

*Module:*     **Communication and Emergent Literacy:  
Early Intervention Issues**

---

**Session 1: Overview of Communication and  
Literacy**

**Major Points**

**A. Definition of *communication***

*Communication* refers to the meaningful exchange of ideas, thoughts, wants, and desires with others. For communication to be successful one partner must *express* a message and the other partner must *receive* the message (Owens, 2001).

*Expressive communication* refers to the ability to send a message to someone else—to share ideas, thoughts, wants, and desires. *Receptive communication* refers to the ability to understand a message sent by another person—to comprehend that person’s ideas, thoughts, or desires. For example, a child may cry (i.e., express a message), and a parent may hear the cry and infer that the child is hungry (i.e., receive the message). Similarly, a parent may speak in a cheerful tone to a child (i.e., express a message), and the child may infer that the parent is happy (i.e., receive the message).

Communication includes the use and understanding of formal, symbolic language and nonlinguistic expression. *Nonlinguistic communication* can include facial expressions, gestures, nonspeech vocalizations, and so on. For example, infants communicate with their caregivers through a variety of means—crying, smiling, pointing—long before they learn to speak. *Linguistic communication* refers to the use of systemized language with conventional vocabulary and rules of grammar, syntax, and so on. Speaking, understanding the spoken word, lip reading, signing, reading, writing, using augmentative communication technologies—all are examples of linguistic communication.

The term *nonlinguistic*, as well as *prelinguistic*, is used in this module because many of the forms of communication these terms describe continue through childhood and beyond. All children communicate; however, not all children become linguistic communicators. Highly competent adults without speech use nonlinguistic means of communication—facial expressions, gestures, nonspeech vocalizations—to support their interactions with others. Because we recognize that not all children become linguistic communicators, we sometimes use the term *nonlinguistic/prelinguistic*. The term *prelinguistic* is used to describe nonverbal and nonlinguistic communication that precedes the acquisition of language in individuals who are able to speak.

## **B. Nonlinguistic/prelinguistic communication, social development, and language development**

Early nonlinguistic/prelinguistic communication is closely related to other areas of development in infants. Social development and attachment are encouraged by communication, and communication develops through social interactions. Social development and communication are mutually reinforcing and develop concurrently. Later linguistic skills in children correlate with early nonlinguistic/prelinguistic communication. Nonlinguistic/prelinguistic communication is an important contributor to later language development.

In infancy, nonlinguistic/prelinguistic communication and social development are closely related (Hala, 1997). As children become increasingly competent in communicative exchanges, the quality of their social interactions improves (Striano & Rochat, 1999; Tomasello, 1992). The distinction between communication and socialization at this stage is somewhat ambiguous. Mothers who hum lullabies to their infants while rocking them to sleep provide a communicative model while engaging in an important social bonding activity.

Nonlinguistic/prelinguistic exchanges are important not only for communication during the first few years, but also the foundation for later language development. Bates (1976) and Bates, Camaioni, and Volterra (1975) documented continuity between prelinguistic and linguistic communication, and more current research supports this continuity (e.g., Wetherby, Warren, & Reichle, 1998). For example:

- Joint attention (i.e., communication during which a child and parent simultaneously focus on an object or toy) is highly correlated with later language development (Carpenter, Nagell, & Tomasello, 1998; Markus, Mundy, Morales, Delgado, & Yale, 2000; Saxon, Colombo, Robinson, & Frick, 2000).
- Higher rates both of infant response (e.g., the child smiling in response to the mother's voice) and of mother response (e.g., the mother picking up the baby who is fussing) correlate with higher scores on language tests when children reach preschool age (Feldman & Greenbaum, 1997; Robinson & Acevedo, 2001).
- When mothers talk to their children about the children's focus of attention (e.g., talk about the toy the 9-month-old is banging on the table), they have more highly developed language when they reach preschool age (Harris, Jones, & Grant, 1984).
- Infants who engage in vocalizations more frequently have greater language skills when they reach preschool age (McCathren, Yoder, & Warren, 1999; Minton, 1969).
- Gesturing, especially pointing, is correlated with language development and often occurs just before the emergence of the first true words (Erikson & Berglund, 1999; Harris, Barlow-Brown, & Chasin, 1995).

In typically developing children, meaningful expressive language begins to emerge around 12 months, though there is great variability in the timing of a child's first word and in vocabulary development (Owens, 2001; Wetherby, Warren, & Reichle, 1998). Because *language* refers to any complex system of concepts represented by arbitrary symbols that are governed by rules, it includes speaking and listening, and reading and writing. In typically developing children, the ability to use language evolves naturally into more refined and complex systems as childhood progresses.

### **C. Literacy and emergent literacy**

Conventional literacy refers to the ability to read, write, and otherwise communicate via or comprehend alphabetic texts (Whitehurst & Lonigan, 1998). Literacy can serve a variety of *receptive* and *expressive* communicative functions and take a variety of forms. Literacy, more specifically *written language*, includes broad-ranging media in reading (e.g., print, large type, braille) and writing (e.g., printing, typing, braillewritng with any number of technologies—slate and stylus, electronic braillewritng, note taker, etc.).

*Emergent literacy* is a term used to describe the developmental precursors of formal reading and writing that begin early in life (Whitehurst & Lonigan, 1998; 2002), regardless of the medium. Emergent literacy precedes *conventional literacy*, which emphasizes reading with comprehension and writing to convey meaning. Emergent literacy encompasses the skills, knowledge, attitudes, environments, and experiences that lead to conventional literacy (Whitehurst & Lonigan, 1998).

Emergent literacy is broad in scope and can be promoted through numerous activities and experiences. Experiences that promote the development of emergent literacy include observing caregivers opening the mail or making a grocery list (Koppenhaver, Coleman, Kalman, & Yoder, 1991), listening while caregivers read aloud (International Reading Association & National Association for the Education of Young Children, 1998), independently exploring a variety of children's books (Weinberger, 1996), engaging in conversations and word play (e.g., rhyming) with adults (Whitehurst & Lonigan, 2002), and developing concepts by experiencing the world (Rosenkoetter & Barton, 2002).

Emergent literacy is rooted in the daily social interactions that children experience (Lawhon & Cobb, 2002). Among these, families and home experiences are key to the promotion of emergent literacy development (Bennett, Weigel, & Martin, 2002; Neuman, 1996; Payne, Whitehurst, & Angell, 1994). Even when parents have minimal literacy skills themselves, reading simple books with their children results in increased emergent literacy skills (Neuman, 1996). Overall, homes that promote the most emergent literacy success provide a variety of direct experiences with adults, including opportunities to explore books and writing materials and to observe others engaged in these same activities (Weinberger, 1996; Whitehurst & Lonigan, 2002).

In a position paper on developmentally appropriate practices, the International Reading Association and the National Association for the Education of Young Children identified reading aloud to children and exposure to concepts about print as the first two critical literacy experiences for young children learning to read and write (1998). Many parents and caregivers can easily provide these two types of experiences. Although research has not documented how children with visual impairments, particularly those with blindness, acquire concepts about print, it is clear that emergent literacy experiences must include opportunities to experience books in accessible media. These early experiences with accessible literacy materials (books, letters, and so on) enable children to begin to understand that people read from left to right, to recognize letter-sound correspondence, to understand that words carry meaning, and so on.

#### **D. Concurrent development of communication and literacy**

Communication begins with the earliest interactions between a baby and a parent. Likewise, emergent literacy in its broadest sense begins at birth, with communication and literacy developing concurrently and interrelatedly (Koppenhaver et al., 1991; Teale & Sulzby, 1986). This interrelated development is supported as children interact in numerous ways to achieve a variety of purposes, often through play.

Written language learning can begin very early as children are exposed to texture, shape, and picture books. Writing tools such as crayons, markers, braillewriters, and slate and styluses should be introduced to children incidentally within daily routines. These early experiences with written language typically result in demonstrations of literacy knowledge long before children can read and write conventionally.

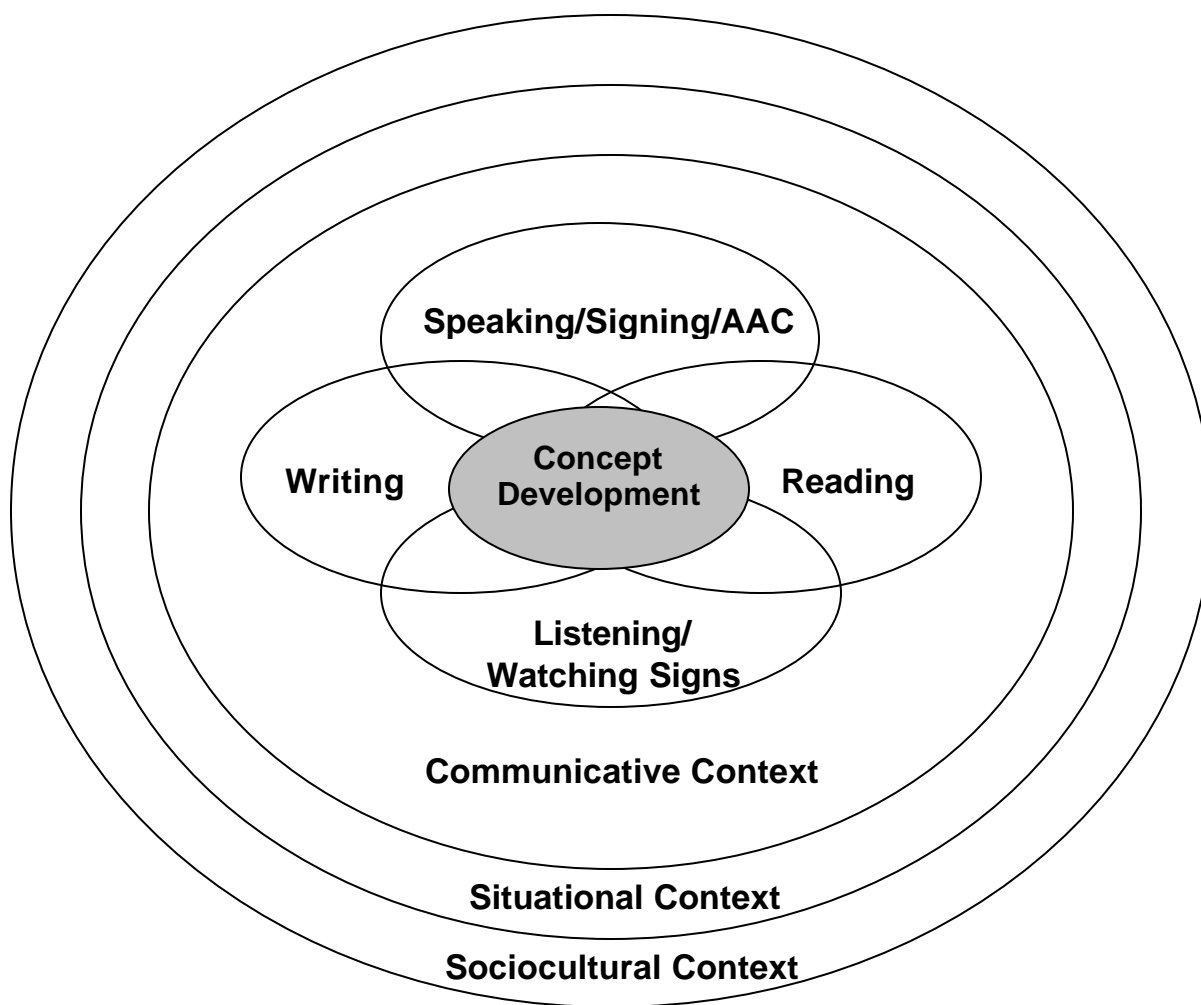
As children “play” with language and engage in literacy activities with their caregivers, they acquire oral and written language knowledge. Children begin to learn concepts of written language, such as storytelling and narrative structures, from listening to storybooks (Glazer, 1989; Norris & Damico, 1990; Senechal & LeFevre, 2001) and spoken language (e.g., Butler, 1979; Pierce & McWilliam, 1993). Children who are reared in homes that are rich in oral and written language are more likely to know how to read and write before entering school than are children from homes with few linguistic interactions (Snow, Nathan, & Perlman, 1985; Weinberger, 1996). Oral interactions between children and their caregivers that involve print create a symbiotic relationship between oral and written language with growth in one fostering growth in the other.

Phonological processing, an important predictor of reading achievement, involves hearing, processing, and manipulating the sounds of words. Parents who attend to and repeat their infants’ early vocalizations and verbalizations probably facilitate acquisition of phonological processing skills that develop later. By engaging in developmentally appropriate sound and word games (nursery rhymes, songs) with their young children, caregivers set the stage for later alphabetic and phonetic associations. Phonological

processing, in turn, should lead to phonetic awareness—understanding that all spoken words consist of sequences of small units of sound called phonemes (Adams, 2001).

### **E. The role of context**

Communication and literacy, like all areas of development, do not develop in a vacuum. Rather, they are influenced by the *contexts* of children's lives. Koppenhaver, Pierce, Steelman, and Yoder (1995) describe a model based on Teale and Sulzby's (1986) work that describes the contexts within which communication and literacy develop (see Handout B).



*Figure 1.* Adapted from Koppenhaver, D.A., Pierce, P.L., Steelman, J.D., & Yoder, D.E. (1995). Contexts of early literacy intervention for children with developmental disabilities. In M.E. Fey, J. Windsor, & S.F. Warren (Eds.), *Language intervention:*

*Preschool through the elementary years* (pp. 241-274). Baltimore: Paul H. Brookes.  
Used with permission.

- The *communicative context* includes the linguistic and nonlinguistic interactions of children and adults. The communicative context is especially important in the home environment, where children develop most of their communication and literacy skills (Teale, 1986). The nature of the communicative context and the interactions occurring within it dictate whether or not children will become familiar with the characteristics of language and the concepts that lead to an understanding of the connection between spoken and written language. Concept development is integrally related to the development of communication, language, reading, and writing and is shown at the center of the diagram.
- The *situational context* refers to the physical characteristics of children’s living and learning environments, including the home, daycare center, community, and so on. The situational context encompasses not only the communicative context but, more broadly, the availability of literacy and communication materials, opportunities for literacy and communication experiences, and the literacy and communication skills of adults and other children children’s living and learning environments.
- The *sociocultural context* encompasses the other two contexts. The sociocultural context includes the societal and cultural values, expectations, beliefs, and resources regarding communication and literacy.

The three contexts—communicative, situational, and sociocultural—influence communication and literacy development because the opportunities afforded children are influenced by their interactions with others, the physical environments in which they live and learn, and the attitudes, expectations, and beliefs that society holds for them as potential learners.

*When 30-month-old Amber and her mother return from their trip to the grocery store, Amber’s grandfather has arrived for a visit. Amber is feeling a little full from tasting so many good samples that were available at the store.*

*While her mother puts away the groceries, Amber brings her grandfather one of her braille-print books about different types of food. She sits on her grandfather’s lap with the braille-print book resting on her legs. Her grandfather reads the rhyming print in a singsong voice as he skims his fingers over the braille dots. Amber periodically places her hand on her grandfather’s as it moves across the page. She chimes in frequently with the repetitive line when her grandfather pauses at the end of each page.*

*Amber also enjoys interacting with her grandfather when he asks, “Is that your favorite food?” As always, Amber responds “No” to everything except chocolate ice cream—her true favorite.*

Amber's communicative and literacy experience can be viewed in terms of the communicative context, the situational context, and the sociocultural context. The communicative context included the use of a special reading voice, i.e., the singsong rhythm, reading a braille-print book, and the fact that the grandfather related the book to Amber's life. The situational context included the child's independent access to braille books, the visit to the grocery store where the child had hands-on experiences with the foods mentioned in the book, and a home environment with many adults who were willing and able to support Amber and her literacy learning. The sociocultural context included the mother's expectation that Amber would go to the grocery store, the grandfather's understanding of the importance of reading and touching the braille dots, and the community resources that had helped the family acquire the books and learn how to use daily interactions to teach Amber about communication and literacy.

## **F. Visual impairments, attachment, and social skills**

Visual impairments (low vision or blindness) at birth may affect early attachment and can influence both parents and children as communication partners. Attachment influences communication, social skills, and all other areas of development.

For example, lack of eye contact between parents and children can reduce the frequency and duration of their communicative interactions. A mother may feel rejected or simply talk less to a child who does not make eye contact during feeding or diaper changing. She may be unaware of other, more subtle signals indicating that the child is engaged. Because the mother talks less, the child has less exposure to language and experiences fewer enjoyable stimuli. Because the child has fewer positive experiences, he or she may be less interested in being held or interacting at other times. It may be more difficult to interpret what the child is enjoying. Because the child may not express obvious pleasure in being held or interacting, the mother may leave the child in a crib and have fewer interactions with him or her. This cycle can continue indefinitely without intervention. Not all visual impairments will have negative effects on development as dramatic as described in this hypothetical situation, but visual impairments do influence developmental processes in many ways.

*Dominick's parents were excited because they were finally able to bring him home from the hospital. He was born at 28 weeks' gestational age and stayed in the neonatal intensive care unit for over a month before he was well enough to come home. While he was in the hospital, he underwent numerous surgeries, though the surgeries to reattach his retinas were only partly successful. His parents felt that he always had needles and tubes sticking out of him even when he wasn't undergoing surgery. He was still so tiny and fragile, his parents were almost afraid he would break.*

*When Dominick awoke for the first time in his crib at home, he began to cry. When his mother quietly scooped him into her arms, his cries escalated to screams. In the hospital, Dominick had learned that being touched usually preceded a needle stick or some other painful experience. Dominick's mother was frightened by the screams and was afraid she was hurting him. When he failed to calm down quickly, she returned him to his crib, where he slowly subsided to whimpering. Dominick's mother collapsed into the rocking chair beside him and sobbed at her inability to comfort her son.*

*During the next few weeks, Dominick continued to cry when his mother picked him up. She always tried to be quiet so she would not startle him with loud noises, but he still screamed. She spent less and less time holding him and mainly held him to administer his medicines. Frequently she even held his bottle over him as he lay in the crib, because he became so agitated when she held him. Dominick spent most of his time lying passively on his back in his crib.*

*At this time, a teacher of children with visual impairments (TVI) who worked with infants and toddlers, began visiting the home. Dominick's parents expressed their frustration over Dominick's crying when held and asked for help. Over several sessions, the early interventionist showed the parents how to talk to Dominick before picking him up so that he would know what to expect. She explained why many children who are born blind may appear to be resistant to being touched. She also connected his parents with parents of preschoolers who were blind, so they could talk to people who had gone through similar experiences. Slowly, Dominick's parents learned how to let Dominick know when they were approaching, and Dominick learned to enjoy being held by his parents.*

On the parents' side, there are many issues related to children's visual impairments that may affect communication. Some parents are unsure about how to interact with children with visual impairments, especially when children are unable to engage in some of the earliest attachment and bonding experiences (e.g., eye contact with parent while being held). Additionally, parents may expend a great deal of energy coming to terms with children's visual impairments and managing children's needs (e.g., additional doctor visits, medications). When parents have additional stresses caused by the birth of a child with a disability, they often have less time and energy to spend in positive interactions with their child (Minde, 2000), resulting in fewer opportunities to communicate.

Communication requires interactions between children and the people in their environments. To interact effectively with people, children need social skills. The very earliest social attachment relationships between infants and caregivers are affected by visual impairments (Preisler, 1997). Children with visual impairments often experience delays in the development of social skills, possibly due to the fact that many social skills are typically learned through observation and visual imitation of others (Rogers & Puchalski, 1984; Tröester & Brambling, 1992). If parents and infants have difficulties

engaging in positive communicative interactions, they will have fewer opportunities to practice developing social skills. Through their impact on communication development, visual impairments can indirectly affect social skills, and vice versa.

Because children with visual impairments are unable to effectively use many of the nonlinguistic/prelinguistic communication techniques of typically sighted infants, they must develop compensatory communication skills. They often develop other strategies, sometimes called compensatory skills, to serve the same function that vision serves for typically sighted children. For example, children with visual impairments use auditory and tactile cues and language to gain information about their environment that typically sighted children gain through their vision. However, compensatory skills may not develop until children are older, putting them at risk for delays in all areas, including communication and literacy. The following vignette illustrates how Estelle compensated for the inability to visually monitor her mother's reaction to a visitor.

*Estelle and her little sister, Jada, were playing in the living room at home. Estelle, who is 30 months old and who has decreased visual acuity and a visual field of only 5 degrees, was holding a baby doll on her lap. Jada, 18 months old, was banging on a pot with a spoon. The doorbell rang and their mother let in an old friend she had not seen in years.*

*Estelle and Jada stopped playing when the newcomer arrived. Estelle listened intently, and Jada stared first at the visitor, then at her mother. Jada saw that her mother was happy and relaxed around the stranger, so she felt safe enough to walk closer.*

*Estelle waited a little longer, then asked, "Mama?"*

*Her mother said, "It's OK. Come here, Estelle. This is my friend Maria." Estelle joined her sister and met Maria.*

In this vignette, children use social referencing, a communication skill in which a child uses cues from a trusted caregiver, to determine how to respond to a strange person or situation. If Estelle and Jada's mother had been nervous or frightened, it is unlikely that the girls would have been willing to approach the stranger. Jada was able to develop social referencing skills early by relying on visual information from her mother's facial expression and posture. Estelle was unable to begin to use social referencing until she developed enough language to verbally ask her mother about the stranger. Over time, Estelle will probably learn to decode the tone and inflection of her mother's voice to determine if interactions with strangers are OK.

## **G. Visual impairments and concept development**

Both communication and literacy development depend heavily on concept development. Without an understanding of the world in which we live, children cannot communicate and become literate.

For example, children cannot communicate about a fire truck if they have not developed a language-based understanding of fire trucks or other vehicles. In the absence of the concept of a fire truck or any other vehicle, communication about the idea is limited. While sighted children could use vision to independently acquire information about a fire truck, children with visual impairments may require other types of opportunities to learn about the vehicle (e.g., physically exploring it, hearing it, hearing others compare and contrast it with other vehicles that they do know) to compensate for the lack of visual information about the truck. Concepts of a fire truck acquired through physical exploration and hearing will be quite different from the integrated, holistic concept that sighted children can acquire in one glance.

Similarly, children with visual impairments who touch a furry dog and later hear a bark from across the room may require intervention from someone else in order to understand that the animal they touched is the animal that made the noise. Without this mediation of the environment, children with visual impairments may have difficulty developing a unified concept of *dog* that includes an understanding of its physical characteristics and the realization that the barking sound came from that furry source. Unless children with visual impairments are introduced to different shapes, sizes, and types of dogs, their concept of *dog* will be based on their direct experiences. In contrast, by observing dogs running around at the local park, by looking at books with pictures of different breeds, and through other incidental experiences, sighted children easily learn that dogs come in many shapes and sizes.

Children with visual impairments may be delayed in developing many concepts about the world, including the object concept or object permanence (the understanding that things continue to exist even when they are not providing sensory input), classification (the ability to group objects together on the basis of common features), and conservation (the understanding that certain objects, such as a quantity of liquid, may stay the same even when made to look different). Additionally, children with visual impairments often develop motor skills, especially self-initiated movement, at later ages than typically sighted peers, further limiting exploration and the acquisition of concepts. Limited exploration and fewer concepts about the world clearly influence communication and literacy development (Warren & Hatton, 2003).

Parents help their children develop concepts about the world in many ways (Fazzi & Klein, 2002; Wormsley, 1997). Children learn many concepts through trial and error. Parents and early interventionists must be willing to sit back, let children repeatedly try to do things independently, and communicate with them about their attempts. Children learn from repeated attempts and informative communicative interactions about their own actions, not from adults doing tasks for them.

Children with visual impairments should participate in the entire sequence of activities within families' daily routines. For example, if the parent intends to read a book to a child, the parent should allow the child to choose the book from the shelf and to return it afterward. If adults always just hand books to children, they will think that books appear out of nowhere; children will not initiate getting books if they do not know where books are located.

For children with visual impairments, adults must take avoid the “good fairy” syndrome, in which things appear out of, and disappear into, nowhere. For example, a mother may be concerned because her child who is blind does not, after drinking from a cup, place it on the highchair tray but drops the cup on the floor. The mother may be contributing to the problem by making a habit of handing the cup to the child above table height; the child is simply putting the cup back where he or she found it—in midair, where the “good fairy” made it appear. The mother should be encouraged to place the cup on the highchair tray and allow the child to find the cup; the child may be frustrated at first, but will soon learn that cups (and other things) do not appear “by magic” out of thin air as soon as they are wanted.

*Johnny was lying under the kitchen sink with a wrench and a flashlight, tightening up the pipes that had started leaking. His 30-month-old son, Malcolm, was sitting beside him touching all the tools in the toolbox. Johnny slid out from under the sink and wiped his brow. “Malcolm, can you go get Daddy a diet cola from the refrigerator?” he said to his son.*

*Johnny watched as Malcolm stood and trailed the cabinets a few feet to the refrigerator. Johnny was still amazed that his son, who was totally blind, was so fearless in moving around their home. Malcolm opened the refrigerator and found a soda can on the bottom shelf. Smiling, he brought it back to his father.*

*“Thank you, Malcolm,” Johnny said. “This will do just fine. It’s not diet, but that’s OK.”*

*“You want diet,” Malcolm said, and started back toward the refrigerator.*

*“OK,” said Johnny. “Let’s see if we can find one together.”*

*They sat down in front of the refrigerator.*

*“Here’s a regular drink,” Johnny said, handing Malcolm a can. “And here’s a diet drink. I wonder if there’s any way to tell them apart.”*

*Johnny saw his son’s finger feeling the tabs on the tops of the cans. After several minutes of exploration, Malcolm held up a can and said, “Diet round.”*

*“Hey, you’re right!” Johnny said. “The tab on the diet drink is round. The tab on the regular drink is square.”*

Families and caregivers can provide children with a range and variety of experiences, including taking them places in the community, discussing naturally occurring concepts in the home and neighborhood, and providing experiences that allow children to see, touch, hear, smell, and taste as much as possible. Parents and early interventionists play an important role in providing children with opportunities to experience their world and develop a linguistic and spatial understanding of it. These experiences will help children acquire concepts needed for effective communication and literacy.

*At 4 months, Colleen was diagnosed with optic nerve hypoplasia; she appears to have light perception. Her mother, who was already a certified special education teacher and reading specialist, decided to take classes on visual impairment and blindness so that she could support her daughter as she learned to read braille. Because Colleen has only light perception, Colleen’s mother understood that she would not automatically acquire concepts about the world incidentally through vision, as most infants and toddlers do.*

*When Colleen was about 30 months old, her mother decided to teach her about pumpkins. In early October, they visited a pumpkin patch and explored the sizes, shapes, and weights of different pumpkins. They traced the pumpkin vines back to their roots and tactually explored the leaves on the vines. Finally, they chose pumpkins for jack-o-lanterns and pumpkin pies, purchased the pumpkins, and took them home. A few days later, Colleen and her mother carved their jack-o-lantern. Although tactually sensitive and hesitant to touch the slimy interior of the pumpkin at first, Colleen finally did so and helped her mother pick out the seeds that were inside the pumpkin. Colleen felt the features of the jack-o-lantern and proudly helped her mother display it on their front porch. They toasted the pumpkin seeds together and enjoyed them as a snack.*

*Colleen’s mother saved the flesh of the pumpkin and told Colleen that they would cook it and make a pumpkin pie. Before cooking the pumpkin, her mother let Colleen feel it and taste it. Colleen did the same after the pumpkin was cooked, so that she could compare raw and cooked pumpkin. The next day, Colleen’s mother brought out a can of pumpkin from the pantry and explained that pumpkin can be purchased in the grocery store in a can to save time. Colleen helped her mother open the can and tasted the difference between the canned pumpkin and the pumpkin they had cooked the day before. Then Colleen and her mother made two pumpkin pies, using fresh cooked pumpkin and canned pumpkin. They sampled each pie before putting both of them in the freezer to have for Thanksgiving dinner a few weeks later.*

*Colleen learned that jack-o-lanterns are made from pumpkins of various shapes, sizes, and weights; that pumpkins grow in fields; and that they have various consistencies and*

*uses. When she encounters cans of pumpkins in the grocery store, she'll know that the substance in the can started out as a pumpkin on a vine.*

*To help Colleen understand that books are related to real life and spoken language, her mother sat down with her at a braillewriter and brailled a story about their trip to the pumpkin patch and their pumpkin adventure. Colleen's mother added a small felt pumpkin on the top right front corner of the book along with the brailled title so that Colleen would know where the top front of the book was to orient it for reading. As Colleen's mother read the book to her and moved her hands in the left-to-right and top-to-bottom manner that readers of braille use, Colleen would sometimes place her hand over her mother's hand to follow along. At other times, she would rub the braille dots. Pretty soon she was "reading" the book to her mother using the hand techniques that her mother had carefully modeled for her.*

Sighted children encountering a photograph of a fire truck in a book can begin to develop a conceptual understanding of the photographic representation. Some children with visual impairments must depend on others to make connections between the image in the two-dimensional book, a toy fire truck, the fire truck encountered on the street, and other symbolic representations. The lack of independent access and need for mediation may make it more difficult for children with visual impairments to generalize labels as early as sighted children (Bigelow, 1987; McConachie & Moore, 1994) and to understand symbols (e.g., restroom signs, fast-food signs).

Children with visual impairments may have very divergent expressive and receptive language skills, with either high expressive and low receptive scores, or low expressive and high receptive scores (McConachie, 1990). As children with visual impairments begin talking, expressive language may not match comprehension, making it easy for adults to overestimate or underestimate the child's understanding of concepts.

## **H. Visual impairments and emergent literacy**

Visual impairments may prevent young children from experiencing the same richness of emergent literacy activities that sighted children experience. Children with multiple disabilities including visual impairments have even more difficulty accessing emergent literacy experiences and activities. Families and caregivers need support that will help them increase the frequency and quality of emergent literacy experiences for young children with disabilities.

All children, particularly those with disabilities, need regular opportunities to develop emergent literacy concepts that will assist them in later formal literacy instruction. Erickson (2000) notes that all children, regardless of disabilities, are ready to develop literacy without a checklist of prerequisite skills. Children with severe physical impairments who are provided with literacy opportunities develop emergent literacy

concepts similarly to typically developing children (Butler, 1979; Pierce & McWilliam, 1993). Children with multiple impairments acquire emergent literacy skills when they engage in regular storybook reading with a parent (Koppenhaver, Erickson, Harris, McLennan, Skotko, & Newton, 2001). Furthermore, parents of children with disabilities can benefit from training that will help their children acquire emergent literacy skills as efficiently as possible (Koppenhaver et al., 1991; Skotko, Koppenhaver, & Erickson, 2004). Unfortunately, children with a range of disabilities have fewer opportunities to engage in early literacy learning experiences (Katims, 2000; Koppenhaver, et al., 1991; Marvin, 1994; Peibly & Koppenhaver, 2001; Rex, Koenig, Wormsley, & Baker, 1994).

Children with visual impairments do not have the opportunity to learn about print incidentally in their environment. When children have visual impairments, fewer experiences are readily available to them unless appropriate early intervention is provided (Harley, Truan, & Sanford, 1997; Koenig & Holbrook, 2002). Children with low vision may not be able to observe environmental print at a distance (e.g., McDonald's sign) or to see their father opening the mail across the room. Children who are blind have very few opportunities to interact with braille or braillewriting instruments unless they have a parent who reads braille or an interventionist who provides materials in the home. Fortunately, with guidance, parents and caregivers can learn to provide children with visual impairments frequent and varied opportunities for appropriate and meaningful early literacy experiences (Swenson, 1999; Wormsley, 1997).

*Frederick arrived at the Sampsons' apartment for his weekly visit. The Sampsons' youngest child, Nicholas, 24 months old, was born with a severe visual impairment. Frederick has been their primary home visitor for almost a year. This week, Frederick brought some information about learning braille and purchasing braille books. Until recently the Sampsons had been very resistant to exposing Nicholas to braille, but they were now ready to begin learning about this potential reading medium for their son. Frederick planned on modeling how to incorporate braille into Nicholas's everyday life.*

*Over the next several weeks, Frederick showed the family how to provide opportunities for Nicholas to experience braille. He encouraged them to store braille books in places that Nicholas could access by himself. He helped them find space for the braillewriter among Nicholas's older brother's crayons and coloring books. He helped them create braille labels for items such as the apartment number on the door, and tactile object labels for other items such as Nicholas's favorite cereal box. Throughout these visits, Frederick demonstrated to Nicholas' parents that braille can be fun and that, at his age, Nicholas can develop many concepts about braille that will help him later in life if they simply provide him with opportunities to play with braille during everyday experiences.*

Unfortunately, many families do not have primary home visitors knowledgeable about visual impairments. The chronic shortage of qualified teachers for children with visual impairments and their families (Council for Exceptional Children, 2000) makes it difficult for some families to receive services from an early interventionist knowledgeable about

children's visual impairments and their impact on emergent literacy. The Division of Visual Impairments of the Council for Exceptional Children adopted a position paper in October 2003 that describes the types of support that young children with visual impairments and their families should receive (see Handout C).

## **I. Multiple disabilities**

Children with multiple disabilities may face special challenges in acquiring emergent literacy because motor and cognitive delays can impede concept development. Children with multiple disabilities may experience early literacy activities in ways that are qualitatively and quantitatively different from their peers with less significant disabilities (Coleman, 1991; Light & Kelford-Smith, 1993; Light & McNaughton, 1993).

Children with visual impairments and additional disabilities are significantly more delayed in developing communication skills than children who are only visually impaired (Hatton, Bailey, Burchinal, & Ferrell, 1997). A large percentage of children with visual impairments under the age of 5 years (40-60%) have additional disabilities (Ferrell, 1998; Hatton & Model Registry Collaborative Group, 2001). Parents of children with visual impairments and additional disabilities must juggle doctors' appointments; maintain complex medication, feeding, and sleeping routines; and still maintain family life.

Children with multiple disabilities may be unable to explore and interact with their environments independently. They may be unable to request activities, including storybook reading, and often can't request that the same book be read repeatedly—an important component of early storybook reading. Children with visual impairments and cognitive delays require numerous and repetitive learning opportunities. They also need additional opportunities to explore their environment. Adults should carefully and thoughtfully introduce new experiences, objects, and concepts. Then they should help children integrate new information into their existing knowledge in a functional manner.

*Piera, a toddler with cognitive and visual impairments, has heard her mother talking about the pantry in the kitchen. At first, Piera did not understand what "pantry" meant. She began to recognize that every time she heard that word, she also heard a door open and smelled food, but these experiences did not allow her to figure out that the pantry is the kitchen closet where food is stored.*

*The early interventionist explained that children with cognitive delays require more time to develop concepts and sometimes require direct structured experiences to help them learn. When children have cognitive delays, they can use their vision to provide additional information about their environments to help them understand their surroundings.*

*Piera's mother began to provide experiences linking the word "pantry" with trips to find treats in the pantry, opportunities to put groceries away in the pantry, and opportunities to explore the pantry both with guidance and independently. Piera is beginning to understand what a pantry is.*

Children with multiple disabilities may be unable to explore their environment independently or to initiate new experiences. Typically developing children use all of their senses, motor skills, and cognitive abilities to make sense of their world. When one or more of these senses, skills, or abilities is limited, children will require more time and more direct experience to develop concepts. Due to the tremendous amount of interaction with the environment necessary for concept acquisition in children with multiple disabilities, language and emergent literacy often develop more slowly.

*Tina, 18 months old, was diagnosed with blindness, developmental delay, and moderate cerebral palsy as an infant. Tina and her mother live with a cousin and her family in a singlewide mobile home. They frequently use a space heater in the living room and turn on the oven in the kitchen to heat the home. It is important for Tina to understand that these places are hot and not to touch things that she is told are hot. Tina's cousin is 12 months old and will point to the space heater or the open oven and say, "Hot." Because Tina's cousin has learned that they are hot and knows that she is not to touch things when told "no" or "hot," she does not approach them.*

*Until recently, Tina mainly cruised along the furniture, and she was never close to the heater or open oven unless her mother was holding her near it to warm her up. She recently began to explore more on her own. Now she frequently comes close to the heater before anyone is able to stop her. She cannot see her mother point to the heater as she says, "Hot." Her mother tries telling her. "No, it's hot," but Tina continues to cruise close to the heater. She does not understand the word "hot" or the danger that it conveys. Tina's visual impairment and cognitive delays have prevented her from learning the danger implied by the words "no" and "hot."*

## **J. Role of the TVI and recommended practices**

As noted, visual impairments can affect communication and literacy beginning in infancy. Visual impairments may affect attachment between infants and caregivers from the very earliest days. Attachment affects communication and socialization and the acquisition of concepts about the world. Communication, socialization, and concept development form the foundation for language and literacy. Teachers of children with visual impairments (TVIs) understand the impact of visual impairments on early development as well as issues related to literacy acquisition in children with visual impairments. They are uniquely qualified to support families and other team members in promoting attachment, communication, socialization, and emergent literacy in young children with visual impairments.

To be effective, however, TVIs and early interventionists who work with infants and toddlers must be informed about recommended practices in early intervention and early childhood special education as well as recommended practices in the field of visual impairment. Not only must TVIs be able to identify the skills and abilities that form the basis for communication and emergent literacy in infants and toddlers, they must be able to collaborate with families and other team members to identify functional outcomes (goals) that help children achieve their potential. Implementing family-centered practices and serving as an effective member of an early intervention team are crucial in providing effective support and intervention.

TVIs typically complete functional vision assessments and developmentally appropriate learning media assessments that describe how children use their senses on a daily basis and provide useful information to families and teams about the potential reading media—Braille, print, or both. These assessments also provide information that will assist in planning and implementing intervention to facilitate the child's optimal use of vision. However, as noted by Topor, Rosenblum, and Hatton (2004), the visual functioning of very young children can change quite rapidly, so assessment and monitoring must be continuous in order to meet the rapidly changing needs of young children.

Topor et al. (2004) proposed a developmentally appropriate learning media assessment—based upon an interview and observational assessment developed by Anthony (2004a, 2004b) for infants and young children—that TVIs may use to gather information about infants' and toddlers' potential reading media. In many cases, it is difficult to determine if very young children will be print or braille readers. Although children may appear to use vision as their primary means for gathering information in the infant and toddler years, that level of vision may not be sufficient for print reading as reading demand increases—often in the second grade. For this reason, many infants and toddlers should be considered dual-media learners and provided with opportunities to experience both braille and print. If there is any question that a child may be a braille reader, she or he should be exposed to both braille and print during early childhood.

Family-centered practices are the foundation for effective early intervention (Division on Visual Impairments, 2003; Hatton, 2004; Hatton, McWilliam, & Winton, 2002). Although an exhaustive description of family-centered practices is beyond the scope of this session, Hatton, McWilliam, and Winton (2003) provide detailed information about implementing family-centered practices in the *Family-Centered Practices for Infants and Toddlers With Visual Impairments* module developed by the Early Intervention Training Center for Infants and Toddlers With Visual Impairments.

TVIs serving infants and toddlers with visual impairments should recognize and understand the following key features of family-centered practices that can be used to

promote communication, language, and emergent literacy development in young children with disabilities.

- Develop reliable alliances (Turnbull & Turnbull, 2001) with families and other professionals that recognize family and child strengths; promote family choice and collaboration among families and other professionals while respecting and honoring diversity within the context of families, communities, and cultures (Division on Visual Impairments, 2003; Hatton, 2004; Hatton, McWilliam, & Winton, 2002, 2003).
- Serve as an effective member of the early intervention team by helping families and other team members understand information specific to children's visual impairments.
- Collaborate with families and other professionals to complete routines-based assessments that lead to functional outcomes as a part of the individualized family service plan (IFSP).

A team approach to supporting communication and emergent literacy in young children with visual impairments is critical for a number of reasons. First, Part C of the Individuals With Disabilities Education Improvement Act of 2004 (known as IDEIA 2004) requires that more than one discipline be involved in the assessment of young children with disabilities and in the development of the IFSP. As noted, communication development in infants and toddlers with visual impairments may be delayed or be quite different from that of sighted children. Often, families may be concerned about their children's communication development and would like input from speech-language pathologists. TVIs should work with speech-language pathologists to identify differences in communication and language that may be due to visual impairments. Very often, TVIs will need to work closely with eye care specialists to determine how much vision children have in order to determine their primary reading medium. Again, this can be a challenge in the early years.

IDEIA (2004) Part C requires that the early intervention team collaborate with families to assess child and family strengths, resources, and priorities and to develop outcomes and strategies for the IFSP. Therefore, a team approach to assessment and intervention planning for communication and emergent literacy for infants and toddlers is required. Because TVIs and early interventionists collaborate closely with families who then implement early intervention continuously throughout the week, determining the family's priorities, strengths, and resources and how interventions can be incorporated into their daily routines is important. More detailed information about interventions specific to communication and emergent literacy is provided in Sessions 3 and 5 of this module.

Visual impairments can affect communication development and emergent literacy in many ways. Drawing on the work of Stern (2000), Millie Smith, an educator with considerable knowledge of and experience with children with visual impairments, describes the connection between emergent literacy and quality of life (Smith & Bishop, 2005). Smith and Bishop note that emergent literacy begins at birth and is built on a foundation of social and communicative skills. The development of these skills is

determined, in large part, by children's interactions with the people and objects in their environments. The overall texture of these interactions is summed up in the phrase *quality of life*.

According to Smith and Bishop (2005), there are three fundamental components of quality of life: agency, anticipation, and participation. Children, especially children with visual impairments, are vulnerable to one or more of the components of quality of life.

- *Agency* refers to people's control over what happens to them. As soon as possible, infants should be granted some degree of control over what happens to them. Infants who have agency, who have learned that they can affect their environments, will be more likely to reach out to—communication with—their caregivers.
- *Anticipation* is the feeling of looking forward to something pleasurable. Caregivers should be consistent in providing young children with pleasurable experiences—being fed, being held, and so on—so that they can anticipate the pleasures. Without anticipation, pleasurable experiences in and of themselves do not raise children's quality of life.
- *Participation* is interaction with other people. Although individuals differ in their needs, all infants and children require some social interaction. Caregivers should understand that simply being in the same house with a child with a visual impairment is not enough; the child may still be isolated even with someone else in the room. Participation involves directly interacting with children. The more children are played with, held, talked to, and sung to, the higher will be their quality of life.

Smith's discussion can be found in video clip CL 1-05, "Millie Smith—Quality of Life and Emergent Literacy" (EIVI Training Center, 2004), and in Handout D, *Quality of Life and Emergent Literacy* (Smith & Bishop, 2005).

To provide effective intervention, TVIs and other early interventionists must recognize and understand the relationships among vision, attachment and socialization, communication and language development, and emergent literacy and literacy. They must recognize that effective early intervention requires family-centered practices and a team approach.

### References for Major Points

Anthony, T.L. (2004a). *Individual sensory learning profile interview (ISLPI)*. In I. Topor, L.P. Rosenblum, & D.D. Hatton, *Visual conditions and functional vision: Early intervention issues* (participant packet, pp. 238-245). Chapel Hill, NC: Early Intervention Training Center for Infants and Toddlers With Visual Impairments, FPG Child Development Institute, UNC-CH.

Anthony, T.L. (2004b). *Observational assessment of sensory preferences of infants and toddlers (OASP)*. In I. Topor, L.P. Rosenblum, & D.D. Hatton, *Visual conditions*

*and functional vision: Early intervention issues* (participant packet, pp. 246-247). Chapel Hill, NC: Early Intervention Training Center for Infants and Toddlers With Visual Impairments, FPG Child Development Institute, UNC-CH.

- Bates, E. (1976). *Language and context: The acquisition of pragmatics*. New York: Academic Press.
- Bates, E., Camaioni, L., & Volterra, V. (1975). The acquisition of performatives prior to speech. *Merrill-Palmer Quarterly*, 21(3), 205-226.
- Bennett, K.K., Weigel, D.J., & Martin, S.S. (2002). Children's acquisition of early literacy skills: Examining family contributions. *Early Childhood Research Quarterly*, 17(3), 295-317.
- Bigelow, A.E. (1987). Early words of blind children. *Journal of Child Language*, 14(1), 47-56.
- Butler, D. (1979). *Cushla and her books*. Boston: Horn Book.
- Carpenter, M., Nagell, K., & Tomasello, M. (1998). Social cognition, joint attention, and communicative competence from 9 to 15 months of age. *Monographs of the Society for Research in Child Development*, 63(4, Serial No. 255).
- Coleman, P.P. (1991). *Literacy lost: A qualitative analysis of the early literacy experiences of preschool children with severe speech and physical impairments*. Unpublished doctoral dissertation, University of North Carolina at Chapel Hill.
- Council for Exceptional Children. (2000). *National plan for training personnel to serve children with blindness and low vision*. Reston, VA: Author.
- Division on Visual Impairments of the Council for Exceptional Children. (2003). *Position statement, Division on Visual Impairments, Council for Exceptional Children, October 19, 2003: Family-centered practices for young children with visual impairments*. Retrieved November 30, 2004, from the University of Arizona College of Education Web site:  
[http://www.ed.arizona.edu/dvi/Postion%20Papers/family\\_centered.htm](http://www.ed.arizona.edu/dvi/Postion%20Papers/family_centered.htm)
- EIVI Training Center. (2004). Millie Smith—Quality of life and emergent literacy [Video clip]. (Available from Early Intervention Training Center for Infants and Toddlers With Visual Impairments, FPG Child Development Institute, CB #8040, UNC, Chapel Hill, NC 27599-8040)

- Erickson, K.A. (2000). All children are ready to learn: An emergent versus readiness perspective in early literacy assessment. *Seminars in Speech and Language, 21*, 193-202.
- Erikson, M., & Berglund, E. (1999). Swedish early communicative development inventories: Words and gestures. *First Language, 19*(55, Pt. 1), 55-90.
- Fazzi, D.L., & Klein, M.D. (2002). Cognitive focus: Developing cognition, concepts, and language. In R.L. Pogrund & D.L. Fazzi (Eds.), *Early focus: Working with young children who are blind or visually impaired and their families* (2nd ed., pp. 107-153). New York: AFB Press.
- Feldman, R., & Greenbaum, C.W. (1997). Affect regulation and synchrony in mother-infants play as precursors to the development of symbolic competence. *Infant Mental Health Journal, 18*(1), 4-23.
- Ferrell, K. (1998). *Project PRISM: A longitudinal study of developmental patterns of children who are visually impaired: Final report*. Greeley: University of Northern Colorado.
- Glazer, S.M. (1989). Oral language and literacy development. In D.S. Strickland & L.M. Morrow (Eds.), *Theory and practice of early reading* (Vol. 1, pp. 137-154). Hillsdale, NJ: Erlbaum.
- Hala, S. (Ed.) (1997). *The development of social cognition*. East Sussex, UK: Psychology Press.
- Harley, R.K., Truan, M.B., & Sanford, L.D. (1997). *Communication skills for visually impaired learners: Braille, print, and listening skills for students who are visually impaired* (2nd ed.). Springfield, IL: Charles C. Thomas.
- Harris, M., Barlow-Browne, F., & Chasin, J. (1995). The emergence of referential understanding: Pointing and the comprehension of object names. *First Language, 15*(43, Pt. 1), 19-34.
- Harris, M., Jones, D., & Grant, J. (1984). The social-interactional context of maternal speech to infants: An explanation for the event-bound nature of early word use? *First Language, 5*(14, Pt. 2), 89-99.
- Hatton, D.D. (2004). Empowering families of young children with visual impairments. *D.V.I. Quarterly, 49*(3), 15-20.

- Hatton, D.D., Bailey, D.B., Burchinal, M.R., & Ferrell, K.A. (1997). Developmental growth curves of preschool children with vision impairments. *Child Development, 68*(5), 788-806.
- Hatton, D.D., McWilliam, R.A., & Winton, P.J. (2002). *Infants and toddlers with visual impairments: Suggestions for early interventionists*. (Report No. EDO-EC-02-14). Arlington, VA: ERIC Clearinghouse on Disabilities and Gifted Education. (ERIC EC Digest No. E636). Retrieved August 27, 2004, from <http://ericec.org/digests/e636.html>
- Hatton, D.D., McWilliam, R.A., & Winton, P.J. (2003). *Family-centered practices for infants and toddlers with visual impairments*. Chapel Hill, NC: Early Intervention Training Center for Infants and Toddlers With Visual Impairments, FPG Child Development Institute, UNC-CH.
- Hatton, D.D., & Model Registry of Early Childhood Visual Impairment Collaborative Group. (2001). Model Registry of Early Childhood Visual Impairment: First year results. *Journal of Visual Impairment & Blindness, 95*(7), 418-433.
- Individuals with Disabilities Education Improvement Act of 2004, H.R. 1350, (2004).
- International Reading Association & National Association for the Education of Young Children. (1998). Learning to read and write: Developmentally appropriate practices for young children. *Young Children, 53*(4), 30-46.
- Katims, D.S. (2000). Literacy instruction for people with mental retardation: Historical highlights and contemporary analysis. *Education and Training in Mental Retardation and Developmental Disabilities, 35*(1), 3-15.
- Koenig, A.J., & Holbrook, M.C. (2002). Literary focus: Developing skills and motivation for reading and writing. In R.L. Pogrund & D.L. Fazzi (Eds.), *Early focus: Working with young children who are blind or visually impaired and their families* (2nd ed., pp. 154-187). New York: AFB Press.
- Koppenhaver, D.A., Coleman, P.P., Kalman, S.L., & Yoder, D.E. (1991). The implications of emergent literacy research for children with developmental disabilities. *American Journal of Speech and Language Pathology, 1*, 329-335.
- Koppenhaver, D.A., Erickson, K.A., Harris, B., McLellan, J., Skotko, B.G., & Newton, R.A. (2001). Storybook-based communication intervention for girls with Rett syndrome and their mothers. *Disability and Rehabilitation, 23*, 149-159.
- Koppenhaver, D.A., Pierce, P.L., Steelman, J.D., & Yoder, D.E. (1995). Contexts of early literacy intervention for children with developmental disabilities. In M.E. Fey,

- J. Windsor, & S.F. Warren (Eds.), *Language intervention: Preschool through the elementary years* (pp. 241-274). Baltimore: Paul H. Brookes.
- Lawhon, T., & Cobb, J.B. (2002). Routines that build emergent literacy skills in infants, toddlers, and preschoolers. *Early Childhood Education Journal, 30*(2), 113-118.
- Light, J., & Smith, A.K. (1993). Home literacy experiences of preschoolers who use AAC systems and of their nondisabled peers. *AAC: Augmentative and Alternative Communication, 9*(1), 10-25.
- Light, J., & McNaughton, D. (1993). Literacy and augmentative and alternative communication (AAC): The expectations and priorities of parents and teachers. *Topics in Language Disorders, 13*(2), 33-46.
- Markus, J., Mundy, P., Morales, M., Delgado, C.E.F., & Yale, M. (2000). Individual differences in infant skills as predictors of child-caregiver joint attention and language. *Social Development, 9*(3), 302-315.
- Marvin, C. (1994). Home literacy experiences of preschool children with single and multiple disabilities. *Topics in Early Childhood Special Education, 14*(4), 436-454.
- McCathren, R.B., Yoder, P.J., & Warren, S.F. (1999). The relationship between prelinguistic vocalization and later expressive vocabulary in young children with developmental delay. *Journal of Speech, Language, and Hearing Research, 42*(4), 915-924.
- McConachie, H. (1990). Early language development and severe visual impairment. *Child: Care, Health and Development, 16*(1), 55-61.
- McConachie, H.R., & Moore, V. (1994). Early expressive language of severely visually impaired children. *Developmental Medicine and Child Neurology, 36*(3), 230-240.
- Minde, K. (2000). Prematurity and serious medical conditions in infancy: Implications for development, behavior, and intervention. In C.H. Zeanah (Ed.), *Handbook of infant mental health* (2nd ed., pp. 176-194). New York: Guilford Press.
- Minton, C. (1969). Sex differences in generality and continuity of verbal responsivity. *Proceedings of the Annual Convention of the American Psychological Association, 4*(Pt. 1), 263-264.
- Neuman, S.B. (1996). Children engaging in storybook reading: The influence of access to print resources, opportunity, and parental interaction. *Early Childhood Research Quarterly, 11*, 495-513.

- Norris, J.A., & Damico, J.S. (1990). Whole language in theory and practice: Implications for language intervention. *Language, Speech, and Hearing Services in Schools*, 21(4), 212-220.
- Owens, R.E. (2001). *Language development: An introduction* (5th ed.). Needham Heights, MA: Allyn and Bacon.
- Payne, A.C., Whitehurst, G.J., & Angell, A.L. (1994). The role of home literacy environment in the development of language ability in preschool children from low-income families. *Early Childhood Research Quarterly*, 9(3-4), 427-440.
- Pebly, M., & Koppenhaver, D.A. (2001). Emergent and early literacy interventions for students with severe communication impairments. *Seminars in Speech and Language*, 22, 221-230.
- Pierce, P.L., & McWilliam, P.J. (1993). Emerging literacy and children with severe speech and physical impairments (SSPI): Issues and possible intervention strategies. *Topics in Language Disorders*, 13(2), 47-57.
- Preisler, G.M. (1997). Social and emotional development of blind children: A longitudinal study. In V. Lewis & G.M. Collis (Eds.), *Blindness and psychological development in young children* (pp. 69-85). Leicester, U.K.: British Psychological Society.
- Rex, E.J., Koenig, A.J., Wormsley, D.P., & Baker, R. (1994). *Foundations of braille literacy*. New York: AFB Press.
- Robinson, J.L., & Acevedo, M.C. (2001). Infant reactivity and reliance on mother during emotion challenges: Prediction of cognition and language skills in a low-income sample. *Child Development*, 72(2), 402-415.
- Rogers, S.J., & Puchalski, C.B. (1984). Development of symbolic play in visually impaired young children. *Topics in Early Childhood Special Education*, 3(4), 57-63.
- Rosenkoetter, S., & Barton, L.R. (2002). Bridges to literacy: Early routines that promote later school success. *Zero to Three*, 33-38.
- Saxon, T.F., Colombo, J., Robinson, E.L., & Frick, J.E. (2000). Dyadic interaction profiles in infancy and preschool intelligence. *Journal of School Psychology*, 38(1), 9-25.
- Skotko, B.G., Koppenhaver, D.A., & Erickson, K.A. (2004). Parent reading behaviors and communication outcomes in girls with Rett syndrome. *Exceptional Children*, 70(2), 145-166.

- Snow, C.E., Nathan, D., & Perlman, R. (1985). Assessing children's knowledge about book reading. In L. Galda & A. Pellegrini (Eds.), *Play, language and stories: The development of children's literate behavior* (pp. 167-181). Norwood, NJ: Ablex.
- Stern, D.N. (2000). *The interpersonal world of the infant: A view from psychoanalysis and developmental psychology*. New York: Basic Books.
- Striano, T., & Rochat, P. (1999). Developmental link between dyadic and triadic social competence in infancy. *British Journal of Developmental Psychology*, 17(4), 551-562.
- Swenson, A.M. (1999). *Beginning with braille: Firsthand experiences with a balanced approach to literacy*. New York: AFB Press.
- Teale, W.H. (1986). Home background and young children's literacy development. In W.H. Teale & E. Sulzby (Eds.), *Emergent literacy: Writing and reading* (pp. 173-206). Norwood, NJ: Ablex.
- Teale, W.H., & Sulby, E. (1986). Emergent literacy as a perspective for examining how young children become writers and readers. In W.H. Teale & E. Sulby (Eds.), *Emergent literacy: Writing and reading* (pp. vii-xxv). Norwood, NJ: Ablex Publishing Corporation.
- Tomasello, M. (1992). The social bases for language development. *Social Development*, 1, 67-87.
- Topor, I., Rosenblum, L.P., & Hatton, D.D. (2004). Functional vision assessment and developmentally appropriate learning media assessment. In I. Topor, L.P. Rosenblum, & D.D. Hatton (Eds.), *Visual conditions and functional vision: Early intervention issues* (pp. 279-386). Chapel Hill, NC: Early Intervention Training Center for Infants and Toddlers With Visual Impairments, FPG Child Development Institute, UNC-CH.
- Tröester, H., & Brambring, M. (1992). Early social-emotional development in blind infants. *Child: Care, Health, and Development*, 18(4), 207-227.
- Turnbull, A.P., & Turnbull, H.R. (2001). Building reliable alliances. In *Families, professionals, and exceptionality: Collaboration for empowerment* (4th ed., pp. 56-82). Columbus, OH: Merrill Prentice Hall.
- Warren, D., & Hatton, D. (2003). Cognitive development of children with visual impairments. In I. Rapin & S. Segalowitz (Eds.), *Handbook of neuropsychology: Vol. 7, Part II. Child neuropsychology* (2nd ed., pp. 439-458). New York: Elsevier.

- Weinberger, J. (1996). A longitudinal study of children's early literacy experiences at home and later literacy development at home and school. *Journal of Research in Reading, 19*(1), 14-24.
- Wetherby, A.M., Warren, S.F., & Reichle, J. (Eds.). (1998). *Transitions in prelinguistic communication*. Baltimore: Paul H. Brookes.
- Whitehurst, G.J., & Lonigan, C.J. (1998). Child development and emergent literacy. *Child Development, 69*(3), 848-872.
- Wormsley, D.P. (1997). Fostering emergent literacy. In D.P. Wormsley & F.M. D'Andrea (Eds.), *Instructional strategies for braille literacy* (pp. 17-55). New York: AFB Press.