactions with their preschoolers. Activities that help a child understand the importance of reading and writing, and introduce the child to the basic organization of print, learning letter names, and learning to attend to sound patterns within words should give a child a good foundation for learning to sound-out words.

Checking a Child's Progress

Most parents who are supporting the development of their child's reading and writing by providing activities in which they interact in mutually enjoyable ways with language, books, and print need not be concerned about the pace of their child's literacy development. Each child has different interests and abilities, and encouraging those is likely to be more important than checking the child's progress against a timetable. However, a child's development should be checked by a professional if, before beginning kindergarten and after considerable exposure to written texts and letters, he or she does not know letter names, have a basic understanding of how print is structured, demonstrate the ability to recognize and create rhymes, and show some awareness that word sounds are related to patterns of print.

Supporting Precocious Readers

No formula for creating a precocious reader has been identified by researchers, and pushing a child exceptionally rapidly through the beginning stages of reading probably will not have any lasting benefit. Both parent and child are likely to enjoy their

literacy-related activities more, and the child is likely to make better progress, if parents follow their child's lead in choosing and structuring activities. During the preschool years, parents should be most concerned with maintaining their child's enthusiasm for learning and providing a broad base for subsequent developments in literacy, language, reasoning, and all other aspects of development. Pushing a child into early reading when he or she is not yet ready or interested may leave the child feeling frustrated and unenthusiastic about further learning. However, parents whose children do become precocious readers should enjoy and nurture their child's gift. When precocious readers are about to begin school, discussion with school personnel and formal assessment may help the school develop a program that is well matched to the child's abilities and needs.

Recommendations for Teachers and Administrators

Our research-based recommendations to teachers and administrators reflect the dual role of the school as a center for the development of early literacy and as a partner and resource for supporting parents in the creation of a home and environment that will complement activities at school.

How Teachers and Schools Can Help Parents Support Early Literacy

Because literacy begins very early, educators should do whatever they can to help parents of young children, even infants and toddlers, begin nurturing their children's development. In general, parents may need help in appreciating what their children *already* know about books and print and *adapting* their interactions to the child's level rather than conducting activities such as story reading according to a predefined adult concept of that activity. A few more specific suggestions follow:

- Teachers can point out that learning to read involves more than learning to identify printed words by demonstrating effective storybook reading while parents are visiting school or during a home visit.
- If parents are concerned that expensive toys or computer programs are critical for their child's success in beginning to read, teachers can remind them of the more important things they can do in their own interactions with the child.
- If parents do have a home computer that their child is interested in using, teachers can help parents find program packages appropriate to the child's abilities and interests in reading or writing.
- Teachers can encourage parents to read some rhyming books to their children and develop a family repertoire of favorite rhymes.
- Teachers can help parents comprehend and appreciate what a child's sometimes unconventional spelling reveals about his or her knowledge of letter sounds. Examples of how children's spontaneous spelling becomes more conventional over time may give parents needed reassurance.
- Helping parents to teach their children to learn letter names and sounds involves keeping a balance between making sure that parents know that

this knowledge is important and helping them understand that beginning literacy involves many other kinds of knowledge as well. Teachers can demonstrate ways of making instruction in letter names a low-key activity that engages the child's interest.

How Schools Can Support Early Literacy Development in the Classroom

Most teachers and administrators who are familiar with recent developments in early childhood education will have recognized the general thrust of most of the conclusions in this report as consistent with both the whole language movement in literacy education and with the recommendations of influential reports (Adams, 1990; Anderson, Hiebert, Scott, & Wilkinson, 1984). Like others who have reviewed the research literature, we recommend the following classroom and school practices:

- Children do need to learn to sound-out words. Instruction that will help children learn to do this can be part of a program that emphasizes reading children's literature and encourages children's writing. Children are more likely to be interested in learning to sound-out words if they already have developed a fundamental understanding of more basic concepts of print. Therefore, teachers should check children's understanding of these concepts as part of their instruction.
- Teachers and administrators are appropriately reluctant to label a young child a failure very early in the school years. However, early attention to even moderately slow development in reading can help a child catch up before a problem becomes much worse. Lagging literacy skills can exclude children with other intellectual gifts from many valuable learning experiences.

Our conclusions about the nature of literacy development in precocious readers also lead to some recommendations for how schools should modify curriculum and programs to match their special abilities:

- School personnel need not worry that precocious readers have learned to read in some peculiar way that will be harmful in the long run. Precocious readers do not need to re-learn the basics they already have mastered. However, individual precocious readers may have areas of relative weakness in their skill patterns that merit attention, particularly when their skills are considered in relation to the full breadth of the school language arts curriculum.
- The kind of educational placement that makes most sense for precocious readers depends on the broad match between the child's intellectual, social, emotional, and physical development, his or her interests, and the demands and opportunities in available classes and programs. Because they sometimes are not exceptionally high in verbal reasoning ability, precocious readers are not always strong candidates for long-term placement in gifted education programs, but many precocious readers are

excellent reasoners as well, and will fit very well into gifted education programs that emphasize higher-level thinking skills.

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Reading With Young Children

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Introduction

Learning to read is one of the most important challenges of the early school years. Parents and teachers of young children often wonder whether they need to do anything special to prepare preschoolers for this challenge. Some wonder whether it is a good idea to try to give children an extra early start in reading and, if so, how they might go about doing that. Parents and teachers of a preschooler who already has learned to read may wonder how to maintain the child's interest and encourage further progress. Other parents and teachers may not be eager to have a child enter school with extremely advanced reading skills, but they do want to make sure that they have helped the child get a good solid base for further learning. This paper has been written for parents and teachers who have any of these concerns.

Unlike most other reports in the Research-Based Decision Making Series published by The National Research Center on the Gifted and Talented, this report is not a detailed scholarly review written for policy makers and researchers. Instead, our task was to translate the existing research literature into a form that would make its findings and implications more accessible to parents and teachers of young children. Therefore, we have drawn conclusions from the research literature without explicitly addressing methodological or theoretical issues.

We have assumed that many of our readers are interested in young children who have displayed exceptionally advanced ability in reading or writing, or who have demonstrated other forms of giftedness. However, we feel that it is important for anyone who is interested in a particular form of gifted performance, such as precocious reading, to be able to view that phenomenon in the broader context of what is known about the nature of learning and development. Most sections of our report focus on these broader issues and therefore should be appropriate for any reader who lives or works with a young child, whether or not that child is a "gifted reader" in any of the possible senses of that ambiguous term. Relations between reading precocity and other forms of intellectual giftedness are considered in the section on precocious reading.

In itself, precocious reading achievement is an example of high performance capability in a specific academic field, and therefore is a form of giftedness that falls within the scope of the federal definition established in the Jacob K. Javits Gifted and Talented Students Education Act of 1988 (Public Law 100-297). According to that act, "[t]he term 'gifted and talented students' means children and youth who give evidence of high performance capability in areas such as intellectual, creative, artistic, or leadership

capacity or in specific academic field, and who require services or activities not ordinarily provided by the school in order to fully develop such capabilities." Supporting the development of literacy in children who are gifted in other ways also is a goal within the spirit of that act. Failure to learn to read well limits the opportunities of any child, regardless of his or her other gifts.

As our title suggests, we focus on reading more than writing. Both aspects of literacy are discussed in this report, but much more research has been done on how children begin reading during the preschool years than on preschoolers' writing. Our title also indicates an emphasis that we hope pervades this paper: reading with a young child is a joint activity in which the child and the adult both play important roles, no matter who is pronouncing the words printed on the page.

This report includes research-based suggestions about what to look for in young children's reading and writing and how to support their developing skills and interests. Research has helped us understand a great deal about young children's learning and development. However, translating research results into practical advice always involves some logical leaps, and researchers have not always been able to answer the questions that are most important to parents and teachers. To fill in these gaps, we have drawn on what we have learned from our own professional experiences with advanced and delayed readers, with very young and not-quite-so-young children, and in observing children learning to read and write both at home and at school.

Suggestions for Using This Report

This report is organized so that each of the following five major sections answers a set of closely related questions, frequently asked by parents and teachers, about how children's reading (and writing) skills develop and how adults can support this development. Some of these questions are more likely to be asked by parents than teachers, or vice versa. Two sections of questions and answers about what adults can do as they read storybooks with young children and provide other kinds of experiences with language and print are followed by two sections describing how reading and related skills develop in children who are progressing in typical fashion and in precocious readers who are making unusually rapid progress. We also address some questions that parents and teachers have asked us about testing young children's reading development. Each section of the report ends with a complete list of the original research reports and other sources we have used, along with some non-technical resources for parents and teachers.

How Should We Read With Young Children?

Why Should We Read With Young Children?

Probably the most important reason for reading with children is that reading is fun. It is an opportunity to spend time doing something that both adults and children enjoy—a time for adults to share with children an activity that they love and that has served them well through the years. While there is no direct research about whether parents and teachers enjoy reading with children, there are many descriptions and reports of adults reading with children. These descriptions have recorded the successful literacy development of children in a variety of settings, and several of them focus on the development of precocious readers (Baghban, 1984; Bissex, 1980; Clark, 1976; Durkin, 1966; Hall, 1987). The descriptions of successful literacy development are characterized by a sense of enjoyment and, at times, even playfulness. Most parents and teachers, regardless of education or class status, believe that reading with children is important (Fitzgerald, Spiegel, & Cunningham, 1991); these descriptions also convey the message that reading with a child is a special and cherished activity for both adult and child.

A second, and very important, reason for reading with children is that reading with children in the preschool years is strongly associated with their later academic success. *Becoming a Nation of Readers: The Report of the Commission on Reading* (Anderson, Hiebert, Scott, & Wilkinson, 1985) says, "The single most important activity for building the knowledge required for eventual success in reading is reading aloud to a child" (p. 23). Reading with young children has an effect on both cognitive and affective development. Two important studies are consistent with this claim. One (Wells, 1986) tracked the language development and school progress of 32 children from shortly after their first birthday to the last year of elementary school. One objective of the study was to examine the relation between language development, class status, and school achievement.

The researchers had thought that lower-class children's poor achievement record in schools might be due to differences in the language developed in lower- and middle-class homes. They were surprised to find that, up to the age of 5, there were no clear differences between middle- and lower-class groups of children in their rate of language development, in the range of meaning expressed, or in the range of functions for which language was used. However, they found that there were strong associations between the children's performance on a test of literacy knowledge and their family and class background. The literacy test was the best predictor of overall achievement at age 7, and it was still a good predictor at age 10. The children who obtained relatively higher scores on the knowledge-of-literacy test were likely to be middle class and to have parents who read more and owned more books; they also were more likely to read to their children who, in turn, were more likely to show an interest in literacy, asking about the meanings of words and the significance of letter shapes, and spending more time on activities associated with reading and writing. A study of three different social class groups in the Piedmont Carolinas (Heath, 1983) also documents these class-related differences in literacy environments.

What Is the Best Time for Reading With Children?

It is never too early to begin reading with young children. In one study (DeCasper & Spence, 1986), mothers-to-be read *The Cat in the Hat* by Dr. Seuss to their unborn children twice a day in the last 6 weeks of pregnancy. After the babies were born, they showed a clear preference for listening to the familiar story rather than another rhyming story. Not enough research is available to support conclusions about what and how much children can learn from stories read to them in the womb. However, reading to children from infancy onward seems to help reading become associated with pleasant, familiar, happy times. A positive attitude toward reading is a good foundation for later reading development.

The child should be the guide when deciding how frequently to read. How often will the child sit still for reading? Many families set aside a 15- to 30-minute period daily for story reading, and both parents and children initiate these sessions (Phillips & McNaughton, 1990). In most preschools and day care centers, at least that amount of time is allocated to reading. The time is often before bed or naptime or after a period of active play. Some families have two such daily reading times. A New Zealand study of middle-class families with 3- and 4-year-olds showed that, on the average, the families read on 23 out of 28 days. They read an average of 87 books during that time. In another study, children who had been read to for a total of 60 minutes per week or more did better on reading readiness measures than those who had been read to for less than 60 minutes per week (Brzeinski, 1964).

What Should Adults Do When They Read With a Child?

The most important thing to remember when reading with a child is that both the adult and the child should be enjoying themselves. Probably the best way to do this is to pay close attention to the child and respond to whatever it is about the book that the child seems to like and enjoy. Responding to what the child does is likely to result in a more productive session because the interactions that occur are more likely to be in a range of learning that helps the child move from what he or she already knows to whatever it is that she or he needs or wants to learn next (Hiebert, 1986). Learning occurs most effectively when we begin with the known and then move to the new. For example, we don't try to teach multiplication to a child who can't count. When a child begins to count off objects by giving each a verbal tag, we applaud that behavior. Then we help the child develop increasingly more reliable counting and numerical reasoning skills. Watching children carefully allows us to respond to them.

There is some evidence that the *responsiveness* of the parent-child interactions around books, rather than the sheer number of those interactions, leads to future academic success. In one study (Teale, Estrada, & Anderson, 1981), researchers observed that a particular child who had more experiences with print than any other in their group nonetheless was behind the other children in knowledge of print. The researchers suggested that this child's experiences may not have been appropriate to the child's level of development. Findings from another study also support the idea that it is parents'

responsiveness to children during reading that leads to later academic success (Crain-Thoreson & Dale, 1992). These researchers found that there was little relationship between specific parent behaviors and children's literacy knowledge. However, a measure of the children's engagement (how involved the children were in the sessions) during story reading was related to literacy. Both of these studies suggest that what is important during story reading is that the child be interested and participating. Perhaps the best way to summarize this is in Donald Graves' (1983) phrase, "leading from behind." Parents and teachers lead from behind by closely watching children and helping them do what they are trying to do. Good interactions are responsive to children.

Should Talking Be a Part of Reading With Children?

Sometimes parents and teachers think reading to children means that they should read and the child should listen. However, in the descriptions of parent-child reading sessions, researchers report that there is a lot of talk between parent and child during story reading. In fact, the amount of talk seems to be positively associated with success on early reading measures. The more talk they have experienced in their reading sessions, the higher children score on early reading tests (Flood, 1977).

Talking is a very important part of reading with children. In fact, with young children there may well be more talking than reading. Altwerger, Diehl-Faxon, and Dockstader-Anderson (1985) quoted an excerpt from a story-reading session with a 23-month-old. Parent and child shared a book that had 69 text words. The mother said 170 words during the interaction, and she never read the text at all. The child said 8 words. Twice he said, "Yeah," and he asked two three-word questions. The mother developed her style after a series of sessions in which she had tried to read the text and found that her child kept interrupting her. She explained to the interviewers that she discussed the pictures and made up a story of her own that she knew her son would understand, because she knew that he was not familiar with a lot of the vocabulary in the story. She said, ". . . you just make up or skip things that you know they don't understand until he does" (p. 478). Some children this age might be ready for more sophisticated story-reading sessions, but the key here is the responsiveness of the parent to the child's needs. This parent realized because of her child's interruptions that his needs were not being met when she simply read the text.

In another example of a mother reading with a 3-year-old child (Wells, 1986, pp. 152-154), all 89 story words except one in the title were read: 82 by the mother alone, one by both mother and child, and five by the child alone. In the course of the interaction, the mother said 379 words and the child said 104 words. The 88 words that were read were only 18% of the words that occurred during the interaction. Talking is a very important aspect of reading with children. For younger children, the adult may need to talk a great deal in order to keep the child's attention focused on the book. As children grow older, their capacity to listen to the printed story also grows. However, even with older children and those whose reading skills are developing rapidly, talk remains an important part of the story-reading session. In the next section we suggest some of the important functions of talk during story reading.

What Kind of Talk Occurs During Story Reading?

There are several types of talk that adults and children use during story reading (Roser & Martinez, 1985). Directing is the purpose of some of the talk. Adults usually introduce stories, announce the session is over, or assume a leadership role in discussions. As children become more accustomed to story-reading sessions, they too will use talk to direct the session. The second type of talk is response. As a co-responder, an adult may initiate topics of discussion for the purposes of describing information in illustrations, recounting parts of stories, sharing personal reactions to stories, and inviting the child to share responses.

In the role of co-responder, adults model for the child the process of the mature reader in interaction with text. For example, the mother in the Wells interaction began with, "The wasps are coming. Here's some more, look. *Wow*!" (p. 152). In this role, adults simply verbalize their own responses to the story, saying things like, "I wouldn't like to get a note like that!" and "I feel sorry for that little boy" (Roser & Martinez, 1985, p. 487). In addition to responding to the story themselves, adults signal that many types of responses are possible and appropriate by inviting children to respond. For example, adults might signal such responses by asking, "Have you ever used your imagination to think up something neat like this boy did?" or "What time of year do you think it is if they're packing like that?" (Roser & Martinez, 1985, p. 488). Children also use this kind of talk during story reading. For example, shortly after the mother in the Wells interaction began reading, her child responded, "I don't like wasps . . . flying into town." The child's comment was followed by an exchange in which the mother questioned the child about why he didn't like wasps and offered information about when wasps are dangerous. It is in this type of talk that cognitive and affective development are encouraged.

The third type of talk involves informing and monitoring. Adults often explain different aspects of stories, provide information to broaden the child's story-related world knowledge, and assess and monitor the child's understanding of stories. A second example taken from the dialogue in the Wells book shows how parents assess and monitor understanding. There was a picture of a man with a fly swatter. The illustration showed a stick with a box that had print on it. The mother asked the child, "What's he got?" She was monitoring his understanding. The child began to answer, "He's . . . " and then realized he didn't know and asked his mother, "What's he got?" Because the mother wanted to check her son's understanding, she returned the question to him, asking "What's that?" The boy answered, "A note. What does the note say?" In the ensuing talk the mother determined that the boy thought the man was holding a sign. She then explained that it was not a sign, but a swatter that the man would use to kill the wasps by hitting and squashing them. This kind of monitoring conveys to the child that a story must hang together and make sense and that it is the task of the reader to make it make sense.

In addition, when adults offer explanations they often model their thinking processes and verbalize for children the steps and moves they are taking as they make

inferences and draw conclusions based on the text. For example, Roser and Martinez (1985) present an example where a parent directs a child's attention to a recurring pattern in a text. When the parent asked if the child saw what they did each time, the child responded with, "What?" The parent then said, "Well, at first they packed all the clothes. Then in each place they lived, they threw something out and put something from where they lived—like from the tree they put the leaves, and from the seashore they put some shells, and from the cave they put some precious stones, and from the pond they took a frog. So each place they went and found something pretty that they liked" (p. 489). This kind of talk encourages children to think of reading as sense making and leads to children who think and question and use their higher-order thinking skills as they read. While research evidence is inconclusive, it seems that the talk during story reading is an important vehicle for the development of higher-level thinking skills.

In another interaction between a teacher and an intellectually gifted 4-year-old, the second author observed the reading of a very simple informational book about chipmunks. The text indicated that chipmunks put nuts and seeds in their cheeks but did not explain why. When the teacher questioned the child, it was clear that the child didn't realize the chipmunk was carrying the nuts and seeds to a storage place under the ground, and she gave the child a brief explanation. Later, when the child reread the book for his mother, he gave her a full explanation of why the chipmunks put nuts and seeds in their cheeks, elaborating on the teacher's explanation and fleshing it out. The talk that occurs around storybooks is rich in opportunities for thinking and learning.

What Kinds of Book Choices Make Good Reading?

The basic guideline for choosing books is engagement. If adult and child stay actively involved with a book, then it is probably a good choice. Choosing books for children is similar to choosing toys for them. Children use toys and play to explore their world. In the process of playing, they discover their world and learn the language that goes with that world. Reading books can be thought of as another, particularly rewarding, form of play that helps children extend their knowledge and language and actually contributes to learning to read.

The choice of a toy is usually based on what a child likes to do and can do. The object is to choose toys that suit children. Tricycles are not good choices for 6-month-olds, and rattles are not appropriate for 4-year-olds. Manufacturers' labeling of toys by age serve as rough guidelines in toy selection. Books are similar. Like toys, they often are marked for children of a certain age, and children's sections of book stores and libraries often are arranged by age. While a child's chronological age may not necessarily match his or her interests and abilities, the arrangement by age can give some indication of the interest and complexity level of the books.

Browsing through books is often the best way to select them. How do the books in this section match a child's interests? How do they match the interests of the adult who will be reading with the child? Think about what the child likes to do and can do with language. Can the child say single words? Tell whole stories? Is the child learning to

count? Does the child like nursery rhymes? Does the child like to play hide and seek? If the child is at the stage of saying single words, a book that focuses on single words or short sentences may be a good choice. If the child can tell stories, a book that tells a story might be appropriate. If the child is interested in motorcycles, or the adult reader is interested in motorcycles, a book about motorcycles might be just right. Because children develop at different rates and in different ways, what one knows about a particular child is likely to be better than some general rule as a guide to making good selections.

Selecting books for children who are either markedly advanced or markedly behind in their reading and intellectual development presents some specific challenges. For gifted children, it is sometimes difficult to find material that matches both their linguistic and social/emotional development. Too many young gifted children read books inappropriate to their social/emotional development because they seek complexity and literary style. Because gifted and precocious readers often are capable of pronouncing the words in material intended for much older children and adults, they sometimes are encouraged to read this material. Children's reading interests also may be very advanced in an area of particular interest to them, such as dinosaurs or baseball. However, precocious readers' chronological age sometimes may predict their interests more closely than their reading level does.

The challenge for the gifted child or precocious reader is to select cognitively challenging but interest-appropriate books. Some interest-appropriate books may not seem sufficiently challenging. A good maxim to keep in mind is that a child's reading material may include a variety of levels. Reading some less challenging material may be an important aspect of social/emotional development and give the gifted child a common ground on which to interact with same-aged peers.

There are several resources to draw upon for selecting intellectually challenging books which are also developmentally appropriate including *Books for the Gifted Child,* (vols. 1 & 2) (Baskin & Harris, 1980, 1988) and *Guiding Gifted Readers: From Preschool to High School* (Halsted, 1988). The selection of books for preschool children is less of a problem than is selection of books for older precocious and gifted children. Many picture books that are intended for the enjoyment of young children are designed as books to read *to* children and contain age-appropriate content expressed in rich language. This means that if a child is an exceptionally precocious reader in these early years, books designed for young children to listen to also can provide sufficient challenge in decoding and vocabulary development.

Beginning at very early ages, children know what they want to read. The 3- and 4-year-olds in the New Zealand study consistently chose the titles that their parents read to them. The majority of the time, children chose books that they had listened to before. Sometimes a child will want to hear the same book over and over. There is evidence that this repetition is a standard feature of early story reading and that the child is learning something new with each repetition. During early readings of a book, story reading sessions seem to concentrate on the illustrations and the meaning of the story. In later

readings, the focus begins to shift to the actual print (Martinez & Roser, 1985). Since children do seem to have definite preferences for their reading, it is important to involve them in selection of books. This is not to say that adults should not choose books for children. Often children need help in exploring the many and varied possibilities that children's books offer. Adults can offer possibilities and expand children's horizons. They can encourage children to stick with a book that may at first seem too challenging. However, forcing children to read books that they do not like is ultimately counterproductive and does not provide the kind of experience that will foster life-long reading behaviors. Adults should respect children's judgment and choices.

Children respond positively to good books. Bernice Cullinan, an international expert on children's literature, makes this point by saying, "It takes a good story" (Cullinan, 1987, p. 2). She writes about a children's librarian who was leading a story hour at Christmas time. When the librarian went to get a Christmas book, she found that they had all been checked out. She finally found a supermarket book about Santa Claus in the lost-and-found bin. The story hour began well, but when the librarian read the Santa Claus book, the children lost interest and began talking with one another. She quickly finished the story and reached for one of the children's old favorites. The children immediately stopped talking and paid attention. The supermarket book failed to capture their interest because it had uninteresting illustrations and no real story.

There are many beautiful children's books available in libraries and book stores. Choose those that have strong characters, interesting plots, fanciful turns in events, and attractive illustrations that support and contribute to the development of the story line. A major factor in your selections should be your knowledge of the particular child. What are the child's interests? What will the child sit still for? Consider many different types of books—folklore and fantasy, fiction, nonfiction, biography, and poetry. Language is also a very important consideration in selecting books. Because language is a major tool for thinking and the development of language is an important aspect of early reading, the language of book selections should be rich and varied, accurate, precise, and exciting. The content of the books should be familiar enough so that the children can make connections to their own experience and unfamiliar enough to expand their horizons and introduce them to new concepts.

Books with patterns of rhyme and repetition are often favorites. Nursery rhyme books and poetry are good choices for young children. They allow children to experience in print the rhymes and games that are a part of the talk and play of parents and children. Familiarity and facility with rhyme seems to be an important component of building children's awareness of word sounds. This awareness becomes critical in early reading instruction (Goswami & Bryant, 1990). Children love all kinds of predictable language patterns in books—rhyme or sentences and phrases that are repeated over and over with minor changes. These books are among the first books that children try to read themselves. The repetitive patterns give children the support and confidence they need to begin the task of word identification.

Children also love nonfiction. Adults often think that story reading means reading fiction. However, there are many beautiful informational books available, and the illustrations in these books often are magnificent. There is also evidence that there is more adult-child interaction with informational books (Pellegrini, Perlmutter, Galda, & Brody, 1990). These interactions are particularly successful when the topic of the book is closely related to the interests of either the adult, the child, or both. Since this interaction is very important to learning, it is wise to include informational books in story-reading sessions.

What Do Children Learn From Reading With Adults?

Experts do not agree completely about what children learn from story reading that leads to later academic achievement. However, they do agree that certain things are learned during story reading. Children who have been read to score better on the *Concepts of Print* test developed by Marie Clay (1985). This test measures children's understanding of print conventions. For example, do children know where a book begins? Do they know that the print rather than the picture tells the story? Do they know that print moves from top to bottom and left to right? Do children have the concepts of word and letter? Do they know that spaces separate words? Can they identify punctuation? Do they know the differences between capital and lower case letters? Children learn many of these concepts in the course of reading with an adult.

Another important benefit of story reading may be vocabulary development. It was clear in both examples described above that the explanation of vocabulary is a major activity in story reading. In the sessions with the 23-month-old boy described earlier, the two questions the child asked were "This a stroller?" while looking at a picture of a wheel barrow, and "What's boy doing?" The mother with the 3-year-old child spent considerable time defining swatter and net (Altwerger et al., 1985). Chall, Jacobs, and Baldwin (1990) suggest that the difference in vocabulary development as the result of early story reading may in fact be instrumental in later academic performance. They suggest that the definitions for abstract, literary, less common words are learned in the story-reading environment, and that failure to learn this abstract vocabulary is ultimately responsible for children's academic failure.

Other experts (Altwerger et al., 1985; Purcell-Gates & Dahl, 1991; Wells, 1986; Yaden, Smolkin, & Conlin, 1989) suggest that what is learned during story reading is the purpose of reading. Children in middle-class homes, who have experienced the kinds of interactive story reading we have described, become better reading comprehenders than children who have not had these experiences. Children who have been read to seem to understand that the task of a reader is to "use words to create a world of meaning" (Wells, 1986, p. 156). The interactions with their parents and adults around storybooks have taught them that the point of the exercise is to understand the world of the book. The talk of adults both models this process for the child and encourages the child to engage in this process. As parents talk about their responses and provide children with explanations, they teach the child what thinking and comprehending is all about. As indicated in the

section about the kinds of talk that occur during story reading, story reading may be a critical environment for the teaching and learning of higher-order thinking skills.

Should I Try to Teach a Child About Letters When We Are Reading?

Again, the basic answer to the question is that the adult should observe the child. What happens when you try to teach letters? Does the child lose interest? Does he or she become unhappy and stop paying attention? If the answers to these questions are "yes," then teaching letters at this time probably is not a good idea. In general, researchers' descriptions of story-reading sessions suggest that very little of the time is spent dealing with letters and pronouncing words (Bus & van IJzendoorn, 1988; Phillips & McNaughton, 1990; Yaden, Smolkin, & Conlin, 1989). Rather, story-reading sessions concentrate on building the meaning of the story.

In general, most children aren't particularly interested in the print during story reading. However, in each of the studies we examined, there were *some* story-reading sessions where there were more questions and talk about print. These seemed to occur with older children or those who were more advanced in their reading development, and with books that somehow invited attention to the print. For example, alphabet books seemed to encourage attention to the printed alphabet letter. There also seemed to be more talk about print when the book had been read many times (Martinez & Roser, 1985). The researchers commented that the features of some books seemed to prompt questions about print. One book that inspired discussion of print presented print in speech balloons. If the book invites attention to print, and the child is interested in the print, then by all means talk about the print. The talk may extend and build the child's knowledge of print. However, the research descriptions thus far indicate that, in most story-reading sessions, there is little talk about print and letter sounds. It seems likely that children learn letters and sounds in other game-like activities that do not take place during story reading.

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What Else Besides Reading With Children Helps Them Learn to Read?

What do Children Learn From the Print They See Around Them?

In a technological culture like ours, print is everywhere. Children see printed words not just in books, but everywhere they go—around the house, around the neighborhood, and on television. However, children are not likely to understand that print is not just pattern but also a message unless they have some help making this connection. In homes where they can observe adults or older children read and write, children are likely to get this kind of help.

In a recent study, parents of children who were about to begin kindergarten were asked to rate how important 46 different kinds of activities or materials were for helping young children learn to read and write (Fitzgerald, Spiegel, & Cunningham, 1991). Some of the parents' own literacy levels were very low (below 8th grade level) and others were very high (above college senior level). The list of activities and materials the parents rated contained items such as "flashcards with letters or pictures and words in the home," "paper to write on," "children recite the alphabet," "children listen to stories read to them at home," and "adults reading books, magazines, newspapers at home."

Both groups rated providing simple materials such as pencils, paper, and children's books as important, but the high-literacy and low-literacy parents differed in their ratings of the importance of some kinds of activities or objects. Oral language activities in which the child participated, and reading and writing engaged in by adults for their own purposes were rated as more important by the high-literacy than by the low-literacy parents. In contrast, the low-literacy parents gave higher ratings to special-use instructional materials, such as flashcards and computer toys for reading and spelling, and to child activities such as watching educational television or playing school. In their general comments, the high-literacy parents expressed a philosophy that their first priority was to create an environment in which their children would learn to appreciate the importance of reading and writing. The low-literacy parents expressed more concern about their children's learning of specific skills.

The research literature suggests that these high-literacy parents understood something important: a child's first task in learning to read and write is learning the purpose of these activities and that they are enjoyable and important. In visiting the homes of children who learned to read at early ages, one thing the first author has noticed is that every home was full of evidence that the parents themselves liked to read. Not all parents of precocious readers are highly educated, and the reading material in their homes may be popular magazines, newspapers, or hobby instructions. However, these parents have given their children plenty of opportunities to observe that reading is an important adult activity. For example, the parents of one precocious reader reported that part of the reason their daughter learned to read so early may have been that her mother was deaf, and written messages were an important part of the household communication system.

Once a child has begun to make the connection between print and meaning, opportunities to strengthen this understanding and expand the number of words a child can recognize are almost unlimited. Some children enjoy asking their parents or teachers to print a special word, which they can carry with them or post for repeated contemplation. For a child who loves cars and trucks, a walk down the street to check out manufacturer and model names can be great fun. A trip to a fast food restaurant offers a chance to practice recognizing the names of menu items, and reading and discussion of the nutritional information on breakfast cereal boxes can be a chance to combine reading with learning about good eating habits.

Is Talking With Children Important to Reading Development?

Talking with children is important to reading development because reading is dependent upon a child's wide knowledge of the world. Children who acquire more world knowledge at home are more likely to have greater success in reading (Anderson, Hiebert, Scott, & Wilkinson, 1985). Children who have gone on trips, walked in parks, and visited zoos and museums will have had a broad range of experiences and more opportunities to learn about the world. However, it is not only the experiences themselves, but also the talk that occurs along with them that determines what children learn from their experiences and what meanings they attach to them. Talking about their experiences extends children's concepts and vocabulary and helps them develop a sense of what it means to *tell* a story, a skill that is an important part of learning to read and write stories (Sulzby, 1985).

Some parents and teachers are more effective than others in talking with children (Cazden, 1983; Tough, 1979; Wells, 1986; Wood, Wood, & Middleton, 1978). The most important differences are related to parents' and teachers' responsiveness to children. Adults who are effective in assisting children's language development observe and listen to children carefully. For example, if a child who is just beginning to talk walks up to a book and says, "ook," an effective adult will check first to see if the child is talking about the book by asking, "Book?" If the child agrees, the adult might extend the child's meaning by saying, "Yes, it is your book, isn't it." The child might then say, "Book, Jackie." The adult will listen carefully to see if the child is referring to a particular incident, and perhaps follow up with more information from that incident such as, "Yes, Jackie took your book, didn't she. Did you cry?" The adult responds to the child by repeating what the child said and encouraging the child to say more about the topic. This is one of the characteristics of effective language interaction with young children. The adult is responsive to the child and follows the child's choice of conversational topics (Cazden, 1983; Wells, 1986).

Certain kinds of talk may be particularly helpful to later reading development. Research suggests that it is important for children to be able to talk about events removed from the here and now. In particular, the ability to tell stories about people and events that are not present may be related to later reading development (Anderson, Hiebert, Scott, & Wilkinson, 1985). Helping children learn to tell stories may be a very important preparation for their literacy development. Adults can be helpful to children in three

ways (Cazden, 1983). First, they can provide children with models by telling children stories about what they saw and did in the recent past. Second, they can help children tell their own stories. When children talk about something they used, saw, or did in the past, adults can help them tell their story by asking questions, saying "uhhum . . ." to indicate interest, and repeating phrases in a way that encourages the child to tell more. Third, there are times when direct instruction is appropriate. If the child is having trouble beginning a story, the adult might say, "Say, Yesterday, when Johnny and Becky. . ."

Another kind of talk that seems particularly important to later reading development is the talk that occurs around nursery rhymes and poetry. Parents sing songs and recite nursery rhymes and poems to their children. They often play rhyming games with their children. For example, they may leave a key rhyme out and expect the child to provide the word. They make up silly sentences and see how strings of rhymes will fit into them. Researchers have found that children's knowledge of nursery rhymes at age 3 is strongly related to their sensitivity to rhyme two years later. Sensitivity to rhyme is one of the factors that contributes to children's awareness of sounds, which seems to be a critical component of success in beginning reading (Bryant, Bradley, MacLean, & Crossland, 1989; MacLean, Bryant, & Bradley, 1987).

Should I Teach My Child Letter Names and Sounds?

At some point in their preschool years, children should learn to recognize and name letters of the alphabet. In many studies, researchers have found that children who begin school knowing letter names are more successful in beginning reading (Ehri & Wilce, 1985; Lomax & McGee, 1987). In part, this may be because just naming a letter often gives a child some information about its sound. One can get some idea of this principle by comparing the correct pronunciation of a word such as *deep* with the approximation one would get from pronouncing the names of each of the letters in the word. At least some children seem to figure out this system on their own and use it in their early attempts to identify words (Ehri & Wilce, 1985).

Almost all parents of children who begin reading early have taught not just letter names but something about the sounds most often associated with individual letters or letter combinations. Many parents of children who are not early readers have done the same (Durkin, 1966; Jackson, 1992). Sometimes this instruction may take place as a child experiments with printing letters and words. If both parent and child enjoy informal instruction about letter sounds, there is no reason not to offer it. However, conscientious parents may make the mistake of focusing on teaching letter names and sounds without also helping the child develop the background understanding necessary to make proper sense of this instruction.

Imagine a 2-year-old who is learning letter names from alphabet blocks, magnetic letters on the refrigerator, or a parent's printing. Two-year-olds are very skilled at learning names for things, and most can learn to name at least some capital letters. The child may have difficulty distinguishing letters that are similar except for their top-down or left-right orientation, such as "M" and "W" or "b" and "d," but these confusions are not

as much of a problem within the set of capitals as they are for lower-case letters (Casey, 1986). The problem with teaching letter names to a very young child is that the child may only be learning to identify letters as *objects* without becoming aware of their function as *symbols* (DeLoache, 1987). A child who learns letter names very early may have learned the names of objects or patterns without yet understanding how these names are connected with reading and writing as ways of communicating. However, some precocious 2-year-olds clearly have made this connection (Henderson, Jackson, & Mukamal, in press).

In order to use knowledge of letters in reading, a child also needs to understand the basic principles of the English writing system, such as left-to-right ordering and the fact that a string of letters beginning and ending with a blank space constitutes a word. Indeed, the abstract concept "word" is itself something that many young children may not yet understand even at the level of tacit knowledge (Roberts, 1992). Another challenge is learning that the uninterrupted stream of sound in a spoken word can be analyzed into segments that correspond with printed letters. The importance of these kinds of knowledge is explained further in the section on the sequences of development involved in learning to read.

Can Children Learn to Read From Watching *Sesame Street* ?

The public television program *Sesame Street* was developed in the late 1960s to help children from low-income homes learn some of the school-related information that more advantaged children learn routinely at home or preschool. The program has been a huge success with parents and children throughout this country and around the world, and children do acquire academic knowledge from watching it (Liebert & Sprafkin, 1988). Parents of precocious readers often report that their child has been an early and frequent viewer of *Sesame Street* (Jackson, Donaldson, & Cleland, 1988), but precocious readers also come from homes in which they are not permitted to watch any television. *Sesame Street* is designed to approximate some of the kinds of learning a child might engage in during interactions with, or observations of, adults and other children. The program encourages the viewer's active participation in reading and language games, and the TV characters model behaviors such as reading and writing. Letters and numbers are presented in ways designed to call the child's attention to their symbolic meaning. The research evidence suggests that viewing *Sesame Street* can help children of preschool age prepare to learn to read (Liebert & Sprafkin, 1988), and some other educational programs also may be helpful.

Should I Buy a Home Computer Program or Special Reading Toys?

In the past few years, many toys, games, audiotapes, and computer programs have been marketed as aids for teaching children to read. To our knowledge, all dramatic claims for the effectiveness of these devices are unsubstantiated. Many of them are likely to bore young children, and some cost far too much. However, some toys and computer programs have the potential to help some children learn. Rather than analyzing the merits of particular products, we would like to raise some issues that the research

literature suggests are relevant to considering what children can learn from different kinds of devices and activities.

When adults and children read a book together, children have many opportunities to keep the activity in line with their own interests and current level of understanding, and adults do much more than just read the text at a steady pace (Bus & van IJzendoorn, 1988; Crain-Thoreson & Dale, 1992). A reading session may involve talking about the pictures or discussion of the meaning of words. The adult may direct the child's attention to particular words in the text as they are read. One major limitation of most reading toys and technological aids is that they cannot provide this kind of flexible interaction. For example, think about the difference between what happens when an adult reads a story with a child and when a child looks at a book while listening to the audiotape recording of the story that has been packaged with it. Children enjoy looking at the pictures in a book, listening to the story being told, and turning pages when they are given the signal to do so. However, these activities do not give children opportunities to learn that reading is an enterprise in which they can take an active role.

Many computer programs have been designed to help children learn to read and write, and these devices do have an advantage over simpler reading toys in that they involve the child in interactions in which the child can make choices, create words or stories, ask for help in identifying a word, or attempt a response and get immediate feedback on its accuracy. Some of these programs have been reviewed enthusiastically by early childhood educators, and some early childhood programs have been designed that draw heavily on the use of computer-based instructional software (Martin, 1986). Programs designed for school use often capitalize on the latest advances in computer graphics and voice generation capabilities as well as video-disc technology. Making a research-based evaluation of competing programs is difficult because the state of the art is redefined again and again as newer and more sophisticated hardware and software becomes available.

Most commercial programs marketed for general use cost between $25 and $80 per copy and offer a limited range of activities, so they may be more appropriate for purchase by schools or groups of parents than by single families. An annual series of reviews of selected educational software called *Only the Best* (Niell & Niell, 1992) summarizes reviews from education agencies and commercial sources and gives basic information about new programs. The selection process and the review criteria used by each of their editors' sources are described in each issue.

Some computer programs focus on drill activities related to learning letters and words. Others allow the child to elaborate on or change a story. Some programs are appropriate only for children at a particular stage in their development, while others are flexible enough for children across a wide range of age and ability. The best programs are technologically sophisticated enough to be attractive and easy to use, and they approximate some part of what an adult does in one-on-one reading interactions with a child. Even the most responsive computer program cannot provide the warmth of human contact, but the impersonality and privacy of interacting with a computer may actually be

an advantage for some children who are anxious about reading (Wise, 1991). High quality computer-based reading packages also may be especially helpful for children whose parents do not read English well or who need more individual help with reading than school personnel can provide in human form.

Technological devices can help some children learn to read, but it is important to remember that countless children have learned to read and write very well without them. Before purchasing these devices, parents and teachers need to consider their goals for the child and whether the pleasure and learning opportunities a program offers justify its cost and the time taken away from other worthwhile activities.

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At What Ages Do Reading and Writing Skills First Appear? How Can I Tell if a Young Child's Progress in Literacy Is on Schedule?

We used to think of the preschool years as a time when a child gets *ready* to learn to read. However, as researchers have learned more about the nature and meaning of children's earliest interactions with books and pencil and paper, definitions of reading and writing have been expanded to include the skills that emerge very early in life as the earliest stages in the development of literacy. This shift in how we think and write about preschoolers' literacy skills is important for parents and teachers. If we think of the ways in which a 3-year-old interacts with print as genuinely literate behavior, we are reminded of the importance of these activities. The most general lesson to be learned from recent research on emergent literacy in children of preschool age is that skills that might seem more like play than real reading and writing actually are important signs of progress in the child's gradual mastery of the complexities of being a reader and writer.

Becoming familiar with the stages through which emergent literacy typically develops should help parents and teachers appreciate young children's accomplishments, anticipate and support transitions into more advanced stages, and identify unusually slow or rapid progress. Researchers have described sequences in awareness of different properties and functions of print, development of storybook reading, development of word identification strategies, and writing and spelling.

Individual children may not go through each sequence step by step. Nonetheless, the sequences that are summarized in the following section do describe what behaviors are most likely to emerge at different points in development, with ages varying according to a child's personal rate of progress. As a set, the sequences should be thought of as developing alongside one another, but not necessarily all at the same pace.

How and When Do Children Develop Understanding of the Properties and Functions of Print?

As adults in a literate society, we know a great many things about print that are so fundamental that we typically aren't even aware of our knowledge. However, children aren't born knowing or biologically programmed to develop the knowledge that books written in English should be held and opened with the binding on the left, that text is read from left to right and from top to bottom of a page, that the spaces between strings of letters have meaning, that a calendar can be consulted to plan activities and a telephone book to find a friend's number, and so on. Children probably develop awareness of these fundamental concepts of print by living in a print-rich environment, by watching adults and older children around them use and create print, and by participating in reading and writing at their own levels.

Most children have learned a great deal about print by the time they begin kindergarten. In a comprehensive study that built on earlier work by a number of other investigators, Lomax & McGee (1987) found that the middle-class 3-year-olds attending a private preschool had some ability to recognize literacy behaviors, to understand the

functions of print, to identify the basics of book and print orientation and units of print, such as a word, and to identify familiar printed labels. All aspects of this knowledge of print were significantly better among the 4-year-olds, and some continued to develop until age 6 years. Within this group of children, there also were close relations between the development of knowledge of concepts about print, awareness of aspects of letter and word form, and awareness of sound patterns in oral language. Children who knew the function of a printed object such as a telephone book were likely also to be able to identify the correct orientations of letters and to match pictures of objects whose names had the same beginning sound. The development of different aspects of literacy may be less closely synchronized in other children, particularly if they have unusual aptitudes or disabilities, or opportunities for some kinds of literacy-related learning but not others. For example, some children may learn a good deal about story reading before showing any interest in writing or spelling (Henderson, Jackson, & Mukamal, in press).

How Does Young Children's Reading of Storybooks Develop?

One way that children learn about print is by looking at books on their own and reading with an adult. We reported earlier that there are a variety of ways in which young children can participate in story reading. Sulzby and Barnhart (1992; Sulzby, 1985) have described how children's reading of stories changes as they progress through a sequence of five broad stages. Across all of these stages, development reflects the child's increasing attention to the story as a whole, developing recognition that it is the text and not the pictures in a book that tell the story, and increasing awareness that the oral language used in reading aloud has a special form. This last aspect of development requires some explanation.

When most of us describe someone as literate, we generally mean simply that the person is able to read and write. However, linguists studying literacy also have pointed out that literate language differs from ordinary conversation in a number of features besides the fact that it is transmitted to the eye via print rather than to the ear via a voice (Sulzby & Barnhart, 1992). Interposing print between the person creating a message (the writer) and the person receiving the message (a reader) places new demands on both parties. Because it is less direct and less bound to a particular time and place, written communication is removed from the immediate context, or *decontextualized*. It has to work on its own, without support from other cues such as the surrounding circumstances or the speaker's tone of voice or gestures.

Telling (and listening to) a story about some past or fictional happening can be thought of as a form of language that is partly decontextualized. The kinds of language that are effective when we are talking face-to-face with someone often would be incomprehensible as written messages. Oral storytelling requires language forms different from those used in conversation and also different from those used when one writes a story and cannot rely on gesture, timing, and intonation to carry part of the message. These distinctions are part of what children learn as their ability to read stories develops.

When asked to read a favorite storybook to an adult, the child who is in Stage 1 looks at the pictures and comments on whatever picture currently is in view, either labeling parts of the picture or noting the kind of action taking place. The slightly more sophisticated Stage 2 child tells a story that continues across a succession of pages and pictures. The language the Stage 2 child uses to tell a story about the pictures now has some elements of the style and intonation pattern that adults use in telling stories, and what the child is saying may be recognizably different from conversational speech. In Stage 3, the child is making the shift from *telling* a story about a series of pictures to *reading* the pictures using a language style that is even more decontextualized. Intonation patterns in the child's speech switch back and forth between storytelling and reading mode. By Stage 4, the child is consistently reading pictures. Even though the child isn't actually reading the printed words, the story that is told is complete enough for a listener to follow without having to look at the pictures. By this stage, the child has made an important transition to the production of language that can be understood without supporting context. When the story is a familiar one, the child's retelling of it may be an almost verbatim reconstruction of the text, but the child isn't actually attending to the print.

When a child reaches Stage 5, he or she finally begins to pay attention to the print in a storybook, moving gradually into what has been called real reading. Children in the early part of this stage may seem less sophisticated than Stage 4 readers because they now realize both that reading involves decoding print and that they don't know how to do this. A child might refuse to read by saying something like, "I can't read yet—I need you to help me sound-out the words" (Sulzby, 1985, p. 471). Children who are at this beginning level of Stage 5 may pay attention to print, and refuse to read, only some of the time, and fall back on reading the pictures at other times.

As children move farther along in Stage 5 and become slightly more sophisticated in identifying printed words, they may adopt any of several incomplete approaches to reading the story. They may pick out and pronounce whatever words they can recognize on a page, or try to sound-out selected words, without trying to reproduce the story as a whole. They also may recite the story from memory, much as Stage 4 children do, but reveal their awareness of the importance of print by looking at or pointing to the text as they recite. Finally, at the highest level of Stage 5, children progress beyond reliance on these partial strategies toward increasingly complete, accurate, independent, and self-controlled reading of text. Independent readers who are at the end of Stage 5 in their development do not read text perfectly, but they do have a full sense of what the task of reading entails, and they are able to use an appropriate balance of strategies to try to get the job done.

Sulzby (1985) used the scheme outlined above to categorize the storybook reading of 32 preschoolers, 2, 3, and 4-year-olds whose families were described as about equally divided between middle and lower class, and 24 kindergartners from a school that served a middle-class population. The kindergartners were tested twice; once at the beginning and once at the end of the school year. Half of the four 2-year-olds, one-third of the 3-year-olds, and a few of the older children refused to read for the investigator,

although they sometimes reacted to an adult's reading. The remainder reacted to the task in ways that suggested developmental progression through the five stages. Some children at all ages except the oldest were classified as being in Stage 1. Stage 4 was more common in 4 and 5-year-olds than in younger children, and the incidence of Stage 5 behavior increased from 21% to 42% from the beginning to the end of the kindergarten year.

When and How Do Children Learn to Recognize and Sound-out Words?

Sulzby's (1985) research suggests that many children are learning to read words in storybooks during their kindergarten year, but children encounter and read words in other places besides books. Children's reactions to letters and words in their everyday environment may be the first signs of emerging literacy that most parents notice. Researchers who have studied the development of young children's word identification skills have relied on parents' reports and various kinds of reading tests to describe children's reactions to print they encounter in their everyday environments and their reading of words presented in isolation (Jackson, 1992; Mason, 1980).

One of the earliest print recognition skills to develop is the ability to name individual letters, followed closely by the ability to recognize one's own name in print. Next, most children begin to recognize traffic signs and other signs and labels. Words such as "STOP" or "UP" that initially are identified only in context often are among the first words children learn to recognize in books or when they are written alone on a piece of paper (Bissex, 1980; Jackson, 1992; Lomax & McGee, 1986; Mason, 1980; Reid, Hresko, & Hammill, 1989).

Shortly after they begin recognizing words in their environmental context, children may begin to be able to say the sounds of some letters. However, children typically learn to recognize a number of familiar words "by sight" before they begin systematically trying to sound-out new words. According to the 1986 standardization data for the *Peabody Individual Achievement Test—Revised* (Markwardt, 1989) children who are progressing at an average rate can identify beginning-letter sounds in words by the end of their kindergarten year (Markwardt, 1989). By this time, many children also can recognize a few short, common words.

Children differ from one another in how long they keep using a sight-word strategy, which may be adequate for reading materials with limited vocabulary (Bissex, 1980), and is actually quite efficient for reading words with unusual spelling patterns, such as *island*. When children begin sounding-out words, they may rely on recognizing the sounds of familiar strings of letters, rather than translating letters one by one into sounds. Goswami (Goswami & Bryant, 1990; Goswami & Mead, 1992) has shown that beginning readers often identify new words by separating words into what she calls the "onset" and "rime" segments. A one-syllable word's rime is the end-part that rhymes with other words, and the onset is whatever is left over at the beginning. In *cat* and *hat*, *-at* is the rime and *c-* or *h-* is the onset. The onset of a word or syllable can be more than a single letter, as in *thing* or *string*. Children who have some preliminary, partial

understanding of letter-sound correspondences may be able to divide words into onset and rime parts and identify a new word by recognizing how its parts are similar to those of familiar words (Ehri & Robbins, 1992).

Children typically have developed considerable skill in sounding out words by the time they are in second grade. From this time on, those children who haven't yet mastered the techniques of sounding out words tend to fall progressively behind their peers (Byrne, Freebody, & Gates, 1992). Earlier, we described activities such as rhyming games that encourage development of the ability to distinguish sound patterns within the words a child hears. This ability should be nurtured because it seems to be very important for the development of the child's ability to sound out words (Goswami & Mead, 1992; Lomax & McGee, 1986).

What About Writing? When Do Children Begin to Write? Is Learning to Write Related to Learning to Read?

Writing, like reading, begins to emerge early in the preschool years as a composite of several skills. Writing in young children can be thought of as the ability to generate a story or message in any graphic form, such as copying or independently producing printed letters and words on paper, spelling words using whatever means are available, or even to dictating a story for someone else to write down (Sulzby & Barnhart, 1992). Mature writers can do all of these things, but the skills are distinct as they emerge in young children. The beginning writer needs to develop a sense of the purpose of writing, become aware of the general form of English script, and eventually master the correspondences between the meaning and sounds of spoken words and their written alphabetic representation. Very young writers also may have difficulty in manual production of letters and words because of their limited fine motor coordination.

At the age of 2 or 3 years, children may not make a clear distinction between drawing and writing. However, as they begin to understand the special nature of print, those scribbles that are intended to represent writing take on some of the general form of print. For a child learning to write English, scribble writing becomes a series of predominantly horizontal patterns with up-and-down perturbations (Baghban, 1984).

By the first months of the school year, the average beginning kindergartner has developed enough coordination to copy individual letters and short words and can also print letters when told their names. By the end of kindergarten, children typically can print words if the spelling is dictated slowly (Markwardt, 1989).

Once writing has come to mean production of the alphabet, children may begin typing or printing words using spellings that are systematic and decipherable, if unconventional. This form of spelling, which has been called "spontaneous" (Read, 1971), develops gradually into conventional form (Bissex, 1980), and many educators recommend encouraging children to write using their own systems, introducing but not belaboring, a distinction between "children's writing" and "grown-up writing" (Sulzby & Barnhart, 1992). By repeatedly applying whatever they have learned so far about the

sound patterns within words and correspondences between those sounds and letters (Mann, Tobin, & Wilson, 1988), children get practice both in the satisfying process of creating written works and in attending to the problem of how word sounds should be represented.

At first, spontaneous spellers pay little or no attention to conventions such as spacing between words. Sounds that are not emphasized in speech may not be represented, and letters often "say their names." For example, at the beginning of his spelling career, 5-year-old Paul typed EFUDOTBSELEIWELGUAPRRZET, for "If you don't be silly I will give you a present" (Bissex, 1980, p. 10). Paul soon learned to leave spaces between words and, like other spontaneous spellers, he grew increasingly conventional in his representations. For example, the word "directions," which he spelled DRAKTHENS at 5 years, 7 months of age, evolved into DRAKSHINS one month later, to DIRECKSHONS by age 7 years 5 months, and to confident use of the conventional spelling by age 8 years, 7 months.

Some children learn to read well before they begin to try to spell (Henderson et al., in press; Jackson, 1988a), but others begin using spontaneous spelling before their reading shows a comparable degree of systematic reliance on the correspondence between letters and the sounds of oral language (Bissex, 1980). Surprisingly, some spontaneous spellers initially are unaware that what they have written can be read (Read, 1971). However, once they have made this connection, children may become enthusiastic readers of their own writing and that of their classmates (Sulzby & Barnhart, 1992). Children do not need to learn to write in order to be able to learn to read, but writing and reading skills gradually become connected with and facilitate one another (Shanahan & Lomax, 1986).

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What Does It Mean When a Child Begins Reading at an Unusually Early Age?

As we have explained in previous sections of this document, all normally developing young children in a literate society are in a sense readers and writers, even if their reading consists of telling their own story in response to the pictures in a book and their writing still takes the form of scribbles. The emergence of literacy is such a gradual process that calling children *readers* only if they can identify a certain number of written words or pass some other test is arbitrary and contrary to the thrust of current research on reading development. However, there are children whose progression through the earliest stages of literacy acquisition is so exceptionally rapid that they merit special attention from researchers and school personnel. We call these children precocious readers.

Some of the most extremely precocious readers we have known have been able to recognize a large number of words and even sound out unfamiliar ones before passing their third birthday (Henderson, Jackson, & Mukamal, in press; Jackson, 1988b). Precocious readers may be able to read simple (or not-so-simple) texts on their own at the age of three or four years, comprehending what they have read (Jackson, 1988a; Jackson, 1992). When precocious readers reveal their advanced skills, which they sometimes do in dramatic and surprising ways, the adults around them are likely to have a great many questions about the meaning of this phenomenon.

Are Children Who Read Early Gifted?

The word *gifted* can mean different things. Our intuitive sense of what qualities characterize a gifted child comes in part from thinking about remarkably creative and productive adults, the geniuses whose work and lives are part of our cultural heritage. However, school systems and people in general describe children as gifted in response to accomplishments much less noteworthy than those of Marie Curie or Leonardo da Vinci.

Parents may describe their children as gifted when they notice advanced language development, surprising feats of memory, or sophisticated reasoning abilities. They may also label as gifted a child who plays a musical instrument well, creates sophisticated artwork, or masters reading, writing, or basic arithmetic at an exceptionally early age. Any of these characteristics may indeed be signs of childhood giftedness (Roedell, Jackson, & Robinson, 1980).

Most research on the relation between reading precocity and giftedness has used childhood IQ as the definition of giftedness. Giftedness in early childhood can take many forms that may not be reflected in a high IQ, but the questions in this section can be answered most adequately if they are reworded to stay within the scope of the research.

Intelligence tests provide a systematic way to compare children with one another and are an important part of most school-system definitions of giftedness. Children whose parents feel they are gifted and who report advanced intellectual accomplishments

often earn high scores on IQ tests (Louis & Lewis, 1992; Roedell et al., 1980). However, in considering the connection between reading precocity and childhood IQ, we need to keep in mind that intelligence goes up and down throughout life, and much more than intelligence is required for creative productivity in adulthood (Csikszentmihalyi & Robinson, 1986). Few of the children whose everyday behavior and IQ scores qualify them as gifted in terms of their parents' perceptions or school program selection criteria will produce the remarkable creative work that defines giftedness in adulthood (Siegler & Kotovsky, 1986). Furthermore, some eminent, highly creative adults were not described as gifted when they were children (Simonton, 1992).

Do Children Who Read Early Have High IQs?

Across a series of studies, children who have learned to read before beginning first grade have had an average IQ of about 130 (Jackson, 1992). This is well above the average IQ of 100 for the population as a whole; in fact, an IQ of 130 is often the threshold for identifying a child as gifted. However, remember that, if the *average* precocious reader has an IQ of about 130, one half of precocious readers would be expected to earn IQs *below* 130. Precocious readers often have IQs in the moderately above-average range, and some children may begin reading early even though they are unusually slow in their general language development and have IQs well below average. This phenomenon, which is called *hyperlexia*, sometimes occurs in children who have been diagnosed as autistic. Hyperlexic children can identify words well, and they are likely to be skilled at sounding-out words they never have seen before. However, their ability to comprehend what they read is limited by their general deficiency in understanding language (Healy, 1982).

The typical precocious reader is not hyperlexic or abnormal in any way. On the average, precocious readers do have high IQs. Many children are gifted both in their verbal knowledge and reasoning ability and in their precocious reading development. However, the earliest readers are not always the children who are the most extremely advanced in verbal knowledge and reasoning ability (Jackson, 1992; Jackson et al., 1988).

Do Children With High IQs Begin Reading Early?

Reading precocity is reported often in case histories of eminent adults and children who have been selected for remarkable accomplishments (Cox, 1926; Feldman, 1986). Researchers who first have selected children for high IQs, and then determined whether the children started reading early, have found that reading precocity is common among children with high IQs, especially among those whose IQs are extraordinarily high (Hollingworth, 1942; Terman & Oden, 1947; Terman & Oden, 1947). However, estimates of the prevalence of reading precocity among high-IQ children have ranged widely from study to study (Ehrlich, 1978; Jackson, 1992), perhaps because of differences in the degree of encouragement and instruction children have received in different communities and different eras.

In recent years, middle-class Americans have become more and more concerned with fostering the development of academic skills in their preschool-age children (Zigler & Lang, 1985). This phenomenon may have contributed to the precocious emergence of reading in more children who were ready to learn, but early academic pressure does not seem to confer any lasting benefit on most middle-class children, whether the pressure comes from home or a structured preschool program (Jackson, 1992; Rescorla, Hyson, & Hirsh-Pasek, 1991). Our impression is that the most sophisticated and enthusiastic precocious readers are children who have driven their parents and teachers to keep up with them.

Is Reading Precocity a Gift in Itself?

Definitions of intellectual giftedness in childhood focus on precocious accomplishments (Jackson & Butterfield, 1986). Beginning to read early is *in itself* an instance of "high performance capability in . . . [a] specific academic field" as defined under the Jacob K. Javits Gifted and Talented Students Education Act of 1988. If we think of giftedness as an attribute of a child's performance in a particular domain at a particular time (Renzulli, 1986), rather than as a general and enduring attribute of the child, a precocious reader is a gifted performer. By definition, any precocious reader has passed a major developmental milestone at an unusually early age. Learning to read opens up new, independent learning opportunities and a whole new world of literature. An early reader's social world also may change as people react to the child's advanced accomplishment. Moreover, a child who begins kindergarten or first grade with reading skills much more sophisticated than those of the rest of the class needs special, advanced instruction in reading and related subjects.

Why Do Some Children Start Reading at Unusually Early Ages?

We have concluded that exceptionally high verbal intelligence is neither necessary nor sufficient to make a child become a precocious reader, although highly intelligent children are more likely to begin reading early. What else matters? There are no clear-cut answers to this question. Investigators have tried to find a profile that would distinguish precocious readers from their non-precocious peers by studying family background characteristics and specific intellectual abilities, questioning and observing parents to determine what kinds of help the children have been given, and comparing the play interests and toy preferences of precocious readers with those of children whose literacy was developing more slowly (Jackson, 1992). No great surprises or firm conclusions have emerged from this body of research.

Precocious readers come from a wide range of family backgrounds. Some have come from families rich in literacy but little else (Durkin, 1982; Torrey, 1969, 1979). For example, Durkin (1982) found that most of the good readers from low-income African-American families in one urban school district had learned to read at home before beginning elementary school. In working with hundreds of parents of precocious readers, the first author has formed the impression that they tend to be exceptionally thoughtful, well-organized people who are strongly committed to supporting their children's

development. Parents of precocious readers typically have interacted with their young children in the ways recommended earlier in this report, but many parents provide the same kinds of support without having their child make exceptionally rapid progress (Durkin, 1966; Jackson, 1992).

Even when one knows something about the children's intellectual characteristics, it is hard to tell exactly which toddlers will be precocious readers (Jackson, 1992). For example, most children whose oral language development is extremely advanced at 2 years do not become precocious readers by the time they are 4, even when they come from homes in which their parents have supported their literacy development in appropriate ways (Crain-Thoreson & Dale, 1992). Research on the intellectual characteristics of precocious readers suggests that they may have minds that do some kinds of basic information processing with superior efficiency (Jackson, 1992; Jackson & Myers, 1982). Perhaps individual differences in mental processing efficiency influence the pace with which children learn from the literacy-supporting experiences in their daily lives. In working with precocious readers and their parents, one does get the impression that the children's interests and rapidly developing abilities are shaping parents' behavior at least as much as parents are leading their children (Henderson et al., in press).

The interests of precocious readers are much like those of other children their age, except for interests in reading and writing. These latter interests may be the result, rather than the cause, of exceptionally rapid development (Thomas, 1984). The reading-related interests of precocious readers tend to fall into two categories that can be described as literary and technical interests. Literary interests include reading fiction and writing poems and stories. Technical interests include reading for information and drawing maps and diagrams. Boys tend to have more technical interests; girls, more literary interests. This gender difference remains stable from the summer after kindergarten to late in elementary school (Jackson et al., 1988; Mills & Jackson, 1990). However, we don't know whether boys and girls *begin* learning to read for different reasons.

As so often happens in the development of giftedness, the natural emergence of precocious reading may depend on a fortunate coincidence of aptitude, opportunity, and interest (Csikszentmihalyi & Robinson, 1986). Many children can learn to read at age four or five years if they are given extensive instruction. When educators develop early childhood programs specifically designed to accelerate the development of children's reading, short-term effects on reading achievement scores often are impressive. However, this advantage is not likely to endure past the first few grades (Coltheart, 1979; Jackson, 1992; Rescorla et al., 1991).

Do Precocious Readers Know How to Read the Right Way?

Some parents and teachers might be surprised that anyone would question whether a child who has learned to read at home or preschool at an unusually early age is reading *the right way*. However, the question is a reasonable one. Children who have learned to read without formal instruction from a professional might somehow be getting by despite gaps in their skills. For example, people sometimes wonder whether

precocious readers tend to rely heavily on identification of words by sight rather than on mastery of the phonological principles of letter-sound correspondences. Gaps in such basic skills might hamper further progress in a child, despite a promising start.

Fortunately, extensive studies of precocious readers' skill patterns have revealed that, at least by the time they have finished kindergarten and can comprehend text at or beyond the second-grade level, these children typically have a solid repertoire of skills. By this point in their development, precocious readers typically have well-developed word identification skills that draw on both knowledge of letter-sound correspondences and an ability to recognize words directly by sight (Jackson & Donaldson, 1989; Jackson, Donaldson, & Mills, 1992). The kinds of errors that precocious readers make in reading stories aloud are similar to the kinds of errors made by typical readers (Jackson, 1992). Precocious readers use information from context to help themselves identify words, but they are not especially dependent upon context for word identification (Jackson & Donaldson, 1989). Precocious readers read both isolated words and text passages accurately, but the most striking feature of their skill repertoire is a tendency to read text very rapidly (Jackson, 1992; Jackson & Donaldson, 1989). Being a faster-than-average beginning reader is probably very useful. Children who read through a passage quickly are likely to find it easier to comprehend. They still have the beginning of a sentence in mind by the time they reach the end, which makes it easier to link up and make sense of the whole (Breznitz & Share, 1992).

We can conclude that precocious readers typically have developed their ability in ways that should give them a firm foundation for future learning. However, this picture of precocious readers as well rounded does need to be qualified in three ways. First, conclusions about their skill patterns may depend on precocious readers' age and the degree to which their reading ability has developed. Several observers have noted that, like many typical readers in a very early stage of reading acquisition, precocious readers who are still in their preschool years, or who are just a bit ahead of their kindergarten classmates, do not always have strong phonological decoding skills (Henderson et al., in press; Jackson, 1992). It is possible that some precocious readers make an unusual degree of progress on the basis of sight-word reading skills alone before they eventually figure out and start using the phonological system (Jackson, 1988).

A second important qualification to our conclusion about the component reading skills of precocious readers is that individual children who are all exceptionally advanced readers differ markedly from one another in the relative strengths of their various skills. On the average, precocious readers are good at using decoding rules to sound out words, but some are much better than others, and individual differences in decoding skill are far from perfectly related to differences in other skills, such as sight-word recognition or text comprehension (Jackson et al., 1988; Jackson et al., 1992). No single score on a test of word-reading accuracy or comprehension is likely to give a complete picture of a precocious reader's skills.

The third important thing to remember about the conclusion that precocious readers have a solid repertoire of reading skills is that the research from which the

conclusion was drawn covered only a limited set of reading tasks. The language arts curriculum for most kindergarten and primary classes encompasses a broad range of activities related to reading, spelling, and composition. Some precocious readers may be less advanced in spelling and writing than they are in reading (Henderson et al., in press; Jackson, 1988a). Others may have gaps in their knowledge about the ways in which their teachers want them to be able to use reading or writing in a variety of contexts.

Precocious readers have a head start on some parts of the beginning language arts curriculum, but where a child fits into the curriculum as a whole merits assessment and curricular modification on a case-by-case basis. In planning a literacy program for a precocious reader, one needs to be aware not only of the child's word identification and written production skills, but also of the levels of the child's developing knowledge of the world, ability to reason, and social-emotional maturity. Some precocious young readers are ready for sophisticated literature; others are not. Very young readers may find some stories written for older children upsetting, confusing, or simply boring.

What Happens to Precocious Readers When They Start School?

Should Children Who Can Read Start School Early?

Instruction in reading and writing is such an important part of the curriculum that parents of preschool-aged precocious readers are often concerned about appropriate school placement for their children (Jackson, Krinsky, & Robinson, 1977). Starting a child in kindergarten or first grade early may be appropriate, but school personnel are likely to be concerned about a young child's readiness to handle all of the physical, social, emotional, and intellectual challenges of being placed with older children (Jackson, Famiglietti, & Robinson, 1981). Between the ages of four and six years, children develop very dramatically in many ways. Kindergarten teachers' concern for a young child's social and emotional readiness makes sense when one realizes that about half of the total session time may be taken up by management activities and informal interaction other than subject matter instruction (Scanlon, Gelzheiser, Vellutino, & Fanuele, 1992). Full-time placement in an advanced grade requires careful consideration of the match between a child's strengths and limitations and the demands of a particular program. A good preschool program can be especially helpful in encouraging the development of a precocious reader's independence and social skills so that deficiencies in these areas are less likely to keep the child out of an academically challenging program (Roedell et al., 1980).

When precocious readers do attend kindergarten with their age-mates, schools can make a variety of accommodations to the child's advanced reading. In one study of children who attended public kindergartens in several districts near Seattle, Washington in the early 1980s, about half of the parents of precocious readers reported that the child's kindergarten program had included some special individual or small group instruction. Less than a quarter of the parents indicated that their child had received no special attention at all. Those who did not receive advanced instruction were often given

opportunities for independent reading in class or trips to the school library (Jackson et al., 1988).

Researchers who have observed in kindergarten and elementary classrooms often note how much the nature of activities varies depending on the individual teacher, even across schools that all share a particular philosophy of reading instruction. Teachers vary in how much of their instruction in reading is devoted to activities related to understanding the meaning of texts to their instruction in letter-sound correspondences. For some teachers, instruction in composition involves having children spend a substantial amount of time writing; others teach composition primarily by activities in which the child is expected to listen, speak, or read, but not actually write (Scanlon et al., 1992). Therefore, it makes sense for parents and school personnel to pay careful attention to the match between the style of a particular classroom and a precocious reader's individual strengths and limitations.

Should Precocious Readers Be in Special Programs for Gifted Children?

The match between child and program is equally important when precocious readers are considered for placement in a special program. When school systems identify kindergartners and first graders for full-time and part-time gifted education programs, they sometimes use selection criteria that include or even emphasize the child's current achievement in reading and other academic skill areas. However, the child's reading ability is not the only characteristic that should be considered, and it may not even be relevant for some programs.

If advanced instruction in reading and other language arts is an important part of a program, it is likely to be appropriate for most precocious readers. However, precocious readers' advanced skills sometimes may gain them entry to programs whose content is not well matched to their abilities or interests, particularly if their reading precocity is not accompanied by the kinds of advanced reasoning skills that typically are reflected in a high IQ (Mills & Jackson, 1990) or by other evidence of skills that are relevant for a particular program. Because precocious readers have skills that sometimes place them only temporarily out of synchrony with their classmates, they are especially good candidates for gifted education programs in which a "revolving door" approach (Renzulli, 1986) allows for continuing changes in children's placements. Precocious readers also may profit from the elimination of work on skills already mastered and progression through the language arts curriculum at an accelerated pace (Reis & Renzulli, 1989).

Do Children Who Get an Early Start in Reading Stay Ahead?

Will My 5-year-old Who Doesn't Read Yet Ever Catch Up?

Some very bright children don't learn to read early, even if they have had some encouragement (Jackson, 1992; Jackson & Myers, 1982). High-IQ children and eminent adults occasionally have had great difficulty learning to read (Jackson, 1992), but a more common pattern for bright children is that they will make rapid progress in reading after

beginning at a typical age. At the same time, children who have received an exceptionally early start may slow down a bit in their elementary school years (Mills & Jackson, 1990).

The skills involved in beginning to identify words differ from those required of a mature reader of sophisticated texts (Curtis, 1980). As children grow older and their reading skills develop, those who have had a head start because they learned very early to break the code of print may be overtaken by later bloomers who, once they also figure out the code, have the general world knowledge and language and reasoning skills required to comprehend increasingly advanced texts. In one recent study of children who all had begun reading somewhat early, the best predictor of individual differences in reading comprehension in fifth or sixth grade was the child's verbal intelligence, although how well the child was reading just after kindergarten also predicted later comprehension (Mills & Jackson, 1990).

Will Precocious Readers Continue to Be Exceptionally Good Readers?

Precocious readers almost always remain at least average in their reading ability, and most stay well above average, even though their reading performance in fifth or sixth grade is much more likely to be within the range of their classmates' performance than it was in kindergarten (Mills & Jackson, 1990). Some investigators have claimed that precocious readers remain superior in reading achievement throughout their elementary school years, relative to other children of comparable intelligence who were not early readers (Durkin, 1966; Pikulski & Tobin, 1989; Tobin & Pikulski, 1988). However, the meaning of these findings is hard to evaluate. Does an early start in reading in itself give a child a lasting advantage, or do other factors, such as persistence, interest in learning, or parental support, contribute both to the early emergence of reading and to continued good achievement? The general absence of long-term gains from experimental programs designed to create precocious readers suggests that an early start in reading may not, in itself, be very important for most middle-class children. A head start in reading may be more important for children who have a special need to begin school with skills that will help them, and their teachers, recognize their ability (Durkin, 1982; Jackson, 1992).

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Should I Ask to Have a Child's Reading Ability Tested?

Those of you who have read all the preceding sections of this document know that children don't move in one great leap from being prereaders to being readers, and that the pace at which literacy emerges varies a great deal from child to child. Some children develop at age 2 or 3 years the skills that others are still struggling to master at 7 or 8. Parents and teachers of a child whose development seems to be either exceptionally slow or exceptionally fast may wonder whether the child's reading skills should be evaluated by a professional. The value of an assessment is likely to depend on the child's age, whether development seems slow or fast, background factors that might contribute to concern, and the use that can be made of the assessment information. In general, assessment during the preschool years is more likely to be helpful when a child's development seems slow or the child is known to be at risk for learning problems.

Should a Preschooler Be Tested If He or She Is Slow in Developing Skills Related to Reading?

Earlier, we presented an overview of the sequences of skills and interests that children display as they gradually move into literacy. As we noted, children vary greatly in the speed with which they progress through these sequences, and those who seem to be developing slowly at the age of two or three years may catch up at four or five, especially if they are given plenty of opportunity and encouragement to engage in activities related to reading and writing.

Children who have had the kinds of experiences we have described should begin kindergarten with a good sense of the purposes of reading and writing, a positive attitude toward these activities and their own ability to master them, knowledge of most letter and numeral names (Markwardt, 1989), and understanding of some basic concepts that underlie how English is written and read (Sulzby & Barnhart, 1992). We often think of these skills as part of the kindergarten curriculum. However, research and standard test norms reveal that kindergartners who are likely to be successful have mastered them already (Clay, 1985; Markwardt, 1989).

Before or during their kindergarten year, children also should have some sense that the sequence of sounds in a spoken word can be divided into parts, and that these parts are systematically related to strings of letters on the printed page. For instance, 5-year-olds who are well prepared to make further progress in reading probably can recognize that the text *car* refers to a short (i.e., one-syllable) word, while *catapult* refers to a word that has a longer stream of sound, even if they can't actually read the words. By the time they begin kindergarten, children also should be competent at detecting and creating rhymes, an activity that focuses attention on sounds that are easily distinguished within syllables (Goswami & Bryant, 1990).

Many of a child's most important prereading competencies can be assessed informally, in an ongoing way, as reading develops. For example, an adult can stop reading a poem just before a rhyming word is needed and ask the child to supply the

rhyme. Most children of this age enjoy playing with rhyme and are quite facile at it. An adult concerned about a kindergartner's development might make a game of pronouncing the only multisyllable word on a page and asking the child to find it. During their kindergarten year, many children also are able to identify words beginning or ending with a particular sound.

Parents sometimes become concerned when kindergartners or first graders occasionally reverse the orientation of individual letters in their writing or mix up the order of letters in a word, for example by reading or writing *tar* as *rat*. At this age, occasional reversal errors are not a sign of reading disability. Children attend to letter orientation and letter and word order more consistently as they gain practice in reading (Gibson & Levin, 1975). For children learning to read English, problems in analyzing the sound patterns of oral language are a much more common source of reading difficulty than problems in processing visual information (Lindgren, De Renzi, & Richman, 1985).

If a child in kindergarten has not mastered the skills we have described, formal assessment by a school psychologist or reading specialist may be appropriate. Another way for parents to get a sense of how well their kindergartner is progressing is to ask the teacher whether the child's performance in reading-related activities is in the bottom twenty percent of the class. Teachers are not likely to volunteer information like this, but most can and will answer a parent's direct question. Identifying reading problems early is important for correcting them (Clay, 1985), and even bright children sometimes have difficulty learning to read.

Most parents need not be concerned about assessing their child's literacy development during the preschool years, so long as the child is participating in appropriate activities. However, very early assessment may be appropriate if a child comes from a family in which older siblings or a parent has had difficulty learning to read. Genetic factors predispose some children to certain kinds of specific reading disability (Olson, Wise, Conners, Rack, & Fulker, 1989). Children who have a hearing or visual impairment also are at risk for reading problems (Andrews & Mason, 1986; Tompkins & McGee, 1986). Very early assessment of a child's oral language development may help parents judge whether future reading problems are likely (Scarborough, 1990). Extra involvement in reading-related activities, especially those designed to help children identify sound patterns in oral language, then can be designed to help the child develop normally (Goswami & Bryant, 1990).

Children who are gifted in other ways, including some who are very high in general intelligence, occasionally have difficulty learning to read (Crowder & Wagner, 1992). Therefore, identification of a child as gifted is no guarantee of a lack of reading problems. Prompt diagnosis and remediation of a problem may be vital for enabling a child to succeed in a challenging gifted education program.

Should Precocious Readers Have Their Abilities Tested? If So, When and How?

A formal assessment may facilitate appropriate placement and instruction for a precocious reader. When a preschooler is reading already, the child's parents and teachers are likely to be concerned with maintaining and building on that precocious development. Formal testing makes sense only when the test results can be used for some purpose, and assessments of precocious readers' skills are likely to be most useful if some practical issues are considered.

Most parents of precocious readers already have a good sense of how to nurture their child's further development, and the preceding sections of this report may give them some additional ideas. Supporting a precocious reader's development at home does not depend on knowing exactly how advanced the child's skills are, and formal testing may be superfluous until a child is ready to begin kindergarten.

Most reading and writing tests that are challenging enough for precocious readers are less than ideal for administration to preschoolers. Some of the items on tests designed for school-age children may have instructions that are difficult for a 3 or 4-year-old to understand and follow, no matter how well the child can read. Precocious readers may fail some of the prereading items on these tests, even though they can do more advanced items in which they simply are asked to read (Henderson, Jackson, & Mukamal, in press; Torrey, 1979).

Another limitation of tests designed for older children is that they provide grade-level-equivalent scores that indicate the degree to which a child's skills are advanced, but have no norms indicating how unusual the child's performance is relative to his or her own age peers. In some communities, reading "at the second grade level" by age 4 or 5 years may be relatively common. One diagnostic reading test, *The Test of Early Reading Ability—2*, or *TERA—2* (Reid, Hresko, & Hammill, 1989), has been developed and formed for children aged 3 through 9 years. The first edition of the TERA and some other tests of early reading skills designed for children of preschool age have been reviewed by Day and Day (1986).

A second reason to delay formal testing until a precocious reader is ready to begin school is that both public and private schools prefer to have test information that is current and derived from tests they are accustomed to using. Schools also may prefer to have their own personnel do most kinds of testing.

When a precocious reader is about to begin or is already attending school, formal assessment can serve two purposes. First, test scores can provide readily interpretable evidence that a child's performance really is exceptionally advanced. Such evidence may be required for admission to a selective program, or it may support a parent's or teacher's argument that a child's abilities are unusual enough to require individualized attention. A child's early enthusiasm for reading may be dampened if he or she is required to participate in inappropriate basic instruction. The second purpose of testing is to provide

diagnostic information about the child's particular strengths and limitations in component reading skills and related skill areas. This information can contribute to planning an individualized program.

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Conclusions

The nature of the conclusions we can draw from the research literature on early literacy development is influenced by the goals and methods of the research. Most research has been descriptive rather than prescriptive. In other words, researchers describe how children of various ages are likely to behave in situations that involve reading or writing, and they describe the range of ways in which adults are likely to interact with children in these situations. Researchers also have described which patterns of development and adult-child interaction during the preschool years are more likely than others to be associated with success in reading during elementary school.

This descriptive research does not provide a consistently strong base for prescribing guidelines about how children should develop and how adults should support their development. Nonetheless, the available research can and should influence how we think about nurturing literacy development in young children. Our beliefs about the nature of children and learning inevitably influence how we behave when we are with them and the kinds of environments we create to nurture their development.

The practices recommended in this report are those that the authors feel are logically consistent with the picture of literacy development that emerges from recent research. However, our readers should be aware that the development of literacy is a complex phenomenon that researchers are still working to understand. Our picture of literacy development has changed radically in the past twenty years, and it will continue to change as more is learned from new research and theory. Our readers are urged to act as researchers themselves, observing what happens when a recommended practice is attempted, and making changes as necessary to fit the particular needs of an individual child and set of circumstances.

Conclusion One: During the preschool years, children acquire important literacy knowledge and behaviors such as understanding that print has meaning, that writing takes particular forms, and that words can be divided into sequences of sounds.

Discussion: Children begin to engage in literate behaviors early in their preschool years. Important milestones in the acquisition of literacy include acquiring the knowledge and behaviors such as understanding that print conveys a message and that reading and writing are useful, attainable, and enjoyable skills; knowing how to make marks on paper that look more like writing than drawing; or recognizing that the sound of a word can be divided up into a sequence of component sounds (Lomax & McGee, 1986; Mason, 1979; Sulzby, 1985).

Conclusion Two: Effective story reading is interactive and responsive to the child.

Discussion: Young children seem to learn a great deal from story-reading interactions that are not directly related to figuring out how to identify the words on the printed page. Particularly in the early preschool years, parents of young children are likely to do more

talking and listening than actual reading during a story-reading session (Altwerger, Diehl-Faxon, & Dockstader-Anderson, 1985). Children are more likely to enjoy and remain attentive to story-reading if the activity is geared to their current level of understanding and gives them a chance to participate. During story-reading sessions, adults may help children learn that reading is an enjoyable activity and gradually teach them how to understand stories by voicing their own reactions to the story and engaging the child in dialogue to check his or her comprehension of and reactions to the story (Roser & Martinez, 1985). Computer programs, television programs, and toys designed to help children learn to read may be helpful (Liebert & Sprafkin, 1988; Martin, 1986; Wise, 1991), but may not engage the child's active participation and respond to the child's behavior in the flexible way a human reading partner can.

Conclusion Three: In early reading development, literacy acquisition reflects the child's developing knowledge of and about several aspects of language. In later reading development, wide-ranging knowledge of the world and the ability to express that knowledge through language becomes more critical.

Discussion: In the long run, a child's mastery of oral language is likely to be one of the most critical factors in a child's success in reading. Some aspects of oral language knowledge are important for success in beginning reading, and others become more important in the later elementary school grades as children begin to read more complex materials (Curtis, 1980; Goswami & Bryant, 1990).

Many forms of knowledge of and about language are involved in beginning reading. These include knowledge of what a *word* is and of specific word meanings and sentence forms, knowledge of how to tell and listen to a story about events from another time or place, and knowledge that the stream of sound within a word can be broken up into segments that match letters or letter sequences. Children may acquire this last form of knowledge in part from listening to and making up rhymes. Children who have been exposed to and become skilled at rhyming are likely to be better beginning readers (Bryant, Bradley, MacLean, & Crossland, 1989). For later reading development, the most important aspect of language probably is a wide-ranging knowledge of the world and the ability to express that knowledge through language (Curtis, 1980).

Conclusion Four: In early writing as in early reading, preschool children initially use unconventional forms that gradually develop into the conventional forms used by adult readers and writers. A child's early reading and writing skills may develop in somewhat parallel sequences, but there is evidence that development may be more rapid in one area than in the other.

Discussion: Recent research suggests that children are beginning to write when they announce that an almost formless scribble is "a letter to Grandma," or dictate a story for someone else to translate into print. As children begin to learn the names and sounds of letters, they may construct words and messages in their own unconventional but orderly systems (Bissex, 1980; Mann, Tobin, & Wilson, 1988). These unconventional spellings evolve gradually into conventional spelling, and using them may help the child develop

understanding of the correspondence between letters and the sounds they represent. Learning to write may help a child learn to read, but the two skills develop somewhat independently, and some children make fast progress through the early stages of one skill without keeping the same pace in their development of the other (Jackson, 1992; Shanahan & Lomax, 1986).

Conclusion Five: While learning to read involves much more than learning to name letters and recognize their sounds, learning letter names and sounds and the relationships between them is an important aspect of early literacy development.

Discussion: Recent research suggests that learning to read involves much more than learning to name letters and recognize their sounds. However, the alphabet is the key to written English, and children do need to learn that key in order to succeed as readers. Children in kindergarten should know the names of the letters and be able to identify at least some sounds for letters at the beginning or end of words (Markwardt, 1989). Children who know letters names accurately and can use them efficiently are likely to be more successful at beginning to read (Ehri & Robbins, 1992; Lomax & McGee, 1986). Most children can learn letter names easily during the preschool years, but they also need to learn that letters are not just objects but symbols with a special role in written communication.

After many years of research, the evidence is clear that, in order to become skilled readers of English, children need to learn to match individual letters or letter strings with their corresponding sounds (Adams, 1990). Most children begin identifying words by recognizing part or all of their visual pattern, but those who don't master letter-sound correspondence are likely to fall behind beginning in the second grade (Byrne, Freebody, & Gates, 1992). Some children learn to sound-out words without any formal instruction, while others have great difficulty learning to do so. The ability to hear the sequence of sounds within spoken words is related to the development of ability to sound-out written words. This ability improves after children have learned to read, but to some extent it seems to be necessary for children to begin to read new words (Ehri & Robbins, 1992; Goswami & Bryant, 1990). The best way to combine instruction in sounding-out words with instruction in other important aspects of literacy probably varies from one child to another.

Conclusion Six: Reading failure in later years can be prevented by the early identification of reading difficulties, followed by appropriate instruction.

Discussion: Children progress through the early stages of literacy development at different rates during the preschool years, and some later bloomers may catch up with and surpass the earliest starters (Mills & Jackson, 1992). However, children who have physical conditions or a family history that puts them at risk for developing reading problems should have their progress monitored beginning in the preschool years (Olson, Wise, Conners, Rack, & Fulker, 1989; Scarborough, 1990). By the time children are in kindergarten, children who are behind schedule usually can be identified by their teachers. Standard tests can be helpful in evaluating a child's development and

diagnosing any problems. Reading problems are easier to correct if they are identified early (Clay, 1985).

Conclusion Seven: Precocious reading is an example of giftedness as defined by the Jacob K. Javits Gifted and Talented Students Education Act of 1988.

Discussion: Some children begin identifying words and comprehending written messages at unusually early ages, occasionally before their third birthday. These precocious readers develop in normal ways, but at an accelerated pace (Jackson, 1992). By the time they have finished kindergarten, they are likely to have a solid repertoire of reading skills, with a particular strength in the speed with which they read text (Jackson, 1992; Jackson, Donaldson, & Mills, 1992). However, individual precocious readers differ considerably in their reading styles or skill patterns (Jackson, Donaldson, & Cleland, 1988; Jackson, et al., 1992). Precocious readers are likely to continue to be above-average readers, but not all will remain exceptionally advanced as some of their later-starting classmates catch up in the elementary school years (Mills & Jackson, 1990; Rescorla, Hyson, & Hirsh-Pasek, 1991). Precocious reading is an example of giftedness as defined by the Jacob K. Javits Gifted and Talented Students Education Act of 1988.

No single kind of experience or characteristic sets precocious readers clearly apart from children who have not learned to read early. As with other forms of giftedness, the emergence of precocious reading may depend on a fortunate convergence of ability, interest, and opportunity (Csikszentmihalyi & Robinson, 1986). Most precocious readers have experienced the kind of parental encouragement that is associated with the development of beginning literacy in the preschool years, but precocious readers seem to lead their parents and teachers along at a faster pace (Jackson, 1992).

Most precocious readers are children of above-average intelligence, but many would not qualify as gifted in verbal intelligence (Durkin, 1966; Jackson, 1992). Some children with extremely high IQs do not read early, although many do (Jackson, 1992). Precocious readers are gifted *as readers*. Schools can accommodate precocious readers in a variety of different ways (Jackson, 1992).

Recommendations for Parents

Because many different aspects of young children's play with books, oral language, drawing materials, and with the print they encounter in everyday life are part of literacy development, parents should be aware that all of these experiences provide the child's preparation for reading instruction in school. Giving a child a good start in reading involves much more than just teaching letter names. Parents help their child learn to read by demonstrating the importance of reading and writing in their own lives, by talking with their children, by exchanging stories, by playing games with rhymes and other word sounds, and by giving children opportunities to appreciate books at their own level.

Story Reading

Reading with young children is an activity that should begin in infancy, but a story-reading session can take many different forms depending on the child's age and level of interest. Parents can read a book by pointing out, naming, or discussing the pictures; telling the story in language the child can understand, discussing the words and letters on a page, or listening while the child tells his or her own story. The form of interaction that works best is likely to evolve naturally if parents follow the child's lead. Children may enjoy reading the same books many times, learning something a little different each time. Television, special toys, and computer programs can help a child learn to read, but they should not be asked to take the place of time spent interacting with a responsive adult.

Talking With Children

Parents should remember that everything a child learns about oral language sooner or later will help the child as a reader and writer. One can think of time spent reading storybooks with a child as one of many times in which parents and children can talk with one another and children can learn about language. Because children of preschool age are skilled and enthusiastic language learners, most will help their parents talk with them effectively if parents attend and respond to the child's cues. Telling stories about shared experiences, past and future, and helping children to tell their own stories, may help them learn that telling a story is different from ordinary conversation. Understanding storytelling may help a child learn the forms and purpose of reading and writing. Learning to attend to the sounds of words as well as to their meaning and to divide a word's sounds into parts helps prepare a child for matching sounds with letters in reading and writing.

Writing

Parents can do a variety of things to help children think of themselves as writers. They can give their young children many opportunities to express themselves on paper or at a keyboard. They can demonstrate the importance of writing by involving the child in the writing and reading of cards and letters to family or friends, making lists, and marking household objects with the owner's name or other useful information. Children may learn letter names and corresponding sounds quite naturally as they are trying to write a word or message.

Learning Letter Names and Sounds

Children can learn letter names from reading alphabet books, from playing with magnetic letters on the refrigerator door, from watching *Sesame Street*, from their own beginning writing attempts, or by talking with adults about letters they see in the world around them. A storybook-reading session may offer opportunities to help a child learn letter names, but most such sessions work well if they are devoted to activities related to other aspects of literacy. Eventually, children need to fit their knowledge of letter names

together with what they have learned about the nature and uses of print and how words, sentences, and stories are put together. Learning letter names can be a gradual process during the preschool years. Capital letters are likely to be easier for the child to learn first. Because some letter sounds are close to their names, letter names give a child an introduction to the system of letter sounds. Like other kinds of learning, learning letter names is likely to be more successful if paced to match a child's developing interests.

Although a few children begin to figure out letter-sound patterns while in their preschool years, children typically don't begin sounding-out words until some time in their kindergarten or first-grade year. Unless a child shows an unusually early interest in mastering this skill, it probably is not the most important focus of parents' literacy-related interactions with their preschoolers. Activities that help a child understand the importance of reading and writing, and introduce the child to the basic organization of print, learning letter names, and learning to attend to sound patterns within words should give a child a good foundation for learning to sound-out words.

Checking a Child's Progress

Most parents who are supporting the development of their child's reading and writing by providing activities in which they interact in mutually enjoyable ways with language, books, and print need not be concerned about the pace of their child's literacy development. Each child has different interests and abilities, and encouraging those is likely to be more important than checking the child's progress against a timetable. However, a child's development should be checked by a professional if, before beginning kindergarten and after considerable exposure to written texts and letters, he or she does not know letter names, have a basic understanding of how print is structured, demonstrate the ability to recognize and create rhymes, and show some awareness that word sounds are related to patterns of print.

Supporting Precocious Readers

No formula for creating a precocious reader has been identified by researchers, and pushing a child exceptionally rapidly through the beginning stages of reading probably will not have any lasting benefit. Both parent and child are likely to enjoy their literacy-related activities more, and the child is likely to make better progress, if parents follow their child's lead in choosing and structuring activities. During the preschool years, parents should be most concerned with maintaining their child's enthusiasm for learning and providing a broad base for subsequent developments in literacy, language, reasoning, and all other aspects of development. Pushing a child into early reading when he or she is not yet ready or interested may leave the child feeling frustrated and unenthusiastic about further learning. However, parents whose children do become precocious readers should enjoy and nurture their child's gift. When precocious readers are about to begin school, discussion with school personnel and formal assessment may help the school develop a program that is well matched to the child's abilities and needs.

Recommendations for Teachers and Administrators

Our research-based recommendations to teachers and administrators reflect the dual role of the school as a center for the development of early literacy and as a partner and resource for supporting parents in the creation of a home and environment that will complement activities at school.

How Teachers and Schools Can Help Parents Support Early Literacy

Because literacy begins very early, educators should do whatever they can to help parents of young children, even infants and toddlers, begin nurturing their children's development. In general, parents may need help in appreciating what their children *already* know about books and print and *adapting* their interactions to the child's level rather than conducting activities such as story reading according to a predefined adult concept of that activity. A few more specific suggestions follow:

- Teachers can point out that learning to read involves more than learning to identify printed words by demonstrating effective storybook reading while parents are visiting school or during a home visit.
- If parents are concerned that expensive toys or computer programs are critical for their child's success in beginning to read, teachers can remind them of the more important things they can do in their own interactions with the child.
- If parents do have a home computer that their child is interested in using, teachers can help parents find program packages appropriate to the child's abilities and interests in reading or writing.
- Teachers can encourage parents to read some rhyming books to their children and develop a family repertoire of favorite rhymes.
- Teachers can help parents comprehend and appreciate what a child's sometimes unconventional spelling reveals about his or her knowledge of letter sounds. Examples of how children's spontaneous spelling becomes more conventional over time may give parents needed reassurance.
- Helping parents to teach their children to learn letter names and sounds involves keeping a balance between making sure that parents know that this knowledge is important and helping them understand that beginning literacy involves many other kinds of knowledge as well. Teachers can demonstrate ways of making instruction in letter names a low-key activity that engages the child's interest.

How Schools Can Support Early Literacy Development in the Classroom

Most teachers and administrators who are familiar with recent developments in early childhood education will have recognized the general thrust of most of the conclusions in this report as consistent with both the whole language movement in literacy education and with the recommendations of influential reports (Adams, 1990;

Anderson, Hiebert, Scott, & Wilkinson, 1984). Like others who have reviewed the research literature, we recommend the following classroom and school practices:

- Children do need to learn to sound-out words. Instruction that will help children learn to do this can be part of a program that emphasizes reading children's literature and encourages children's writing. Children are more likely to be interested in learning to sound-out words if they already have developed a fundamental understanding of more basic concepts of print. Therefore, teachers should check children's understanding of these concepts as part of their instruction.
- Teachers and administrators are appropriately reluctant to label a young child a failure very early in the school years. However, early attention to even moderately slow development in reading can help a child catch up before a problem becomes much worse. Lagging literacy skills can exclude children with other intellectual gifts from many valuable learning experiences.

Our conclusions about the nature of literacy development in precocious readers also lead to some recommendations for how schools should modify curriculum and programs to match their special abilities:

- School personnel need not worry that precocious readers have learned to read in some peculiar way that will be harmful in the long run. Precocious readers do not need to re-learn the basics they already have mastered. However, individual precocious readers may have areas of relative weakness in their skill patterns that merit attention, particularly when their skills are considered in relation to the full breadth of the school language arts curriculum.
- The kind of educational placement that makes most sense for precocious readers depends on the broad match between the child's intellectual, social, emotional, and physical development, his or her interests, and the demands and opportunities in available classes and programs. Because they sometimes are not exceptionally high in verbal reasoning ability, precocious readers are not always strong candidates for long-term placement in gifted education programs, but many precocious readers are excellent reasoners as well, and will fit very well into gifted education programs that emphasize higher-level thinking skills.

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