AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION

Roles and Responsibilities of Speech-Language Pathologists in Early Intervention: Guidelines

Ad Hoc Committee on the Role of the Speech-Language Pathologist in Early Intervention

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About This Document

This guidelines document is an official statement of the American Speech-Language-Hearing Association (ASHA). It was developed by ASHA's Ad Hoc Committee on the Role of the Speech-Language Pathologist in Early Intervention. Members of the Committee were M. Jeanne Wilcox (chair), Melissa A. Cheslock, Elizabeth R. Crais, Trudi Norman-Murch, Rhea Paul, Froma P. Roth, Juliann J. Woods, and Diane R. Paul (ex officio). ASHA Vice Presidents for Professional Practices in Speech-Language Pathology Celia Hooper (2003–2005) and Brian B. Shulman (2006–2008) served as the monitoring officers. The ASHA *Scope of Practice in Speech-Language Pathology* (ASHA, 2007) states that the practice of speech-language pathology includes providing services for infants and toddlers with communication needs. The ASHA *Preferred Practice Patterns* (ASHA, 2004e) are statements that define universally applicable characteristics of practice. The guidelines within this document fulfill the need for more specific procedures and protocols for serving infants and toddlers. It is required that individuals who practice independently in this area hold the Certificate of Clinical Competence in Speech-Language Pathology and abide by the ASHA Code of Ethics (ASHA, 2003b), including Principle of Ethics II, Rule B, which states that "individuals shall engage in only those aspects of the profession that are within their competence, considering their level of education, training, and experience." This document was disseminated for select and widespread peer review to speech-language pathologists, speech, language, and hearing scientists; and audiologists with expertise in early intervention, family members of young children, graduate students in communication sciences and disorders, and related professionals. This document was approved by the ASHA Board of Directors (BOD 4-2008) in February 2008. The guidelines will be reviewed and considered for revision on a regular basis (within no more than 5 years from the date of publication). Decisions about the need for revision will be based on new research, trends, and clinical practices related to early intervention in speech-language pathology.

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Executive Summary

The development of communication skills is a dynamic process that is shaped by interdependent factors intrinsic to the child and in interaction with the environment. The reciprocal and dynamic interplay between biology, experience, and human development converge to influence developmental experiences. Most importantly, the course of development is alterable through provision of early intervention services.

The early intervention practices described in the *Roles and Responsibilities of Speech-Language Pathologists in Early Intervention: Guidelines* include those based on both internal (e.g., policy, informed clinical opinion, integrative scholarly reviews) and external evidence (e.g., empirical data) from the literature. As the Committee evaluated available external evidence, variation was apparent both in strength of the research designs and implementation (e.g., randomized control vs. observation without controls). Many of the practices detailed in the guidelines have not yet been studied adequately; however, when considered in terms of internal and external evidence, the practices demonstrate promise and were therefore included in the guidelines document.

Speech-language pathologists (SLPs) will need to consider both the strengths and the limitations of current empirical studies when evaluating the preponderance and quality of evidence for practices presented here. The Committee recognized that there are few areas of early intervention practice in which clear, unequivocal answers emerge from empirical research that can be applied confidently to broad classes of infants and toddlers with disabilities. In recognition of this, no attempt was made in this document to prioritize specific assessments, interventions, or treatment programs. The goal was to present a range of assessment and intervention practices with some basis in either internal or external evidence, in an effort to provide a backdrop against which clinicians can evaluate newly emerging external and internal evidence in making service decisions for particular children and families.

This document includes conclusions and recommendations derived from available empirical evidence that were formed by consensus of the ASHA Ad Hoc Committee on the Role of the Speech-Language Pathologist in Early Intervention through five face-to-face meetings and nine phone conferences between November 2004 and December 2007. However, SLPs recognize that in areas for which empirical evidence is lacking, extrapolations from evidence with other populations and applications of principles stemming from theoretical models, societal norms, and government mandates and regulations also are relevant for decision making. Recommended practices are expected to change as new evidence emerges. Within a collaborative context, SLPs should be able to articulate both the principles and the levels of evidence that undergird their service delivery practices. SLPs serve as an integral part of a team, including families, that is responsible for formulating and implementing service delivery plans that meet the unique communication needs of infants and toddlers. The recommended knowledge and skills needed by SLPs serving infants and toddlers are presented in a companion document (ASHA, 2008a). Further, a technical report providing background and a basis for understanding the communication characteristics and challenges of infants and toddlers with or at risk for communication disabilities also was developed by the committee to provide further information and guidance on the implementation of the roles and responsibilities outlined in the position statement (ASHA, 2008b).

Guiding Principles

Four guiding principles that reflect the current consensus on best practices for providing early and effective communication interventions for infants and toddlers (birth to age 3 years) serve as a foundation for the design and provision of services. Specifically, services are (a) family-centered and culturally responsive; (b) developmentally supportive and promote children's participation in their natural environments; (c) comprehensive, coordinated, and team-based; and (d) based on the highest quality internal and external evidence that is available.

Services Are Family-Centered and Culturally Responsive

An aim of all early intervention services and supports is responsivity to family concerns for each child's strengths, needs, and learning styles. An important component of individualizing services includes the ability to align services with each family's culture and unique situation, preferences, resources, and priorities. The term *family-centered* refers to a set of beliefs, values, principles, and practices that support and strengthen the family's capacity to enhance the child's development and learning. These practices are predicated on the belief that families provide a lifelong context for a child's development and growth. The family, rather

than the individual child, is the primary recipient of services to the extent desired by the family. Some families may choose for services to be focused on the family, whereas others may prefer a more child-centered approach. Family-centered services support the family's right to choose who is the recipient of the services. Components of family-centered practices include offering more active roles for families in the planning, implementing, interpreting, and decision making in service delivery. Family-centered practices can maximize time and other resources, create closer alignment between family and professional decisions and plans, and increase decision making by families.

Services Are Developmentally Supportive and Promote Children's Participation in Their Natural Environments

Effective early intervention services and supports are based on theoretical, empirical, and clinical models of child development which assume that the acquisition of communication occurs within a social and cultural framework, and which make use of commonly accepted theories about how individual children learn communication, speech, language, and emergent literacy skills. Early identification and intervention practices that are developmentally supportive are thought to include active exploration and manipulation of objects, authentic experiences, and interactive participation appropriate to a child's age, cognitive level and style, strengths, interests, and family concerns and priorities.

Early speech and language skills are acquired and used primarily for communicating during social interactions. Therefore, optimal early communication intervention services are provided in natural environments, which offer realistic and authentic learning experiences (i.e., are ecologically valid) and promote successful communication with caregivers. Authentic learning can maximize children's acquisition of functional communication skills and promote generalization of newly mastered behaviors to natural, everyday contexts.

Services Are Comprehensive, Coordinated, and Team-Based

In *comprehensively* meeting the needs of infants, toddlers, and their families, SLPs may be one of several professionals working with the child and family. In other instances, SLPs may be the initial contact for the child and family and may need to make referrals or enlist the assistance of other qualified professionals (e.g., when a child initially referred for speech-language assessment needs team-based assessment). As part of comprehensive early intervention services, SLPs can play a key role with their specialized knowledge about typical and atypical early development of communication, language, speech, feeding/swallowing, cognition, hearing, emergent literacy, social/emotional behavior, and the use of assistive technology.

In the current provision of the Individuals with Disabilities Education Improvement Act (IDEA 2004), children who receive Part C early intervention services may be seen by multiple professionals who are employed by different agencies representing differing team models. The term *multidisciplinary* is used in IDEA 2004 to convey the need for multiple professionals to be included on a team and to be involved in the Individualized Family Service Plan (IFSP) process. Other types of team models, such as interdisciplinary or transdisciplinary, may be the best approach to meet the specific needs of a child. Service providers have the

responsibility for selecting the most appropriate team model for each infant and toddler and the family. Team models differ in the nature of the communication, contribution, and collaboration involved in the interaction among team members.

A transdisciplinary model typically includes some type of "role release" of one professional to another and is sometimes implemented as a primary provider model. In this model, one professional provides primary services to the child across disciplinary lines with other disciplines providing consultation to the primary provider. The use of transdisciplinary models with a primary service provider may be appropriate for SLPs. Early intervention is a field with many disciplines represented as practitioners and in which the roles vary according to the needs of the child. Teams benefit from joint professional development and also can enhance each other's knowledge and skills through role extension and role release for specific children and families. SLPs may serve as either primary providers or consultants in transdisciplinary models, and should be considered for the primary provider role when the child's main needs are communication or feeding and swallowing.

Comprehensive, coordinated, and collaborative team-based services help avoid fragmentation of services and supports to children and families. While the extent of collaboration in early intervention will vary depending on the team model that is used, as well as the lead agency's program guidelines and the knowledge and skills of the team members, the need for communication among team members and with the family is mandated by Part C of IDEA and must be supported by the administering agency.

Services Are Based on the Highest Quality Internal and External Evidence That Is Available

Early intervention practices are based on an integration of the highest quality and most recent research, informed professional judgment and expertise, and family preferences and values. Evidence can be classified as external or internal: Internal evidence is drawn from a variety of sources including policy, informed clinical opinion, values and perspectives of both professionals and consumers, and professional consensus; external evidence is based on empirical research published in peer-reviewed journals.

Roles of the SLP in Early Intervention Service Delivery

The SLP is uniquely qualified to provide services to families and their children who are at risk for developing, or who already demonstrate, delays or disabilities in language-related play and symbolic behaviors, communication, language, speech, emergent literacy, and/or feeding and swallowing behavior. In providing these services, the SLP may participate in the following primary functions: (a) prevention; (b) screening, evaluation, and assessment; (c) planning, implementing, and monitoring intervention; (d) consultation with and education of team members, including families and other professionals; (e) service coordination; (f) transition planning; (g) advocacy; and (h) awareness and advancement of the knowledge base in early intervention.

Prevention

The goal of prevention activities is to reduce the risk or mitigate the effects of risk factors on a child's development so as to prevent future problems and promote the necessary conditions for healthy development. SLPs have the opportunity to play

an important role in the prevention of communication disorders, especially in the field of early intervention. SLPs can help young children avoid the onset of communication problems ("primary prevention") by, for example, promoting positive communication interactions between children and caregivers. They can assist in the early detection of delays or deficits by participating in child-find and screening programs, thereby mitigating or eliminating the effects of a disorder ("secondary prevention"). Finally, they can help remediate an existing problem by providing early intervention services, thereby preventing future difficulties ("tertiary prevention").

Screening, Evaluation, and Assessment

Screening for communication needs in infants and toddlers is a process of identifying young children at risk so that *evaluation* can be used to establish eligibility, and more in-depth *assessment* can be provided to guide the development of an intervention program. The aim of screening is to make a determination as to whether a particular child is likely to show deficits in communication development.

IDEA 2004 distinguishes between the terms *evaluation* and *assessment*. *Evaluation* refers to procedures that determine a child's initial and continuing eligibility for early intervention services and includes identification of the child's current level of functioning across cognitive, physical (including vision and hearing), communication, social/emotional, and adaptive development. In contrast, *assessment* refers to the ongoing process of describing the child's needs; the family's concerns, priorities, and resources related to the development of the child; and the nature and extent of the early intervention services required to meet the needs of the child and family. IDEA 2004 also specifies that both evaluation and assessment should be based on a variety of measures that include informed clinical opinion. The roles of SLPs in evaluation and assessment typically are to measure and describe communication and related behaviors, including feeding and swallowing, to share observations on other developmental domains, and to help in the decision-making process related to diagnosis, eligibility determination, and planning next steps for the child and family.

Screening, evaluation, and assessment will be accomplished through a range of measures and activities, including standardized tests and questionnaire formats, interviews, criterion-referenced probes, dynamic procedures such as diagnostic teaching, and observational methods. Information will be drawn from direct interactions with the child, from indirect means such as parent interviews and report forms, and from observation of the child in natural activities with familiar caregivers. Federal guidelines emphasize that no single tool will be adequate for either evaluation or assessment, and both must be accomplished using a range of tools in varied contexts. Further, eligibility decisions may not rely on the use of standardized measures alone. Rather, such decisions also are based on informed clinical opinion that is derived from multiple sources of information gathered in multiple contexts.

Planning, Implementing, and Monitoring Intervention

Once it is determined that a child is at risk for or has a communication deficit, the members of the early intervention team (e.g., family, SLP, pediatrician, early childhood special educator, audiologist, physical therapist, occupational therapist, home trainer, child care provider) develop a plan for services and supports (i.e.,

the IFSP or an equivalent) that includes intervention outcomes, approaches, methods, and settings. This plan will be based on information from the multidisciplinary assessment regarding overall concerns, priorities, and resources of the family combined with the SLP's analysis (and the team's observations) of the child's communication, language, speech, hearing, and feeding/swallowing behavior.

Service delivery models. The purpose of early intervention provided by SLPs is to maximize the child's ability to communicate effectively, and to enhance the family's ability to support their child's development. The selection of a service delivery model will vary and will be based on the particular needs of individual children and their families or caregivers. Service delivery models in early intervention vary along the dimensions of location and types, both of which influence the roles of the SLP and other team members in the provision of services. Historically, the location for early intervention service delivery has been in the home, center (e.g., special classroom, preschool, or child care center), or clinic. Recent federal legislation requires that early intervention services and supports be provided to the maximum extent appropriate in natural environments, including the home and community settings in which children without disabilities participate (IDEA 2004).

Types of service delivery models in early intervention range from the traditional, one-to-one, direct clinical model (i.e., pull-out) to more indirect collaborative approaches. Consultative and collaborative models are closely aligned with inclusive practices, involve services delivered in natural environments, and focus on functional communication during the child and family's natural daily activities and routines. The emphasis of these models moves from a unitary focus on direct or “hands-on” service delivery to the child to an integrated model that includes the child, family, caregivers, and the SLP in a collaborative role.

Research about service delivery models in early intervention is in an emerging phase, and as a result, some practices may be based more on policy and professional and family preferences than on theories or research. Furthermore, service delivery utilization studies and state-reported data indicate general adherence to standardized models such as weekly home visits or half-day classroom programs without individualization for child and family characteristics. These realities suggest the need for more flexibility in program implementation as well as more research on the effectiveness of various service delivery systems.

Intervention approaches and strategies. In the past 15 years, there has been increasing support of intervention occurring within the child's and family's functional and meaningful routines and experiences dispersed throughout the day rather than in tightly planned and executed activities. This shift away from traditional, clinical models for services for young children and their families is aligned with the federal mandate to provide services in natural environments and is responsive to the success of parent-implemented interventions. The use of routines and everyday activities as a context for embedded instruction involves (a) identifying the sources of learning opportunities occurring regularly in family and community life; (b) selecting, with the parents and caregivers, desired participation

and desired communication by the child in the routines; (c) mapping motivating aspects and the child's interests within the routines; and (d) identifying facilitative techniques that will be used to maximize the learning opportunity.

Organization of the ever-expanding research base on effective intervention approaches and strategies in early intervention is challenging for a variety of reasons. The focus of intervention may be the parent or caregiver, the child, the dyadic interaction, the environment, or combinations of these factors. The agent of the intervention may be the SLP, another team member, a family member or peer, or varying combinations. The intervention may be in small or large groups, individual or massed, or distributed opportunities throughout the day. Much of the empirical data collected to date have been on preschoolers rather than infants and toddlers, and the quality and preponderance of the evidence are lacking for some intervention practices. However, there are intervention approaches and strategies for the SLP and team to consider that have some evidence to support their use by professionals and parents in both home and community settings for young children with a variety of disabilities.

Strategies with promising evidence fall into one of three groups: responsive interaction, directive interaction, and blended. *Responsive* approaches include following the child's lead, responding to the child's verbal and nonverbal initiations with natural consequences, providing meaningful feedback, and expanding the child's utterances with models slightly in advance of the child's current ability within typical and developmentally appropriate routines and activities. Responsive interaction approaches derive from observational learning theory and typically include models of the target communication behavior without an obligation for the child to respond. Among others, specific techniques include expansions, extensions, recasts, self-talk, parallel talk, and build-ups and breakdowns. *Directive* interaction strategies include a compendium of teaching strategies that include behavioral principles and the systematic use of logically occurring antecedents and consequences within the teaching paradigm. *Blended* approaches, subsumed under the rubric of naturalistic, contemporary behavioral, blended, combination, or hybrid intervention approaches, have evolved from the observation that didactic strategies, while effective in developing new behaviors in structured settings, frequently fail to generalize to more functional and interactive environments. The emphasis on teaching in natural environments using strategies derived from basic behavioral teaching procedures has been broadened to include strategies for modeling language and responding to children's communication that derive from a social interactionist perspective rooted in studies of mother–child interaction. The core instructional strategies are often identical to those used in direct teaching (e.g., prompting, reinforcement, time delay, shaping, fading) but also may include strategies that come from a social interactionist perspective (e.g., modeling without prompting imitation, expansions, recasts, responsive communication). Naturalistic language interventions may be used as the primary intervention, as an adjunct to direct teaching, or as a generalization promotion strategy.

Monitoring intervention. Because young children often change very rapidly, and families respond differently to their children at various periods in development, systematic plans for periodic assessment of progress are needed. The three broad purposes of monitoring are to (a) validate the conclusions from the initial

evaluation/assessment, (b) develop a record of progress over time, and (c) determine whether and how to modify or revise intervention plans. Thus, the evaluation/assessment and intervention processes can be viewed as a continuous cycle of service delivery. Monitoring includes attention to both the child's IFSP as well as broader aspects of the child's development and behaviors, such as participation in routines, play, social interactions, and problem behaviors, to determine appropriate goals in these areas. For children in early care and education programs, attending to their levels of engagement in activities can help determine whether changes are needed in their classroom environment.

Consultation With and Education of Team Members, Including Families and Other Professionals

In delivering early intervention services and supports, SLPs assume important collaboration and consultant functions with team members, including the family and other caregivers, and other agencies and professionals. As part of the early intervention team, the SLP is uniquely qualified to help a family enhance their child's communication development through consultation and education. Because young children learn through familiar, natural activities, it is important for the SLP to provide information that promotes the parents' and/or other caregivers' abilities to implement communication-enhancing strategies during those everyday routines, creating increased learning opportunities and participation for the child.

In some cases, an indirect or consultant role is warranted. In this role, the SLP works with parents and other professionals to include language stimulation within other activities being addressed in the child's program. The consulting SLP can provide information and support to the parent and/or professional regarding the rationale and methods for providing indirect language stimulation, during a range of activities and routines. The SLP will continue to consult directly with the family and professional to monitor progress, and participate in development or revision of intervention plans. The indirect consultant role, while flexible to meet the child and family needs, is ongoing to ensure progress and appropriate implementation of the chosen strategies.

Service Coordination

Service coordination is mandated under IDEA 2004 Part C and is defined as an active, ongoing process that assists and enables families to access services and ensures their rights and procedural safeguards. It is provided at no cost to families. The service coordinator is responsible for ensuring that every child and family receives a multidisciplinary evaluation and assessment, an IFSP, delivery of services in natural environments, and coordination of services. The SLP, as a member of the IFSP team, may in some instances assume these functions and therefore needs an understanding of the roles and responsibilities of the service coordinator.

Transition Planning

A major goal of IDEA 2004 is to ensure a seamless transition process for families moving from one program to another as well as timely access to appropriate services. To this end, it is stipulated that there be a transition plan, that representatives of the sending and receiving programs take part, and that families play an active role. Although there are several types of transitions, including hospital to community-based programs, home-based to center-based programs,

provider to provider, and early intervention to community-based preschool, the most dramatic transition occurs when the child moves from Part C early intervention to Part B school-based services, typically at age 3.

In this latter transition, a range of options exists, and the SLP will offer the level of assistance to families and team members appropriate for their particular role with that family.

Advocacy

Advocacy activities and products that raise awareness about the importance of early intervention are essential, and SLPs have a responsibility to play a part in this process. Mechanisms include working with other professionals; writing and editing textbooks, articles for consumer use and reference, and other resource materials to provide up-to-date and accurate developmental information; involvement in local, state, and national efforts to influence public policy; and development and dissemination of information to families, health care professionals, and others involved in the care of young children.

Awareness and Advancement of the Knowledge Base in Early Intervention

Continued experimental and clinical research is needed to obtain information and insight into several areas, including identification of risk factors, clarification of the interactions between risk and resilience factors that affect the likelihood or severity of early communication difficulties, development and refinement of identification methods to increase the accuracy of detecting children in need of services, development and refinement of interventions to prevent and treat developmental communication difficulties, and scientifically sound studies to demonstrate the efficacy and effectiveness of current intervention approaches and collaborative models of service delivery. Further, all those invested in enhancing the early intervention services delivered to young children and their families have a responsibility to be aware of and advance the knowledge base in early intervention. These stakeholders include preservice programs and higher education faculty, students, in-service providers, practicing clinicians, researchers, policy makers, and consumers.

Introduction to Guidelines

The purpose of these guidelines is to address the role of the SLP in the provision of early intervention services to families and their infants and toddlers (birth to 3 years of age) who have or are at risk for developmental disabilities.[1] The roles and responsibilities of SLPs serving infants and toddlers include, but are not limited to, (a) prevention; (b) screening, evaluation, and assessment; (c) planning, implementing, and monitoring intervention; (d) consultation with and education of team members, including families, and other professionals; (e) service coordination; (f) transition planning; (g) advocacy; and (h) awareness and

advancement of the knowledge base in early intervention. The guidelines discuss each of these roles along with the available evidence to support specific practices. The implementation of SLP roles and responsibilities in collaboration with families, caregivers, and other professionals is informed by a set of early intervention principles and values (see ASHA, 2008a).

Guiding Principles for Early Intervention Services and Supports

The development of communication skills is a dynamic process that is shaped by interdependent factors intrinsic to the child and in interaction with the environment. The reciprocal and dynamic interplay between biology, experience, and human development converge to influence developmental experiences (National Research Council & Institute of Medicine, 2000). Most importantly, the course of development is alterable. The following four guiding principles reflect the current consensus on best practices for providing early and effective communication interventions (ASHA, 2008a).

1. Services are family-centered and culturally and linguistically responsive.

An aim of all early intervention services and supports is responsivity to family concerns for each child's strengths, needs, and learning styles (Paul, 2007; Roth & Worthington, 2005). An important component of individualizing services includes the ability to align services with each family's culture and unique situation, preferences, resources, and priorities. The term *family-centered* refers to a set of beliefs, values, principles, and practices that support and strengthen the family's capacity to enhance the child's development and learning (Boone & Crais, 2001; Dunst, 2001, 2004; Individuals with Disabilities Education Improvement Act of 2004 [IDEA, 2004]; Polmanteer & Turbiville, 2000). These practices are predicated on the belief that families provide a lifelong context for a child's development and growth (Beatson, 2006; Bronfenbrenner, 1992). The family, rather than the individual child, is the primary recipient of service delivery to the extent desired by the family. Some families may choose for services to be focused on the family, whereas others may prefer a more child-centered approach. Family-centered services support the family's right to choose who is the recipient of the services. Early identification and intervention efforts are designed and carried out in collaboration with the family, fostering their independence and competence, and acknowledging their right and responsibility to decide what is in the best interest of their child (Dunst, Trivette, Starnes, Hamby, & Gordon, 1993). Family-centered services emphasize shared decision making about referral, need for assessment and intervention, types of assessment and intervention approaches, methods for monitoring and sharing information with others important to the child and family, development of functional outcomes, and implementation of intervention.

[1] In our discussion of practices, we do not address the needs of infants served by an SLP in neonatal intensive care environments because another set of documents for that population is available (ASHA, 2004d, 2004g, 2004h, 2005e). Further, other ASHA documents have been developed that delineate the role of the SLP with feeding and swallowing disorders, including pediatric dysphagia (ASHA, 2001, 2002b), and the reader is referred to those documents when feeding and swallowing are the focus of early intervention efforts.

There is no single set of practices that is appropriate to meet the needs of all families. Family-centered early intervention practices respect family choices and decisions (Summers, Hoffman, Marquis, Turnbull, & Poston, 2005). Components of family-centered practices include offering more active roles for families in the planning, implementing, interpreting, and decision making in service delivery. Family-centered practices can maximize time and other resources, create closer alignment between family and professional decisions and plans, and increase decision making by families (Dunst, 2002; Summers et al., 2005).

All early intervention services and supports are directly influenced by the cultural and linguistic backgrounds of the family, child, and professionals. Every clinician has a culture, just as every child and family has a culture (ASHA, 2004c). SLPs need to recognize their own as well as the family's cultural beliefs, values, behaviors, and influences, and how these factors might affect their perceptions of and interactions with others. Like all clinical activities, early intervention services are inherently culture-bound because they reflect the beliefs, values, and interaction styles of a social group (Battle, 2002; P. H. Johnston & Rogers, 2001). Factors such as beliefs about child rearing, discipline, authority roles, and styles of communication, as well as views on disability and past experiences with health care or other professionals, can influence the family's interactions and decision-making process. In some cultures, for example, emphasis is placed on what a child can learn independently, whereas other cultures focus on what a learner can accomplish in collaboration with others. Therefore, different learning styles, and values regarding means of teaching and learning, necessitate different assessment and instructional approaches and strategies (Terrell & Hale, 1992; van Kleeck, 1994).

With the changing demographics in the United States and the differences that may occur between service providers and families in sociocultural characteristics (e.g., age, language, culture, race, gender, ethnicity, background, lifestyle, geography), it is important to gather information from families about the ways in which these factors may influence family/provider relationships and communication. For these reasons, some programs use cultural guides or cultural-linguistic mediators to facilitate communication and understanding between professionals and families (Barrera, 2000; E. W. Lynch & Hanson, 2004; Moore & Mendez, 2006). Moreover, from the perspective of “recommended practices” as well as policy (ASHA, 2004c; IDEA, 2004; National Association for the Education of Young Children [NAEYC], 2005), all materials and procedures used in the provision of early identification and intervention services and supports should be culturally and linguistically appropriate for the individual child and family.

2. Services are developmentally supportive and promote children's participation in their natural environments.

Effective early intervention services and supports are based on theoretical, empirical, and clinical models of child development that assume the acquisition of communication occurs within a familial, social, and cultural framework, and make use of commonly accepted theories about how individual children learn communication, speech, language, and emergent literacy skills (Apel, 1999; Leonard, 1998; Paul, 2007). Early identification and intervention practices that are developmentally supportive include active exploration and manipulation of objects, authentic experiences, and interactive participation appropriate to a child's

age, cognitive level and style, strengths, interests, and family concerns and priorities (Bredekamp & Copple, 1997; Roth & Baden, 2001; Sandall, Hemmeter, Smith, & McLean, 2005). Early intervention promotes social communication for children to enhance their competent, adaptive, and independent participation in their natural environments irrespective of their cognitive abilities. All young children have the need to communicate; therefore, factors such as their general ability level should not be used to exclude them from receiving services to promote their communication and interaction with caregivers and other persons in their environments (National Joint Committee for the Communication Needs of Persons With Severe Disabilities, 2003a, 2003b).

Early speech and language skills are acquired and used primarily for communicating during social interactions. Therefore, optimal early communication intervention services are provided in natural environments, which offer realistic and authentic learning experiences (i.e., are ecologically valid) and promote successful communication with caregivers. Authentic learning can maximize children's acquisition of functional communication skills and promote generalization of newly mastered behaviors to natural, everyday contexts (Bruder, 1998; Girolametto, Pearce, & Weitzman, 1997; Hart & Risley, 1995, 1999; McLean & Snyder-McLean, 1999; Roper & Dunst, 2003).

Natural environments for the team to consider in service decisions extend beyond a child's home and include the many and varied community settings in which children without disabilities participate. Community settings are places a child and family would typically be present, such as family- or center-based child care centers and community recreation programs, as well as more informal settings such as family or neighborhood gatherings, a local park, religious activity, or a grocery store. Family-identified community settings and activities are important sources of learning (Dunst, Bruder, et al., 2001; Dunst, Hamby, Trivette, Raab, & Bruder, 2000). When services are provided in natural environments, they offer the opportunity to highlight learning opportunities that are available within typical activities and routines that the family selects. Common activities or routines may include interactive play, book sharing, feeding, dressing, toileting, or other activities that occur repeatedly with family members, family friends, and other regular caregivers. However, it is important to remember that these activities will vary greatly depending on sociocultural factors and preferences of the family. Therefore, SLPs need to be careful not to impose their own ideas of what routines/activities a family should engage in with the child, letting the family identify those that are preferred. These types of naturally occurring activities offer opportunities for promoting children's participation and learning throughout the day using activities, materials, and people familiar to the family and child (Bernheimer & Weismer, 2007; Cripe & Venn, 1997; Dunst et al., 2000; Girolametto et al., 1997). Other benefits attributed to provision of early intervention services and supports in community settings include support and encouragement from others outside the family; improvement in child self-esteem; facilitation of social skills, adaptive skills, and positive behavior through peer modeling (Stowe & Turnbull, 2001); and enhanced sense of belonging on the part of the family (Bruder, 2001).

The SLP's participation in the child's and family's natural environments enhances the assessment and intervention processes through the identification of the child's and family's preferred routines and interests, facilitates access to everyday

materials and toys, and encourages effective arrangement of the environment to promote communication in familiar and functional activities. The SLP promotes positive, responsive interactions between children and caregivers. The SLP should assess the child in the context of daily activities and demonstrate how to embed intervention into such activities, thereby increasing the frequency of communication opportunities for the child and caregivers (Cripe & Venn, 1997).

3. Services are comprehensive, coordinated, and team-based.
Infants and toddlers who have or are at risk for developmental delays and disabilities demonstrate a wide range of skills and deficits. Some may have severe involvement, with difficulties in multiple developmental domains (e.g., communication, adaptive behavior, social-emotional, cognitive, motor). Because all these developmental areas are highly interdependent during early childhood, and intervention efforts in one area may influence another, a *comprehensive* approach toward meeting family and child needs is recommended in these cases. Other children, in contrast, may have milder disabilities or may manifest a circumscribed disability in one primary area. Regardless of whether a child has severe or mild, single- or multiple-domain disabilities, comprehensive service provision will include any and all types of supports or resources the child needs and is eligible to receive (e.g., service coordination, assistive technologies, amplification).

In *comprehensively* meeting the needs of infants, toddlers, and their families, SLPs may be one of several professionals working with the child and family. In other instances, SLPs may be the initial contact for the child and family and may need to make referrals or enlist the assistance of other qualified professionals (e.g., when a child initially referred for speech-language assessment needs team-based assessment). As part of comprehensive early intervention services, SLPs can play a key role with their specialized knowledge about typical and atypical early development of communication, language, speech, feeding/swallowing, hearing, cognition, emergent literacy, social/emotional behavior, and the use of assistive technology. Further, a comprehensive approach takes into account the perspectives provided by the family and others whom they identify as significant to the child, including siblings, extended family, early care and education providers, and family friends.

Coordination and integration of services, including service coordination and teaming, are key components of effective implementation of comprehensive services. Many of the difficulties reported by families in caring for their infants and toddlers with disabilities result from poor coordination between services and among professionals (Harbin et al., 2004; McBride & Peterson, 1997; McWilliam et al., 1995). Further, research has suggested that belief in and ability to practice family-centered care are central to effective collaborative relationships between parents and service coordinators (Dinnebeil, Hale, & Rule, 1996). Still, the degree to which family-centered care is provided has been quite variable (Dinnebeil et al., 1996; Trivette, Dunst, & Hamby, 1996). Service coordination can be a primary service, or coordination can be achieved through the formulation of professional teams who jointly and in conjunction with the family plan comprehensive and coordinated services. In team settings, the SLP may serve (along with other professionals) as a service coordinator on a rotating basis, particularly when a child's primary needs are for speech-language intervention. In addition, some

families may choose to take on the role of service coordinator, and the SLP and other professionals may serve as consultants to the family in the decision-making process. For SLPs providing services in settings where professionals from other disciplines are not readily available (e.g., private practice, some medical settings, university clinics), it is equally important that coordination of services is clearly articulated and used by all who interact regularly with the child. In these situations, it will be helpful for the SLP as well as the family to communicate actively with other professionals serving the child and with others in the child's daily environments (e.g., home, child care, preschool). In addition, when children are seen in settings that do not provide service coordination, the SLP is entitled to make a referral to the local early intervention system for formal service coordination.

Early intervention is a dynamic process that requires continuous assessment and monitoring to inform ongoing changes in service delivery in accord with children's developmental progress. Members of the IFSP team, required by Part C of IDEA 2004, are mandated to coordinate their approaches, consult with one another, and recognize that child and family outcomes are a shared responsibility. In settings where SLPs work independent of other professionals on the team (e.g., private practice, hospital settings, home-based services, university clinics), referral and consultation with other professionals (e.g., physical therapist, family physician, child care provider) and additional caregivers (e.g., grandparents, aunts, family friends) are important for understanding the scope of a child's strengths and needs. This pooling of information from a variety of sources also is recommended practice of ASHA (ASHA, 1991a) as well as related professions (Sandall et al., 2005), and is required in IDEA 2004.

In the current provision of Part C services, children who receive early intervention may be seen by multiple professionals who are employed by different agencies representing differing team models. Comprehensive, coordinated, and collaborative team-based services help avoid fragmentation of services and supports to children and families (ASHA, 1991a; Hebbler, Zercher, Mallik, Spiker, & Levin, 2003; IDEA 2004; National Research Council & Institute of Medicine, 2000). While the extent of collaboration in early intervention will vary depending on the team model that is used, the lead agency's program guidelines, and the knowledge and skills of the team members, the need for communication among team members and with the family is mandated and must be supported by the administering agency.

Common team models that are used include multidisciplinary, interdisciplinary, and transdisciplinary. *Multidisciplinary* teams typically make use of a process whereby children are seen by professionals from different disciplines who each separately complete an evaluation and/or assessment, make recommendations, and deliver their services independently. In these instances, integration of findings and recommendations typically is left to the family or service coordinator. This model may diminish the cohesiveness of services and the number of opportunities for professionals to interact with one another and the family. Many of the difficulties that families report in service delivery result from poor coordination between services and across professionals, emphasizing the need for integration of services

(Harbin et al., 2004; McBride & Peterson, 1997; McWilliam et al., 1995). This is an especially important challenge to SLPs working as private contractors to the early intervention team.

Interdisciplinary teams characteristically work together, communicate consistently, coordinate information and resources, and collaborate with the families and each other to achieve priority outcomes. Effective interdisciplinary teams share responsibility for providing services based on identified child and family priorities, including communication skills. Although individual professionals may assess the child separately or in small groups, there is some attempt to communicate findings and recommendations to each other. In addition, some teams use an arena method whereby all or designated team members are present during the evaluation and/or assessment and professionals interact individually, collaboratively, or through observation of the child. Teams may use an integrated tool, discipline-specific tools, or some combination. Further, some teams meet before and after testing to consolidate their plans, findings, and recommendations. Family participation is also integrated, with their role ranging from being the child's play partner in the assessment process to being an observer and validator of information collected by professional team members. Family members inform the team's ongoing discussion of the child's strengths, preferences, and current skills. The professional team members can infuse dynamic assessment opportunities as the child interacts with family members and other familiar adults in typical routines and activities. Some teams choose to compile one report that includes each individual report; other teams write an integrated report. On interdisciplinary teams, the SLP is seen as the team member most qualified to guide the identification and development of the intervention approaches and strategies related to communication and to consult with the family and other team members; however, the SLP may not be the only team member involved in the intervention or may participate in the intervention as a consultant.

In a *transdisciplinary* model, all team members work closely to plan the assessment and the subsequent intervention, although typically one team member and the family will be responsible for the day-to-day implementation of intervention. Transdisciplinary models include some type of role release wherein one or more professionals take on, with the supervision and collaboration of the discipline-trained professional, some aspects of the roles and responsibilities of one or more of the other professionals. Ideally, in this model team, members provide training to one another about key behaviors to observe/document and then consult with other team members regarding interpretations and recommendations. Arena assessment, in which professionals of different disciplines simultaneously observe a child, may be included in transdisciplinary models.

The use of a transdisciplinary model, sometimes referred to as a primary service provider (PSP) model, is logically appealing and considered recommended practice by the Division for Early Childhood of the Council for Exceptional Children (DEC) for early intervention (Sandall et al., 2005). Infants and toddlers learn new skills across domains simultaneously and synchronously rather than in isolation. Coordination of services is enhanced when the team's message is unified in delivery by a lead member working closely with the family. The team, in concert with the family's preferences, selects the appropriate team member to serve as the primary provider. In some cases, this will be the SLP, while in others the PSP will

be a member of a different discipline such as special education, nursing, or occupational therapy, and the SLP will play a support role. The team member is selected based on the needs of the child, relationships already developed with the family, and special expertise, but should not be established a priori by program policy or based on logistics such as travel or caseload.

The use of transdisciplinary or PSP models may be appropriate for SLPs. Early intervention is a field with many disciplines represented as practitioners and in which the roles vary according to the needs of the child. Teams benefit from joint professional development and can enhance each other's knowledge and skills as well as through role extension and role release for specific children and families. It is not appropriate or suitable for SLPs to be asked to train others to perform professional level services unique to SLPs or for SLPs to perform services outside of their scope of practice (ASHA, 1997a, 1997b).

4. Services are based on the highest quality evidence that is available.
Early intervention practices are based on an integration of the highest quality and most recent research, informed professional judgment and expertise, and family preferences and values (ASHA, 2005a; Glass, 2000; Meline & Paradiso, 2003; Schlosser & Raghavendra, 2003). Evidence can be classified as external or internal: Internal evidence is drawn from a variety of sources including policy, informed clinical opinion, values and perspectives of both professionals and consumers, and professional consensus; external evidence is based on empirical research published in peer-reviewed journals (Gillam & Laing, 2006; Porzsolt et al., 2003; Sackett, Strauss, Richardson, Rosenberg, & Haynes, 2000).

The interpretation of internal evidence may be based on a single factor or may reflect a synthesis of multiple perspectives and experiences. Policy, as a source of internal evidence, is based on federal, state, and agency legislation and guidelines, as well as the recommended practices of ASHA and related professional organizations. Informed clinical opinion is a type of internal evidence reflecting the values and beliefs of professionals, their prior and continuing education, personal and professional experiences, and application of the theory and scientific evidence for early intervention practices. Informed clinical opinion is displayed through a professional's ability to observe, document, apply, and evaluate the efficacy and effectiveness of early intervention practices and procedures for specific children and families. Internal evidence also takes into account the values and perspectives of the professionals and families involved. These values and perspectives are influenced by sociocultural, linguistic, educational, and economic factors, and they in turn influence and are influenced by the relationships among professionals, children, families, and the services delivered. A final component of internal evidence includes professional consensus whereby experts in the field have reached general agreement about certain principles and practices through consideration of theory, a review of existing evidence and policies, and their collective clinical experience. Statements of consensus often are published as recommended practices.

When evaluating external evidence, there are several factors that require consideration, and numerous classification systems have been developed for this purpose (e.g., Dollaghan, 2004; Fey & Justice, 2007; Finn, Bothe, & Bramlett, 2005; Porzsolt et al., 2003; Robey, 2004; Sackett, Rosenberg, Muir Gray, Haynes,

& Richardson, 1996). Classification systems typically rate or judge the degree of confidence that the practices implemented are responsible for the observed findings. In evidence-based classification systems, the degree of confidence is evaluated according to several characteristics of the research design (e.g., random assignment to conditions, use of blind raters, prospective designs) and the degree of experimental control present in the design. Other factors that are considered in evaluating research quality include practice fidelity, validity of outcome measures, factors related to the participants and settings, and data analysis procedures.

Evaluation of practice fidelity focuses on description and implementation. The description of a practice or protocol should include a level of detail sufficient for replication by other providers. Fidelity of implementation should demonstrate that the intervention was in fact delivered in the manner in which it is defined. The validity of outcome measures should be established through reliability reports, evidence that the outcome measures are aligned with and reflect the intended purpose of the intervention, and evidence that the outcome was measured at a time that was appropriate and reasonable for documenting the effect of a practice.

Factors related to the participants, providers, and settings are central to evaluation of the likely effectiveness as well as generalizability of a practice. Evaluation of these components should consider the description of the participants, including any identification of subgroups (e.g., diagnostic, language status, ethnicity), descriptions of the person(s) who actually delivered the intervention (e.g., parent, SLP, teacher), and the settings in which the practice was tested (e.g., clinic, home, child care program, other community setting). Questions guiding evaluation of these factors should be centered on the extent to which the report includes important subgroups, settings, and providers. When variations in subgroups, settings, and providers are apparent, it is important to determine the extent to which effects can be estimated for these variations.

Evaluation of data analysis procedures focuses on the extent to which assumptions are met for selected statistical tests. Of importance is evidence for independence among participants in the research, both between one participant and another as well as for measures of performance for a given participant. Other considerations are sample sizes, power, and estimates of effect size. Documentation of the sample size and power are interrelated and allow for the evaluation of the sufficiency of the sample size to detect meaningful effects. In addition, estimates of effect size should be calculated to evaluate whether they are sufficient to support any claims of effectiveness that may be made.

Most classification systems view the strongest external evidence as that derived from meta-analysis and systematic reviews of a number of well-designed, controlled studies that include random allocation to treatment and contrast conditions. Weaker external evidence is accorded to literature reports that vary from these standards, including quasi-experimental designs, case studies, and groups without random assignment to conditions. “Best practice” recommendations, consensus panels, and expert opinion are not regarded as providing external evidence, but rather as components of internal evidence.

Review of the Early Intervention Literature

The literature review for these guidelines was drawn from sources provided by individual committee members in their respective areas of expertise as well as sources such as the (a) DEC Recommended Practices Research Review (B. J. Smith et al., 2002), (b) ASHA National Center for Evidence-Based Practice in Communication Disorders (N-CEP), and (c) Research and Training Center on Early Childhood Development (RTCECD; www.researchtopractice.info/index.php). The DEC Recommended Practices Research Review includes a thorough review of the literature on children from birth to 8 years of age that appeared in peer-reviewed journals through 1999 (B. J. Smith et al., 2002). N-CEP conducted a literature search for this Committee to identify empirical treatment studies or systematic literature reviews on speech, language, and/or communication in early intervention. Empirical studies were defined as those that included original data that addressed treatment outcomes through single-case, quasi-experimental, or experimental research. Systematic literature reviews were those that included an analysis of the evidence base for a particular instructional method or a group of methods. The N-CEP search was limited to peer-reviewed publications from 1980 to the present. Articles were classified by instructional method and disorder, and those where parents were taught to implement the intervention procedures. Studies were included in this review if they (a) included children under 3 years, (b) were reported in English, and (c) had original data relevant to one or more of the search terms (e.g., parent training, indirect language stimulation, script therapy, milieu teaching, language delay). A list of electronic databases used, search criteria, and search terms is available in the Appendix. Finally, the RTCECD and the What Works Clearinghouse were used to ensure that a comprehensive literature search was conducted (Dunst et al., 2002).

The early intervention practices described in this document include those based on both internal and external evidence from the literature. Some of the practices detailed here are based predominantly on internal evidence, while others rely on some external evidence. However, readers must recognize that the external evidence varies in strength of the research design and implementation (e.g., randomized control vs. observation without controls). Many of the practices discussed have not yet been studied to the degree and in the manner that would allow the evidence for them to be considered “strong” by certain evidence standards; however, when considered in terms of internal and external evidence, the practices that appear promising were included in this document. SLPs will need to consider both the strengths and the limitations of current empirical studies when evaluating the preponderance and quality of evidence for practices presented here. The Committee recognized that there are few areas of early intervention practice in which clear, unequivocal answers emerge from empirical research that can be confidently applied to broad classes of infants and toddlers with disabilities. In recognition of this, no attempt was made in this document to prioritize specific assessments, interventions, or treatment programs. The goal was to present a range of assessment and intervention practices with some basis in either internal or external evidence, in an effort to provide a backdrop against which the clinician can evaluate newly emerging external and internal evidence in making service decisions for particular children and families.

Functions of the SLP in Infant/Toddler and Family Services

The SLP is qualified to provide services to families and their children who are at risk for developing, or who already demonstrate, delays or disabilities in language-related play and symbolic behaviors, communication, language, speech, emergent literacy, and/or feeding and swallowing behavior. In providing these services, the SLP may participate in the following primary functions: (a) prevention; (b) screening, evaluation, and assessment; (c) planning, implementing, and monitoring intervention; (d) consultation with and education of team members, including families and other professionals; (e) service coordination; (f) transition planning; (g) advocacy; and (h) awareness and advancement of the knowledge base in early intervention.

Prevention

The goal of prevention activities is to reduce the risk or mitigate the effects of risk factors on a child's development so as to prevent future problems and promote the necessary conditions for healthy development (ASHA, 1991b; National Joint Committee on Learning Disabilities [NJCLD], 2006). SLPs have the opportunity to play an important role in the prevention of communication disorders, especially in the field of early intervention. Prevention can be conceptualized at three levels: primary, secondary, and tertiary. SLPs can help young children avoid the onset of communication problems (“primary prevention”) by, for example, promoting positive communication interactions between children and caregivers. They can assist in the early detection of delays or deficits by participating in child-find and screening programs, thereby mitigating or eliminating the effects of a disorder (“secondary prevention”). Finally, they can help remediate an existing problem by providing early intervention services, thereby preventing future difficulties (“tertiary prevention”). An example of the latter would be language intervention in the toddler/preschool years, which helps to prevent the need for subsequent school-based services (ASHA, 1991b). SLPs who assume an effective role in prevention will be knowledgeable about the various factors that place a child at risk for communication disorders, as detailed below in the Screening, Evaluation, and Assessment section.

Prevention activities often extend beyond the traditional intervention settings (e.g., clinic, Part C early intervention programs) into various community settings. In their implementation of prevention activities, SLPs have the responsibility to collaborate with local partners such as pediatric medical providers, early childhood education programs (e.g., Early Head Start or child care centers), libraries, and parent support groups to offer educational support as well as screening services. Information regarding known risk factors, “red flags” for possible communication deficits, and activities that promote positive early language and literacy development can be provided by offering in-service training and written resource materials. Establishing personal relationships with other providers in the community (e.g., early childhood educators, physicians, social service providers) and being responsive to inquiries or requests made by them for information or referral should increase their use of available screening and diagnostic resources.

Screening, Evaluation, and Assessment

Federal legislation (IDEA 2004) designates the following three risk categories for young children: established risk (i.e., a diagnosed medical condition or disorder that has a known effect on developmental outcomes), biological risk (i.e., a history of prenatal, perinatal, neonatal, and developmental events that may individually or collectively affect development), and environmental risk (i.e., early experiences

that include health care, parental care, exposure to physical and social stimulation that if absent or limited may affect development). Children in the established risk category are universally eligible for services under IDEA 2004 Part C; that is, neither screening nor evaluation is necessary to establish eligibility for early intervention services. However, all states do not automatically provide services to children in the other two categories. Local programs also vary in terms of which risk categories are covered by their services. With the increased awareness of environmental and biological risk factors and their effect on later communication skills (and overall development), SLPs can integrate information on risk factors with screening, evaluation, and assessment information to help make decisions about early intervention services for individual children and their families (NJCLD, 2006). *Screening* for communication needs in infants and toddlers is a process of identifying young children at risk so that evaluation can be used to establish eligibility, and more in-depth assessment can be provided to guide the development of an intervention program. Its aim is to make a determination as to whether a particular child is likely to show deficits in communication development. Screening is also an important component of prevention, family education, and support that is particularly relevant for young children and their families.

As noted above, children who are identified at an early age with a diagnosed medical condition that is known to result in a communication and/or feeding/swallowing disorder (e.g., Down syndrome, hearing loss, cleft palate, low birth weight) are considered to have established risk and are automatically eligible for services. The medical conditions of these children, rather than their performance on a behavioral examination, serve as the eligibility criteria for early intervention services. Teams serving children likely to be identified at birth (or shortly after) should include an SLP to manage early communication and feeding needs. In some settings, the SLP's involvement begins in the neonatal intensive care unit (NICU) where specialized feeding/swallowing techniques can be promoted and used. In other settings, the SLP's participation begins when the infant visits the follow-up clinic. SLPs involved in follow-up of these infants with established risk have the responsibility to develop a detailed understanding of the children's medical records and conditions and to interview the children's families so that a comprehensive developmental history can be derived and documented. Use of standardized and criterion-referenced measures, checklists, and interview procedures should be supplemented by direct monitoring of development and by observation of the interaction between caregiver(s) and infant in multiple natural contexts.

Although certain medical conditions make it possible to identify at-risk children as neonates, similar indices are not readily available for identifying which children without known medical conditions may be at risk for difficulty in acquiring communication, language, speech, and feeding/swallowing skills. Some of these children will be identified by comprehensive child-find systems that include the input and guidance of an SLP. Therefore, SLPs also have a primary responsibility for selection and development of age-appropriate screening and assessment procedures. Moreover, there may be children without known medical conditions who show signs of risk, such as delayed development or loss of babbling during the latter half of the first year of life, failure to begin to use words, absence of a “vocabulary spurt,” failure to begin combining words in the second year of life, or feeding/swallowing difficulties as they transition from liquids to solids. In addition, there are children who exhibit some forms of communication (e.g.,

gestures, vocalizations, words) but do not use these skills to successfully interact with others. In the second and third years of life, however, the most common presenting complaint is the failure to begin talking and to engage in communication exchanges (U.S. Department of Education, 2003). For these children, as well as those who appear to have broad or generalized developmental delays, careful screening by an SLP is warranted to determine whether more intensive evaluation and assessment are needed. SLPs charged with the responsibility for early screening require knowledge of (a) the great variability that characterizes typical development, and (b) the wide variation in interactive styles surrounding successful communication and language development, particularly in populations from culturally and linguistically different backgrounds.

IDEA 2004 identifies communication as one of the developmental domains required in a comprehensive *evaluation*. IDEA 2004 distinguishes between the terms *evaluation* and *assessment*. The term *evaluation* refers to procedures that determine a child's initial and continuing eligibility for services and includes identification of the child's current level of functioning across cognitive, physical (including vision and hearing), communication, social/emotional, and adaptive development. In contrast, *assessment* refers to the ongoing process of describing the child's needs; the family's concerns, priorities, and resources related to the development of the child; and the nature and extent of the early intervention services required to meet the needs of the child and family. The legislation also specifies that both evaluation and assessment should be based on a variety of measures that include informed clinical opinion. The roles of SLPs in evaluation and assessment typically are to measure and describe communication and related behaviors, including feeding and swallowing, to share observations on other developmental domains, and to help in the decision-making process related to diagnosis, eligibility determination, and planning next steps for the child and family. In some communities, evaluation and assessment may be a two-part process in which one team of professionals evaluates the child to determine eligibility and then refers the child to another team for service coordination and/or other intervention services. In other areas, a single team may provide a combined evaluation/assessment and then provide service coordination and intervention planning services.

It is important, as specified in IDEA Part C regulations, for the evaluation and assessment to be conducted in the language(s) used by the child and family (both orally and in written form). Recommended practice for assessing children learning more than one language is to assess the child's skills in all the languages available to the child (Genesee, Paradis, & Crago, 2004; Langdon & Cheng, 2002). Thus, SLPs who do not speak the languages of the family may collaborate with interpreters or cultural mediators to ensure the accuracy of the assessment (ASHA, 1998a, 1998b, 1998c, 1998d, 2003a, 2004c; Langdon, 2002; Langdon & Cheng, 2002). Evaluation/assessment when there are language differences between the family and the SLP can be hindered by a lack of tools that have been developed in, or translated into, languages other than English. Given the limited availability of translated tools, SLPs screening children with multiple languages will need to pay particular attention to the psychometric properties of commonly used tools to determine their applicability to a particular child. Language alone should not present an insurmountable obstacle to the SLP, however. Frequently, children involved in early intervention services have not acquired verbal language. For these

children, much of the SLP's assessment will focus on preverbal behaviors, including play, gesture, and other forms of nonverbal communication and interaction, as well as feeding skills. Many of these behaviors can be observed independently of verbal language and, when augmented with parent report obtained through the help of interpreters and cultural mediators, can serve as a foundation for informed clinical opinion regarding communication development status. As noted elsewhere, parental perspectives on the child's skills relative to the beliefs and values of the family and their culture are also important to gain.

The processes of screening, evaluation, and assessment present important opportunities integral to the guiding principles for early intervention. The eligibility determination process may be the first contact a family has with an SLP or a team of early intervention professionals. First contacts provide opportunities to develop a family-centered relationship and for the team to answer questions from families about their child's development. Although parents may know their child's communication status, they often have less information about typical communication milestones and early literacy development, the range of variability among children, and appropriate red flags for concern. Parents may be surprised to learn developmental expectations for the length of toddlers' sentences or the intelligibility of their speech. SLPs who are presented with a toddler who is talking but making numerous articulation errors can reassure parents about the developmental progression children follow to become fully intelligible. SLPs also can use this opportunity to discuss the ways in which language grows out of earlier communicative functions. For example, a 2-year-old may be referred because he or she is not yet talking, but the SLP may note a lack of preverbal communication acts such as requesting and commenting with gestures. This situation provides the opportunity for the SLP to help parents become more informed observers of their child's behavior, and to introduce the idea that the language delay may be only the most obvious symptom of a more pervasive disorder. Further, screening, assessing, and evaluating children from varied cultural and linguistic backgrounds provide opportunities to observe different parent–child communication styles so that assessment and intervention methods can be matched to the child's customary communication exchanges and promote a success-oriented perspective for future interactions. Finally, these processes aid in the prevention of communication, language, and early literacy disabilities through family education about the course of typical development, the ways in which the child demonstrates typical behaviors as well as the degree to which the child diverges from this pathway, and strategies for using natural learning opportunities to foster growth and development.

Screening, evaluation, and assessment will be accomplished through a range of measures and activities, including standardized tests and questionnaire formats, interviews, criterion-referenced probes, dynamic procedures such as diagnostic teaching, and observational methods. Information will be drawn from direct interactions with the child, from indirect means such as parent interviews and report forms, and from observation of the child in natural activities with familiar caregivers. Federal guidelines emphasize that no single tool will be adequate for either evaluation or assessment, and both must be accomplished using a range of tools in varied contexts. Further, eligibility decisions may not rely on the use of standardized measures alone. Rather, such decisions also are based on informed clinical opinion that is derived from multiple sources of information gathered in multiple contexts.

Screening and evaluation serve as gateways to services, and it is important that the measures used are valid, reliable, sensitive, specific, and representative. A valid instrument, whether standardized or criterion-referenced, should measure what it claims to measure, such as communication skill, and not something else, such as the motor ability to point or imitate. A reliable measure is stable and does not change based on who administers the test or when the test is administered. Measurement sensitivity means that children who actually have difficulties in the target area are accurately identified. Specificity means that children who do *not* have a problem in the area also are accurately identified (as not having a problem). To achieve these standards, tests need to have large, representative norming samples, and standardized measures should only be used for children who are represented within their respective norming samples. Collectively, validity, reliability, sensitivity, specificity, and representativeness are important psychometric properties that make a test fair. SLPs have the obligation to ascertain that standardized measures they use in screening, evaluation, and assessment show robust psychometric properties that provide strong evidence of their quality (Dollaghan, 2004). This obligation may be challenging for SLPs in early intervention due to the limited number of well-constructed and validated measures available for infants and toddlers, particularly those with applicability for a broad multicultural sample.

SLPs, through collaborative practice with other professionals and the family, interpret screening, evaluation, and assessment findings within the context of a child's overall development. Contextualized interpretation is of particular importance because communication is just one aspect of the dynamic, multifaceted interactions between children and their worlds that constitute their environment. Therefore, professionals need to recognize the importance of using screening, evaluation, and assessment tools that provide the most representative sample of a child's behaviors across a range of people and activities within the child's natural environments. If screening, evaluation, and assessment cannot take place in the child's natural environments, such as the home or child care setting, professionals can attempt to use tools and methods such as play with familiar objects and interactions with caregivers to obtain a representative sample of the child's communication behaviors. In addition, clinicians gather information about the child through parent and caregiver report, and use these data in the decision-making process.

Areas to Screen, Evaluate, and Assess

A variety of areas of development contribute to facilitating later language acquisition in both typically developing children and those with atypical development (Calandrella & Wilcox, 2000; McCathren, Yoder, & Warren, 1999; Mundy, Kasari, Sigman, & Ruskin, 1995; Wetherby, Allen, Cleary, Kublin, & Goldstein, 2002). Many of these skills are predictive of later language outcomes and therefore can enhance professionals' abilities to make decisions about whether and when to intervene with a particular child. For these reasons, evaluation and assessment of infants and toddlers need to focus both on immediate needs (e.g., eligibility, intervention planning) and on behaviors known to be indicators of prognosis. The following section provides a brief overview of key components and reasons for their inclusion in evaluation and assessment of infants and toddlers who may have or be at risk for communication deficits.

Background/Developmental History

A thorough evaluation/assessment includes a detailed review of the child's birth and medical history, developmental history, other potential risk factors (e.g., familial history of disabilities, low socioeconomic status, maternal depression, teenage or single parent, adoption), and protective factors (e.g., good medical care, familial support; NJCLD, 2006). For excellent guides to gathering information in family-friendly and culturally sensitive ways, see Bailey (2004), E. W. Lynch and Hanson (2004), Westby, Burda, and Mehta (2003), and Winton and Winton (2005). History of speech, language, and learning disabilities in parents and other family members also may be particularly useful in evaluating risk. Children with a family history of language and/or learning disabilities have a higher risk for communication deficits than do children with no such history (Gopnik & Crago, 1991; Hadley & Holt, 2006; Lewis, Ekelman, & Aram, 1989; Stromswold, 1998; Tomblin et al., 1997).

Language History and Proficiency for Children Who Are Dual Language Learners

Throughout this document, the term *dual language learners* is used to include all young children who are learning more than one language, both those who are exposed to two languages from birth and those who have sequential exposure to two languages. As suggested by the NAEYC (2005), evaluation and assessment of young dual language learners should include information about the child's and family's history with language(s), the language the family typically speaks at home and in the community, other languages spoken in the home, the family's country of origin, the length of time in the United States, the child's age when first exposed to English, the amount of English exposure, and who in the family speaks English (and how well). In addition, it is often helpful to know about family members' formal education and their perceptions of their child and disabilities in general, along with their experiences with previous professionals (e.g., health care providers, child care providers). This type of knowledge can help professionals adapt their own interactions and the words they use with family members. For children who are already communicating, the range of the child's communication abilities in all the languages used by the child should be evaluated. Finding out which languages are used, with whom, and the extent of the child's proficiency in each language is important.

Concerns/Priorities/Resources

IDEA 2004 requires that programs offer the family an opportunity to identify their concerns, priorities, and resources related to enhancing the child's development. From the work of Bailey (2004) and Winton (1996), there are six key outcomes that may guide the gathering of this type of information:

1. To identify the family's concerns and what they hope to accomplish with their participation with service providers and the service system.
2. To determine how the family perceives the child's strengths and needs related to their family values and within the family structure and routines.
3. To identify the priorities of the family and how service providers may help with these priorities.
4. To identify the family's existing resources related to their priorities.
5. To identify the family's preferred roles in the service delivery decision-making process.

6. To establish a supportive, informed, and collaborative relationship with the family.

Each of these outcomes serves as a starting point for aligning the evaluation and assessment processes with family priorities.

Families' concerns about their children and what they want from service providers and the early intervention system vary with each family. Some families may have very specific concerns and may be clear about what they want (e.g., speech-language treatment for a “late talker”). Others may have broader concerns (e.g., a child with multiple areas of delay) and therefore may be less sure of what they want from the service system. In addition, families may be less likely to talk about certain kinds of concerns (e.g., mental health or marital issues), especially in the early phases of service delivery. The family's concerns are influenced by “an infinite combination of family, culture, community, and societal experiences” (Winton, Brotherson, & Summers, in press), thus making each family's concerns unique. Because the family knows their child best and the circumstances surrounding their family, it is important for professionals to honor the family's perspectives. This is not to say that professionals should not raise concerns or issues that they feel are important, but only to encourage sensitivity and respect for the family's perspectives. Family concerns are also likely to change over time, and professionals should be responsive to current as well as future concerns (e.g., stress before annual assessment/evaluation or before/during transitions) and shifting resources (e.g., loss of job, foreclosure on house).

For understanding the child and planning for the future, it is important to gather information about how the family perceives the child's strengths and needs, especially in relation to their own beliefs, values, and everyday experiences. For example, a child who may be viewed by professionals as having a “disability” may be perceived by the family as being a “gift,” and therefore they may not feel the child needs “intervention.” Identifying the family's words that are used to describe the child (e.g., “she's just quirky,” “he's very stubborn and understands everything”) is helpful in reflecting their perspectives of the child's strengths and needs. It is also vital to identify the ways that the child functions within the daily environment from the perceptions of the family and other caregivers (e.g., early education and care providers, grandparents). This information can then be used within both the assessment and intervention planning process.

Identifying the family's priorities for the child and the family is another key step in the planning process. Although some families will be able to readily identify their priorities, others may need further information and discussion to come to these types of conclusions. Further, priorities reflect values, and therefore not all family members will have the same concerns or priorities. Therefore, it is helpful for professionals to gain the perspectives of all of the child's primary caregivers. Although professionals may not always agree with the family's identified priorities, careful consideration and discussion may lead to what Barrera and Corso (2002) call “third space.” Third space is a mindset that respects diversity but encourages holding two viewpoints in mind without forcing a choice between them. This process may allow families and professionals to move forward in the planning process while respecting all viewpoints.

In terms of resources available to the family, many experts encourage a broad view including both formal (e.g., social services, therapies) and informal supports (e.g., family members, neighbors, religious organizations). Thus, professionals should ask about or consider with families the variety of resources that might be available to them. Understanding the family's existing resources and supports (and discussing with the family others that might be helpful) provides the team with key information for planning.

A central tenet of family-centered services is that families should be the key decision makers in the early intervention process. Not all families, however, will choose to take the same roles within service delivery and in decision making. Some families may prefer very active roles wherein they are a part of all decisions and help guide much of the early intervention process. Other families prefer to have the professionals take the lead, and still others seek a more equal partnership with professionals. In following the tenets of family-centered services, professionals should support families in their preferred roles in decision making. The specific roles are less important than the way those roles are identified by the family and the professionals. The important elements are that families are offered choices (e.g., to take part in the assessment by filling out a tool that measures the child's skills, or to learn about ways to help the child learn at home) and that professionals individualize services and supports to match the family's preferences. Additionally, families may choose different roles in various components of service delivery (e.g., screening, evaluation, assessment, and intervention planning, implementation, and monitoring) or over time, and therefore professionals should ask specific questions within these components and across time (Bailey, 2004). Further, there is some evidence within assessment practices that parents will choose a more active role in assessment when given more opportunities to do so (Crais, Roy, & Free, 2006). In choosing roles, families will be influenced by their own perceptions and experiences with the early intervention (or other health care professional) systems, their beliefs about their child, and many other familial, cultural, and sociocultural factors (Applequist & Bailey, 2000; Chen & McCollum, 2001). For some cultures, even seeking professional services is viewed as disloyal to the family or community. Understanding the family's view of professionals and the services they provide may help the team individualize their own communication and interactions with the family.

Finally, a range of variables (as was the case with family roles) will affect the relationships established between families and professionals, and professionals need to take their lead from the family as to the type of relationship preferred. For families who receive time-limited or minimal services (e.g., screening, brief consultation), the relationships with professionals may be more formal, whereas families and professionals who work together over a longer period of time or with children with more complex needs may have closer relationships. Some would argue that relationship building may be one of the more important elements of early intervention services and particularly to delivering family-centered services (McWilliam, Tocci, & Harbin, 1998). These researchers identified the following key components of family-centered relationships between families and professionals: positiveness, responsiveness, orientation to all family members, sensitivity, and friendliness. Further, Dunst (2002) discusses two types of family-centered “help-giving” practices: relational and participatory. Relational practices include demonstrating active listening, respect, and empathy with families,

whereas participatory practices include strategies for building competence, confidence, and capacity in family members. As suggested by Dempsey and Dunst (2004), while building good relationships with families is important, participatory practices are also key in parental empowerment. These researchers noted that important features of empowerment include self-efficacy, participation and collaboration, a sense of control, meeting personal needs, understanding the environment, access to resources, and personal action. One of the ultimate goals of family–professional relationships is to facilitate these types of parental empowment.

As indicated in IDEA 2004, some of the information gathered from families about their concerns, priorities, and resources should be within the context of a personal interview. Additional methods are also available, including semi-structured interviews, nonstandardized survey or rating tools, and standardized measures and rating scales used by parents and/or professionals. For an excellent overview of available tools, see Bailey (2004), and for concrete examples of family-centered information gathering, see Westby et al. (2003), Winton et al. (in press), and Winton and Winton (2005).

Hearing

Due to the potential impact of hearing loss on a child's speech and language development, children suspected of developmental delays should undergo comprehensive audiologic assessment and monitoring on an ongoing basis for signs of hearing loss (ASHA, 2004b). The widespread implementation of universal newborn hearing screening has resulted in many children with hearing loss being identified in infancy (Joint Committee on Infant Hearing, 2007); however, identification may be delayed for children with unilateral hearing loss, late onset or progressive hearing loss, mild losses not detected by newborn screening, or auditory neuropathy/dysynchrony. In addition, it is important to identify intermittent conductive hearing loss associated with otitis media. Early identification of hearing loss followed by appropriate intervention has been shown to result in improved developmental outcomes (Moeller, 2000; Yoshinaga-Itano, Sedey, Coulter, & Mehl, 1998).

In terms of who performs audiologic assessment with infants and toddlers, ASHA (2004b) provides clear guidelines. “Audiological assessment is performed by appropriately credentialed and qualified audiologists who possess a current ASHA Certificate of Clinical Competence where required and/or valid state license where required by law” (ASHA, 2004b, p. 4). According to the Joint Committee, SLPs are among the specialists who provide early intervention services to children who are deaf or hard of hearing and, because of their professional qualifications, are uniquely capable of providing assessment of language, speech, and cognitive-communication development. The Joint Committee also recommends a global screening of developmental milestones for all infants and young children by the family's pediatrician, and immediate referral to an SLP for a speech and language evaluation if a child does not pass the global screening.

With the technological advances in cochlear implantation, children who are deaf are able to receive auditory stimulation at a very young age, during the critical period for the development of speech and language skills (Kirk, Miyamoto, Ying, Perdew, & Zuganelis, 2000). Several studies indicate that children who are

implanted before age 3 years can acquire speech and language at a rate similar to that of peers with normal hearing, which mitigates a widening gap in language development after implantation (Kirk et al., 2002). It is not yet known, however, which preimplant factors reliably predict success with cochlear implants (e.g., Geers, 2003; Pisoni, Cleary, Geers, & Tobey, 1999). Therefore, a comprehensive assessment of the communication skills of children with cochlear implants is essential to document their pre- and postimplant level and rate of speech and language development, and to make recommendations regarding intervention planning.

Motor and Cognitive Skills

Children who have or are at risk for motor or cognitive disabilities are particularly vulnerable to concomitant speech and language deficits due to the interrelationships among cognitive, motor, and communication skills. For some children with severe physical impairment such as cerebral palsy, the ability to vocalize and/or use oral language may be impaired even though the child's underlying cognitive and linguistic abilities are intact. For children with motor impairments, careful assessment adaptations are needed to bypass response obstacles presented by traditional response modes (e.g., pointing, speaking). In addition, investigation of the need for augmentative or alternative means of communication may be necessary.

Cognitive abilities also are linked with language skills during young children's development and can be measured on certain tasks such as object permanence (Thal, 1991). Therefore, the child's overall cognitive level should be a consideration when assessing and intervening with children who have or are at risk for disabilities. This does not mean that professionals should use the child's cognitive level to make decisions about the need for speech-language services; in fact, there is a growing consensus among professionals that this type of "cognitive referencing" should not serve as a basis for eligibility decisions (ASHA, 2004a; Cole, Coggins, & Vanderstoep, 1999; Cole, Schwartz, Notari, Dale, & Mills, 1995; Francis, Fletcher, Shaywitz, Shaywitz, & Rourke, 1996; Krassowski & Plante, 1997; National Joint Committee for the Communication Needs of Persons With Severe Disabilities, 1992). The primary difficulty with the use of cognitive referencing is the substantial variation seen in a child's language-cognitive profile, depending on which test measures are used. The child's resulting eligibility for speech-language services may vary accordingly (Cole et al., 1995; Whitmire, 2000). In addition, research suggests that children without a language-cognitive discrepancy can nonetheless benefit from communication intervention (Carr & Felice, 2000; Cole et al., 1999). It is prudent to recommend that nonverbal cognitive assessment measures be used with children who have or are at risk for communication disorders, so that cognitive measures that include many language items and verbal directions will not confound results. In this way, the child's cognitive skills may be measured more accurately and the impact of the child's language deficits on results will be minimized.

Given that children with motor and/or cognitive deficits are at higher risk for concomitant deficits in communication skills (Abbeduto & Boudreau, 2004), SLPs play a key role in assessment and intervention planning. Resources on communication skills in children with motor and cognitive impairments include

the ASHA documents on mental retardation/developmental disabilities (2005b, 2005c, 2005d, 2005f) and the National Joint Committee for the Communication Needs of Persons With Severe Disabilities (2003a, 2003b).

Emotional and Social Functioning

There has been a growing understanding of the importance of emotional and social development in early childhood (Guralnick, 2005). The SLP working in early intervention should be familiar with the developmental course of key social and emotional skills. These cut across traditional developmental domains and reflect the child's ability to function in relationships with caregivers. Children with significant attachment or regulatory disorders may display secondary or concomitant communication delays. Important capacities for early social and emotional development, taken from the Functional Emotional Assessment Scale (Greenspan, DeGangi, & Weider, 2001; Zero to Three, 2005), include the following:

- attention and self-regulation
- ability to form relationships by means of mutual engagement and attachment
- intentional two-way communication and reciprocity
- prelinguistic means of communication, including gestures, gaze, and vocalization
- use of symbols to express thoughts and feelings

Feeding/Swallowing

Adequate feeding and swallowing skills are necessary for the health and development of the child and are precursors to the development of early communication skills (Kent & Vorperian, 2007). Difficulties in early feeding skills have been suggested to be an indicator of potential neurological deficits that may result in a later diagnosis of language or developmental delays (Hawdon, Beauregard, Slattery, & Kennedy, 2000; Selley et al., 2001). In addition, the incidence of feeding/swallowing deficits in children with disabilities is higher than that seen in typically developing children (Eicher, 2002). Therefore, information about the child's past and current feeding can be helpful in determining risk. Parents can be asked about the type, amount, and frequency of meals, the variety and consistency of foods eaten, and any evidence of difficulties sucking, chewing, or swallowing, or of gagging or drooling. If parents or professionals report concerns about the child's feeding/swallowing skills, observation of the child's behaviors, along with more formal assessment, is important. More detailed information about these disabilities, including assessment and treatment, can be found in the documents from ASHA focused on feeding and swallowing (ASHA, 2001, 2002b) and those focused on providing services to infants and families in the NICU environments (ASHA, 2004d, 2004g, 2004h, 2005e).

Oral Motor System

It is important to consider the structure and function of the child's oral motor system for all children with or at risk for communication deficits. Due to the need for coordinated oral motor patterns in the production of speech sounds, disorganization or dysfunction in these patterns may lead to later deficits in speech and language (Nobrega, Borion, Henrot, & Saliba, 2004). Oral motor abilities may be compromised in children with established medical diagnoses (e.g., cerebral palsy, Down syndrome). For most infants and toddlers, oral examination will include observing the child and asking parents about the child's feeding/

swallowing skills and oral productions, and comparing what is observed or reported with what might be expected to occur at varied developmental levels. For other infants, more in-depth examination may be necessary. A discussion of specialized assessments related to feeding/swallowing difficulties in infants and toddlers can be found in the ASHA documents on feeding/swallowing (ASHA, 2001, 2002b). Although at this time there are no standardized tests of the full range of oral motor skills, a sample of common informal assessments include the Oral Motor Assessment (Sleight & Niman, 1984), Preschool Oral Motor Examination (Sheppard, 1987), Pre-Speech Assessment Scale (Morris, 1982), and The Carolina Curriculum for Infants and Toddlers With Special Needs (Johnson-Martin, Attermeier, & Hacker, 2004). Many oral motor assessments involve imitation, and imitation itself is a cognitive skill that undergoes a series of developments. Therefore, if a young child cannot imitate oral movements, the role of imitation as well as oral motor skills must be considered before deciding that a child has an oral motor disorder. Detailed oral motor assessment for children with or without established medical conditions may have to be deferred until the child reaches a developmental level that enables more formal evaluation and the use of imitation formats.

Early Sound Development

Sound production skills not only provide information on the child's current level of functioning but also can assist in predicting the child's future ability to produce speech and language. For detailed information on early sound development, see Mitchell (1997) and Paul (2007).

Mitchell (1997) suggested documenting the rate of vocalization, the proportion of consonants, and the advent of multisyllabic babbling. All these components should be increasing over time, and if they are not, stimulation may be warranted. By 16 months of age, children should be using a larger percentage of consonants than vowels, and babbling should contain more than one syllable (Mitchell, 1997). As suggested by Paul and Jennings (1992), the ability to use more than one consonant in an utterance is an important developmental milestone that many 24-month-old toddlers with delayed language do not achieve. Further, as children develop their phonological systems, clinicians can document the presence or absence of the earlier versus later developing sounds to gain a picture of the child's developmental progression (Paul, 2007; Shriberg, 1993; Vihman, 1992). Carson, Klee, Carson, and Hime (2003) noted that the more delayed 2-year-olds were in phonological development, the higher their risk for speech delay at age 3. In particular, these children had less complete phonetic inventories, and their expressive vocabularies had words with simple, early developing, canonical forms. Thus, phonological information can be useful in making decisions regarding “late talkers” and predicting their likelihood to exhibit typical language skills at age 3 or 4. These types of analyses, however, can only be conducted for speakers of languages for which the phonological system has been documented.

Some children in the birth-to-3-year range present with severe speech delays of unknown origin. These children are unable to produce developmentally appropriate consonant and vowel sounds and words, and may be limited to one or two vocalization types. In these situations, there is limited evidence to support the conferral of a diagnosis of childhood apraxia of speech (ASHA, 2008a, 2008b, 2008c; Shriberg et al., 2003). Therefore, use of standard apraxia batteries for

children at this level is recommended for assessment rather than evaluation purposes. As suggested earlier, independent analyses of phonological production, including consonant inventory and syllable shape level, are helpful for documenting the degree of phonological development in children with little speech. In addition, various phonological/articulation measures can be used to document the child's production skills in single words and conversation. A sample of common tools for English speakers includes the Goldman Fristoe Test of Articulation—Second Edition (Goldman & Fristoe, 2000), the Bankson-Bernthal Test of Phonology (Bankson & Bernthal, 1990), the Hodson Assessment of Phonological Patterns—Third Edition (Hodson, 2004), and the Khan-Lewis Phonological Analysis—Second Edition (Khan & Lewis, 2002). A thorough assessment of an infant or toddler's sound production skills can provide important information for intervention planning.

Functions of Communication

The ability to communicate for a variety of functions is a milestone of communicative development and an indication of prognosis in young children. The ability to signal one's intentions is key to the development of higher level communication skills (Brady, Marquis, Fleming, & McLean, 2004). For prelinguistic children, type, variety, and frequency of intentional communication should be examined and can be sampled in interactive play contexts with caregivers and professionals. During caregiver–child interaction, the SLP can watch for (and/or ask the caregiver about) the reasons the child communicates intentionally (e.g., to get something, to protest something). In addition, the SLP can set up situations that encourage the child to communicate his or her needs. Use of “temptations” such as those provided in the Communication and Symbolic Behavior Scales Developmental Profile (CSBS DP; Wetherby & Prizant, 2002) is one example of how to use common toys to “tempt” and then document the communicative functions used by young children. The CSBS DP uses Bruner's (1981) system of classifying intentional communication into three functional categories: behavior regulation (e.g., requesting objects, protesting), social interaction (e.g., greeting, showing off), and joint attention (e.g., showing, commenting).

Use of specific types of communicative functions plays a role in predicting later language skills and helps differentiate children with different disability patterns. For example, joint attention skills have been shown to predict comprehension and production skills in both typically developing children (Mundy & Gomes, 1998; Slaughter & McConnell, 2003) and those with autism spectrum disorders (Charman et al., 2003; Mundy et al., 1995). Similarly, social interaction acts are predictive of expressive vocabulary in typically developing children (Mundy & Gomes, 1998) and children with autism spectrum disorders (McEvoy, Rogers, & Pennington, 1993; Mundy, Sigman, Ungerer, & Sherman, 1986). Further, a limited variety of social interaction gestures in 9–12-month-old children was significantly associated with later diagnosis of autism, when compared with gesture use in typically developing 9–12-month-old infants (Lanter et al., in press).

The frequency of intentional communication is also an important factor in identifying children with communication deficits. Rate of intentional communication is predictive of language outcomes in young children with developmental delay. Higher rates of nonverbal intentional communication are associated with improved language outcomes (e.g., Calendrella & Wilcox, 2000).

Typically, 12-month-olds communicate intentionally about once per minute, 18-month-olds about twice per minute, and 24-month-olds about five times per minute (Wetherby, Cain, Yonclas, & Walker, 1988); therefore, a slow rate of intentional communication may be another indicator of deficits. Thus, documenting the variety, type, and frequency of communication behaviors is useful for assessing current functioning and determining prognosis of communication skills for planning intervention.

Means of Communication

Increasingly, research has demonstrated the relationship between the early use of communicative means (e.g., gaze, gestures, vocalizations, words) and later language skills in children with developmental delays (McCathren, Yoder, & Warren, 2000) and those with autism spectrum disorders (Zwaigenbaum, Bryson, & Rogers, 2005). In addition, in children who are identified as "late talkers," gesture use has been used to help predict which children will "catch up" eventually to their peers (Thal, Tobias, & Morrison, 1991). The measurement of communicative means is an essential component for all young children with or at risk for communication deficits, but particularly those who are at the prelinguistic stage of development. Observational methods along with parent report instruments can be used to gather information on communicative means. Sample tools for examining gestures include parent report tools such as the MacArthur-Bates Communicative Development Inventories (Words and Gestures Form [CDI:WG]; Fenson et al., 2006) and the CSBS DP Caregiver Questionnaire (Wetherby & Prizant, 2002). Other tools for examining gestures include the Bayley Scales of Infant Development, Third Edition (Bayley, 2005); Clinical Evaluation of Language Fundamentals—Preschool, Second Edition (Semel, Wiig, & Secord, 2004); Preschool Language Scale, Fourth Edition (PLS-4; Zimmerman, Steiner, & Pond, 2002); and the Receptive-Expressive Emergent Language Test, Third Edition (Bzoch, League, & Brown, 2003). Both the child's number and variety of means should be examined as signs of advancing complexity of communication.

Assistive Technology

Young children who have or are at risk for developmental delays/disabilities frequently experience challenges participating in their daily routines and activities (e.g., playing with siblings or other children, interacting with their caregiver or other adults, participating in story time at the library). Assistive technology (AT), one of the IDEA-mandated services for infants and toddlers, represents a means to minimize these challenges and enhance a family's ability to support their child's development and successful interactions (Campbell, 2004; Mistrett, 2004; Wilcox, Guimond, Campbell, & Weintraub Moore, 2006). AT includes devices, environmental modifications, and assessment/intervention strategies. AT modifications and/or devices range from being readily available, off the shelf, and generally inexpensive (e.g., bath seats, strollers, pencil/crayon grips, adapted books for easier access) to more specialized devices that are limited in availability or designed to address a specific disability (e.g., speech-generating devices [SGDs], touch screens for computer access, special switches to activate toys, power wheelchairs; Burke, 1998; Wilcox et al., 2006). AT services include identification, procurement, implementation, and monitoring functional use of appropriate devices and modifications.

AT represents an area of expertise in which the SLP can take an active role, particularly as it relates to augmentative and alternative communication (AAC), play, and learning. When SLPs and other team members have knowledge of the range of available AT and the ways it can create opportunities for participation and learning, they can make informed recommendations to the family and other team members regarding AT devices and services for young children and their families.

Although the SLP is uniquely qualified to explore ways to enhance a young child's existing communication abilities using AT, some areas may be addressed by other professionals (e.g., positioning and mobility by a physical therapist, self-help by an occupational therapist). The development of play and language skills is interrelated; play can serve as a primary setting for language and communication interactions between a young child and his or her communication partners. Hence, it is important for the SLP to assess a child's ability to participate in play. When a child demonstrates limited success during play (e.g., inability to manipulate a desired toy), the SLP considers adaptations, devices, or strategies that may enhance the child's success, including teaching family members or other caregivers how to engage in more successful play activities with their child.

Historically, AAC assessment has focused on determining appropriate matches between a communication mode and the communicator. This approach has resulted in the exclusion of young children from AAC interventions because it was thought that they did not have the skills necessary to begin using AAC (Chapman & Miller, 1980). However, recommended practice now asserts that all individuals can communicate when communication is defined along a continuum from prelinguistic to symbolic to fully linguistic (National Joint Committee for the Communication Needs of Persons With Severe Disabilities, 1992). Because of the IDEA mandate, recommended practice, and the general acceptance of use with young children, the focus of overall AT assessment is typically not to determine the need for AT but rather to explore the continuum of devices and services that can help children fully participate in their environment (Romski, Sevcik, Hyatt, & Cheslock, 2002; Zabala, Reed, & Korsten, 1999). At present, standardized tests are not available to assess the appropriateness of AT for an individual child; however, informal checklists have been developed (K. J. Lynch & Reed, 1999; Zabala et al., 1999). These checklists typically have been used with school-age children and adults but can be adapted for use with young children, provided that developmentally supportive modifications are made. AT assessment for infants and toddlers includes careful observation within the framework of the ongoing early intervention assessment (e.g., determining the child's potential communication modes, ability to participate in family-identified activities and routines) and problem solving with the family, caregivers, and other team members. Family/caregiver interviews and informal observation of the child interacting with family, friends, and caregivers during natural daily routines and in typical settings assist in determining barriers that affect the child's participation in play, cognitive, communication, physical, and self-help activities. Team members can then engage in a problem-solving process to determine the most appropriate devices, adaptations, services, and/or strategies that will reduce or eliminate existing barriers and enhance participation. Problem solving may include trial and error usage of a variety of devices and strategies before determining the best solution. More in-depth assessment procedures may need to occur for

specialized high-tech AT devices, such as electronic wheelchairs or SGDs. For comprehensive AAC assessment and intervention guidelines, refer to the ASHA family of documents on AAC (ASHA, 2002a, 2004f, 2005g).

Comprehension

Deficits in comprehension not only serve as barriers to language development in their own right, but they are also associated with language deficits at later ages (Thal et al., 1991). Comprehension skills in the second year of life are a significant predictor of later comprehension and production skills in children with typical and atypical development (Lyytinen, Poikkeus, Laakso, Eklund, & Lyytinen, 2001; Wetherby et al., 2002; Wetherby, Goldstein, Cleary, Allen, & Kublin, 2003). In addition, comprehension skills can be used to help predict which children with early expressive language delays are most likely to "catch up" to typically developing age-matched peers (Paul, 2000a, 2000b; Paul, Looney, & Dahm, 1991; Thal et al., 1991; Whitehurst, Fischel, Arnold, & Lonigan, 1992). Further, failure of a child to look up or orient to his or her own name and to respond to speech directed to him or her early in life are indicators associated with a later diagnosis of autism (Baranek, 1999; Filipek, Accardo, & Baranek, 1999; Gillberg, Nordin, & Ehlers, 1996; Zwaigenbaum et al., 2005).

During assessment, both children's nonlinguistic comprehension strategies (e.g., responding to routines, watching what others do) and linguistic comprehension skills can be examined. For comprehension of early social routines and words, a sample of useful parent report tools includes the First Words Checklist (Wetherby, 2002); CDI:WG (Fenson et al., 2006); Receptive—Expressive Emergent Language Test, Third Edition (Bzoch et al., 2003); and the Vineland Adaptive Behavior Scales: Second Edition (Sparrow, Cicchetti, & Balla, 2005). Sample direct assessment tools that focus on early receptive skills include the Bayley Scales of Infant Development, Third Edition (Bayley, 2005); Mullen Scales of Early Learning (Mullen, 1995); PLS-4 (Zimmerman et al., 2002); and the Reynell Developmental Language Scales III (Edwards et al., 1999). Whereas only a small number of tools are available to assess the comprehension skills of children under 2 directly, there is a broad range of tools for children older than 2. These include the Clinical Evaluation of Language Fundamentals, Fourth Edition (Wiig, Secord, & Semel, 2004); PLS-4 (Zimmerman et al., 2002); Peabody Picture Vocabulary Test—Fourth Edition (Dunn, Dunn, & Dunn, 2006); and the Receptive One-Word Picture Vocabulary Test—2000 Edition (Brownell, 2000b). In addition, Miller and Paul (1995) and Paul (2000a, 2000b) discuss informal methods of assessment of comprehension for children younger than 3 years.

Word Production and Word Combinations

Vocabulary growth is an important component of the child's overall development and is critical to both communication development and later academic success. The child's acquisition of new words is influenced not only by sensory and cognitive systems but also the child's experiences, the input language, and the sociocultural influences that surround the child. As most of the research on vocabulary development and word combinations has been performed with monolingual, English-speaking children, care should be taken when examining these skills in children learning more than one language.

Acquisition of the first 50 words is fairly slow, especially compared with the "vocabulary burst" that frequently occurs after 50 words. A traditional red flag for 24-month-old children has been the failure to have an expressive vocabulary of 50 words and/or no 2-word combinations (Paul, 1991; Rescorla, 1989). However, research has indicated that 10%–15% of children have fewer than 50 words at 24 months; thus, use of this marker as the only indicator of delay will produce too many false positives. Indeed, a growing body of research has demonstrated that many so-called "late talkers" by age 3 or 4 will perform at age level on standardized measures (Paul et al., 1991; Thal et al., 1991; Whitehurst et al., 1992). As suggested by Paul (1991), making a distinction between who will and who will not "outgrow" these early "delays" can be difficult. Although vocabulary size is important, factors such as rate of vocabulary growth, sound development, and social, cognitive, comprehension, gesture, play, emerging grammar, and imitative skills can also help sort out the late talkers from children with language disorders. For example, research by Rescorla, Mirak, and Singh (2000) with children who were late talkers indicated that the children whose vocabulary growth was the slowest between 24 and 36 months had poorer grammatical outcomes at age 3. An aggregate view across developmental domains in communication and related areas is likely to provide stronger prediction of later delay (Olswang, Rodriguez, & Timler, 1998; Paul, 1996, 1997; Wetherby et al., 2002). Furthermore, as noted, familial history of language and/or learning disabilities is a significant risk factor and should be taken into consideration.

For identifying emerging words, vocabulary growth, and word approximations, parental report and observation can provide information to guide referral decisions. In this case, identifying the number and type of words or word approximations is useful. The diversity of word types (e.g., nouns, relational words) can not only be a good indicator of development but can also help in intervention planning when increasing the number of words and types targeted. In addition, the words should be categorized by sound inventory and syllable shape, as research has shown that children are more likely to learn new words that include the sounds and syllable shapes already in their inventory (Schwartz & Leonard, 1982). As children acquire more words, parent report tools such as the CDI (Fenson et al., 2006) and the Language Development Survey (Rescorla, 1989) can be used to document production vocabularies up to 30 months of age. In addition, the rate of growth in the early years can be calculated and used in clinical decision making. As suggested by Hadley (2006), slow vocabulary growth may be a better indicator of risk than vocabulary size in young children.

Word combinations typically emerge between 18 and 24 months, but not all typically developing children produce word combinations by 24 months (Fenson et al., 2006). In examining a child's word combinations, the length of the child's utterances can be predictive of the child's overall language development (Fenson et al., 2006). The typical mean length of utterance (MLU) for English-speaking children is

- 1.0–1.6 at 18 months,
- 1.1–2.1 at 21 months,
- 1.5–2.2 at 24 months,
- 2.0–3.1 at 30 months,
- 2.5–3.9 at 36 months (Miller, 1981).

Thus, by 24 months of age, most children are using a range of words per utterance, but some are just beginning to produce words and have no word combinations. Most children begin to combine words when their vocabularies reach between 50 and 100 words. As suggested by many researchers (e.g., Brown, 1973; McCathren et al., 1999), the correlation between word combinations and vocabulary size is stronger than the correlation between word combinations and age. Thus, vocabulary size should be a helpful marker as to when a child may be expected to begin combining words. Those children with productive vocabularies (as validated by parent report) of more than 100 words who are not combining words are at risk for communication delays and should be referred for evaluation, especially when they display other risk factors.

The range of meanings expressed in early word combinations also is an important consideration, as any intervention aimed toward enhancing word combinations should build on the ideas the child is attempting to express, as well as the child's own words. Children's first word combinations typically express the semantic relations already encoded in the child's single words (Lahey & Bloom, 1977).

Development of Grammar

The majority of the research on the development of grammar is available only for monolingual, English speakers, therefore, the following developmental information should be used advisedly with dual language learners. This research indicates that even at early ages, young children are developing their grammatical system, and aspects of their grammar can be seen as early as the second year of life (Brown, 1973; Hadley, 2006). As discussed by Hadley, children should have a diverse verb lexicon, produce frequent and diverse simple sentences, and demonstrate the onset of tense marking by 3 years of age. Thus, assessing these areas in toddlers can provide insight into their overall language development. When children add verbs to their lexicons, they also typically begin to form sentences (Hadley, 2006). Klee, Gavin, and Letts (2002) documented that 70% of children between 24 and 26 months use at least two subject–verb (e.g., *baby cry*) and subject–verb–object (e.g., *I want snack*) sentences. For toddlers who are at risk for language impairment, the use of subject–verb and subject–verb–object sentences may not appear until after 30 months of age, even when their MLU indicates ability to combine words (Hadley, 1998). Therefore, the limited use of verbs and of subject–verb sentences by 30 months are indicators of risk for language impairment (Hadley, 2006).

With regard to tense markings, the first tense morphemes usually emerge with sentences between 24 and 26 months. The earliest are typically third person singular (e.g., “It walks/falls”), the copula BE (e.g., *is hot, is hungry*), and auxiliary DO (e.g., “This doesn't fit” “Do you need help?”), whereas “ed” (e.g., *wanted, dropped*) and auxiliary BE (e.g., *is crying, is running*) typically appear at later ages (Hadley & Rice, 1996; Hadley & Short, 2005; Klee et al., 2002). Despite some variability across children, Rispoli and Hadley (2005) noted that all of these forms are evident in most children by age 3 years. Children with language impairment often use very few tense markers even at 36 months of age (Conti-Ramsden & Jones, 1997; Eyer & Leonard, 1995; Hadley & Rice, 1996; Leonard, Camarata, Brown, & Camarata, 2004). Thus, as suggested by Hadley (2006), the absence of tense morphemes and/or limited productivity of tense morphemes at 36 months would place a child at risk for language impairment.

Play

Although particular play skills are not viewed as prerequisite to specific language skills, there appear to be relationships that occur at particular stages of development and on particular play behaviors (Bates, Bretherton, Snyder, Shore, & Volterra, 1980; Thal, 1991). For example, as first words appear along with more consistent communicative gestures (13–20 months), single play schemes (e.g., child feeds self with spoon) are emerging (Kennedy, Sheridan, Radlinski, & Beeghly, 1991). Although this relationship declines over time, as children begin to combine words (20–24 months), they also combine single play schemes (e.g., child feeds self with spoon, then drinks from cup). By 28 months, children are learning the rules for syntax, producing ordered play sequences, and showing an increase in productivity in language and other symbolic domains (Kennedy et al., 1991; McCune-Nicholich & Bruskin, 1982). The level of symbolic play exhibited by young children is frequently shown to predict later language skills (Lyytinen, Laakso, Poikkeus, & Rita, 1999; Lyytinen et al., 2001). For example, Lyytinen and colleagues observed that symbolic play skills at 14 months of age were predictive of receptive and expressive language at both 24 and 42 months. In addition, for both typically developing children (Bates, Bretherton, & Snyder, 1988) and those with developmental delays (Kennedy et al., 1991), higher levels of gestural production and play maturity have been associated with higher levels of comprehension. Thus, depending on the developmental stage and skill observed, play and language may exhibit a variable relationship.

A child's play with or interest in objects may also have an effect on the types of interactions and learning opportunities the child may have. For example, young children with autism have been reported to have limited actions on and play with fewer objects (Pierce & Courchesne, 2001; Wetherby et al., 2004). Thus, not only do these children have fewer objects and actions to talk about, but their caregivers (and professionals) are also constrained in their nonverbal and verbal attempts to engage the child in play and language. As suggested by Yoder and McDuffie (2006), helping young children develop their play skills provides both the children and their caregivers with more objects and actions to share in interactions and provides a context for enhancing the child's communication skills.

Assessing the child's play has a number of advantages for SLPs in making assessment and intervention decisions. For example, it provides a nonlinguistic benchmark against which the child's linguistic performance can be compared when examining the overall developmental level (Paul, 2007). Profiling play skills with other developmental domains also helps identify the child's strengths and needs across areas and can be useful in making diagnostic decisions, as well as in intervention planning. Further, assessing the child's play is important for utilizing play as a context for intervention and when specifically targeting the development of play skills as a means to enhance communication skills.

There are various ways to assess a child's play, and the choice depends on the individual child and the outcome desired. Informal approaches include observation of the child during play alone or with a parent/caregiver and identifying the type and complexity of play skills. Using play checklists may add more consistency to the process. These include tools such as R. L. Carpenter's (1987) Play Scale for nonverbal children, Casby's Scale (Casby, 2003), Lifter's Developmental Play Assessment (2001), or McCune's (1995) system of providing a standard set of toys.

Westby (1998) described seven stages of symbolic play that correspond to stages in children's language development, and in a more recent play scale Westby (2000) integrated cognitive and communicative skills. There are other more formal means to assess play. They include the CSBS DP (Wetherby & Prizant, 2002), which examines both combinatorial play (e.g., stacking blocks) and symbolic play in children developmentally between 8 and 24 months and allows comparison across domains (e.g., play, gestures, words). Also, the Symbolic Play Test, Second Edition (Lowe & Costello, 1988) examines play and symbolic ability in children age 12–36 months using a standard set of toys and procedures. The CDI:WG (Fenson et al., 2006), a parent report tool, has a list of play behaviors that can provide information to help gauge the child's imitation of adults in play.

Finally, it is important to keep in mind that play skills and styles will vary depending on the characteristics of the play partners, the type of toys available, and the type of play (Cherney, Kelly-Vance, Glover, Ruane, & Ryalls, 2003; Farver & Shin, 1997; Farver & Wimbarti, 1995). Research has documented a variety of differences across cultures in the themes and communicative functions of social pretend play in preschoolers (Farver & Shin, 1997). Indeed, Farver and Wimbarti (1995) identified differences in the play of caregivers with their infants and toddlers reflecting the parents' differing beliefs and values regarding the role of play. In some cultures, play is viewed as an avenue for learning, whereas in others, it is seen purely as entertainment. In addition, in some cultures, parents are more likely to label and describe their child's play, as opposed to other cultures in which parents may be more directive, with the use of more frequent commands (J. R. Johnston & Wong, 2002; Vigil, 2002). Therefore, expectations of young children's play skills have to be adjusted according to the results of parent/caregiver reports on how play is viewed and encouraged in each individual family.

Emergent Literacy

Emergent literacy refers to the behaviors and concepts learned by young children that precede and develop into conventional literacy (Roth & Baden, 2001; Teale & Sulzby, 1996). Early indicators of emergent literacy include scribbling on paper as if writing, pointing to recognized logos and letters, turning alphabet blocks so the letters are facing the same direction, printing letter-like shapes, playing with rhyming words, completing nursery rhymes, recognizing words on packages or signs, and engaging in shared book reading (Senechál, LeFerve, Smith-Chant, & Colton, 2001). Typical examples of book-reading behaviors are holding the book right side up, turning pages one by one, and pretending to “read” the book. In very young children, storybook reading facilitates joint attention between caregiver and child as both partners focus on a shared object, and opportunities arise for the adult to provide input to the child through gestures and language while the child often uses pointing and gestures to share his or her developing knowledge about the content (Norris & Hoffman, 1993). Joint book reading has been documented to facilitate growth in children's attention, vocabulary mapping, receptive language, emerging literacy skills, decontextualized language use, and later reading and academic achievement (Dickinson & McCabe, 2001; Justice, Meier, & Walpole, 2005; Kaderavek & Sulzby, 1998; Morales et al., 2000; Sulzby, 1985; Teale & Sulzby, 1986, 1996; van Kleeck, Gillam, & McFadden, 1998).

A number of studies have documented a positive relationship between early storybook reading and later language and literacy development (Bus, van IJzendoorn, & Pellegrini, 1995; Dickinson & McCabe, 2001). Young children who demonstrate interest in shared storybook readings and other literacy-related activities are more likely to demonstrate greater achievements in language and literacy development throughout the early school years compared with children with low interest (Frijters, Barron, & Brunello, 2000; Guthrie & Knowles, 2001; Olofsson & Niedersoe, 1999).

For children with or at risk for communication deficits, consideration of emergent literacy behavior seems particularly important given their higher than average risk of developing reading disabilities (Catts, 1991; Catts, Fey, Tomblin, & Zhang, 2002; National Institute of Child Health and Human Development, 1999). Some of the factors that affect the relationship between communication risk/disorders and later reading problems include the child's interest in shared storybook reading, the types of interactions between parents and children, and the beliefs and values of the parents regarding storybook reading (Bus et al., 1995; DeBaryshe, 1995). Thus, identifying a child's interest in and opportunities for shared book reading are key elements in the evaluation and assessment process.

As part of an evaluation/assessment, the following behaviors have been identified by Roth (2005) as key emergent literacy behaviors that clinicians may assess:

- showing brief interest in looking at books with very familiar pictures (8–12 months)
- looking at pictures in a book when named (1 year)
- turning pages in a book more than one at a time, holding a large marker or crayon, or scribbling (1–2 years)
- enjoying a favorite book read over and over again, turning pages in a book one at a time, knowing how to open and hold books, and “writing” by scribbling or drawing (2–3 years)

One caveat for making clinicial decisions based on the research in emergent literacy, however, is the fact that most studies have been conducted with middle class mainstream populations and therefore may not reflect the skills and experiences of children whose backgrounds differ from this group. Thus, acquisition of the skills reported have not been sufficiently validated with children from a variety of backgrounds.

Parent–Child Interaction

Given the tremendous influence that families have on their child's growth and development, and the fact that language is learned in the context of interactions between children and those who are close to them, it is important for SLPs to observe and ask questions about the interactions that the child has with his or her caregivers. The purpose of observing caregiver-child interactions is to identify the behaviors that may be facilitating interaction and communication, and to encourage and perhaps help parents refine or increase the use of these behaviors. Clinicians should be careful not to impose their own values when making these observations (Sameroff & Fiese, 2000; Yoder & Warren, 2001). Caregiver behaviors differ across contexts and may be more influenced by the parents' expectations of their role in an activity (e.g., teacher, clinician, or playmate) than their natural caregiver interaction style. Hoff-Ginsberg (1991) reported a low

incidence of directive comments produced during book reading versus play with toys. In addition, the fact that some children produce very few vocalizations may serve to limit the responsivity of their caregivers (Yoder & Warren, 1998, 2001). Speech intelligibility also has been shown to be a factor in caregiver responsivity (Conti-Ramsden, 1993).

Various means are available for observing these types of interactions (e.g., use of scales, interviews, observations), and they vary with respect to their psychometric properties (see Mahoney, Spiker, & Boyce, 1996, for a thorough review of each method). For example, contextual issues such as the setting (e.g., home, clinic, child care), familiarity of the participants with the observer(s), type of materials or toys available, type of interaction requested (e.g., completion of particular task, free-play), and length of the observation all can affect the ways children and their caregivers interact. Further, sociocultural factors such as culture, ethnicity, and socioeconomic level, as well as personality and interactive style, strongly influence the ways different caregiver–child behaviors are exhibited and viewed.

A range of parenting and child-rearing styles have been shown to be conducive to promoting competence in young children. Behaviors reported in the literature that enhance communication include providing (a) responses that are directly related to a child's previous communication act or the child's focus of attention, (b) positive language models for the child, (c) imitating or expanding the child's actions or words, (d) accepting and reinforcing the child's communication attempts, and (e) adequate time to initiate and respond to adults (Girolametto, 1988; Girolametto, Weitzman, Wiigs, & Pearce, 1999; Kaiser, Hester, & McDuffie, 2001; Wilcox, 1992; Yoder & Warren, 2001). In addition to models of verbal behavior, providing models of desired communication behaviors (e.g., gestures, vocalizations, eye gaze, word approximations), also may be beneficial. These types of behaviors can be taken into consideration when observing and talking with caregivers about their interactions with the child. Suggestions for examining and influencing caregiver–child communication interactions within a family-centered context can be found in Barrera and Corso (2002) and McCollum and Yates (1994).

Environmental Stressors

Social risk factors such as poverty, limited parent education, maternal depression, poor-quality child care, and adolescent or single parenthood can influence cognitive-linguistic development (Bradley et al., 1994; Burchinal, Roberts, Nabors, & Bryant, 1996; Cummings & Davis, 1994; Lyons-Ruth, Connell, Grunebaum, & Botien, 1990; Sameroff, Seifer, Baldwin, & Baldwin, 1993). Furthermore, these risk factors often co-occur and appear to have a cumulative effect. Thus, children exposed to multiple risks show the most significant developmental impact. SLPs working with multiple-risk families need to consider these factors when evaluating/assessing an individual child's communication development.

Attention to environmental stressors is important because increasing numbers of young children are referred to Part C early intervention programs for developmental screening and evaluation through the 2002 Child Abuse Prevention and Treatment Act. These are children who have very recently been removed from

Table 1. Sample of Screening Measures for Infants and Toddlers.

Screening Measure	Parent Report	Direct Assessment	Reliability	Validity	Sensitivity	Specificity	Representative Sample	Language(s)
Battelle Developmental Inventory, Second Edition: Screening Test (Newborg et al., 2005)		√	√	√	Unknown	Unknown	√	Spanish
Birth to Three Assessment and Intervention System, Second Edition (Ammer & Bangs, 2000)		√	Unknown	Unknown	Unknown	Unknown	Unknown	
The Capute Scales: Cognitive Adaptive Test and Clinical Linguistic and Auditory Milestone Scale (Accardo & Capute, 2005)		√	√	√	√	√	Unknown	Spanish, Russian
Communication and Symbolic Behavior Scales Infant Toddler Checklist (Wetherby & Prizant, 2002)	√		√[a]	√[a]	Unknown	Unknown	√	
Denver Developmental Screening Test II (Frankenburg & Dobbs, 1990)		√	√	√	√[b]	√[b]	√	Spanish
Early Language Milestones Scale, Second Edition (Coplan, 1993)		√	√	√	√	√	√	
Early Screening Profiles (Harrison et al., 1990)	√	√	√	√	√	√	√	
Joliet 3-Minute Speech and Language Screen (Revised) (Kinzler & Johnson, 1993)		√	√	√			√	
Language Development Survey (Rescorla, 1989)	√		√	√	√	√	√	
MacArthur–Bates Communicative Development Inventories (2nd ed.) (Fenson et al., 2006)	√		√	√	Unknown	Unknown	√	Spanish, others
Pre-Screening Developmental Questionnaire (PDQ–II) (Frankenburg & Bresnick, 1998)	√		√	√	Unknown	Unknown	√	Spanish, PDQ–I available in French
Screening Kit of Language Development (Bliss & Allen, 1983)		√	√[c]	√	√	√	√	Normed for Standard and African American English

[a] Validity and reliability data reported in Wetherby et al. (2002).
[b] Sensitivity and specificity data reported in Glascoe et al. (1992).
[c] Data reported in Bliss & Allen (1984).

their homes and placed in foster care. They may well have experienced significant disruption in their daily routines and even trauma, all of which could affect their observed communication skills.

Process for Screening

Screening measures may involve direct interaction with the child, parent report on a standardized instrument, or a combination of the two. The use of parent-completed screening measures is appropriate to make the determination of whether a child needs further evaluation (Diamond & Squires, 1993; Glascoe, 1997; Stott, Merricks, Bolton, & Goodyer, 2002), as parents have been shown to be reliable and accurate observers and describers of their children's communication and general development. Further, research has documented that the validity of the screening process increases with the combination of professional-administered and parent-completed measures (Glascoe, 1999; Henderson & Meisels, 1994). For screening purposes, however, either standardized testing or parent report is adequate, providing the measure used has adequate psychometric properties. Examples of screening measures and their characteristics are outlined in Table 1.

When evaluating the results of screening, clinicians should consider whether a child who appears to have a language problem is demonstrating a linguistic *difference* or a *disorder*. This issue pertains to any child who comes from a background with cultural or linguistic differences from the normative sample used in the screening tool. For example, using a test normed on native Standard English speakers without scoring that takes into account dialect differences is inadequate to test a Spanish-speaking child or one who uses another dialect of English, such as African American English. In recent years, a number of tests, both for screening and evaluation, have been translated into Spanish and a small number of other languages. As can be seen in Tables 1, 2, and 3, some screening instruments are available in multiple languages.

SLPs are responsible for choosing an appropriate screening instrument that meets criteria for fairness and efficiency. It is generally not acceptable to translate a test standardized in English into another language for use as a screener because the psychometric properties of the test are not valid when the test has been translated. Additionally, direct translations do not account for linguistic differences and developmental patterns of other languages, nor do they account for cultural differences in communication styles. If a standardized screening measure is available in the home language of the child or community in which the screening takes place, the clinician can train native speakers as paraprofessionals to assist professionals in administering the screening instrument. If a standardized measure is not available in the home language, screening may be accomplished using a parent-report measure. Translation of parent-report measures is less problematic than translation of direct screening measures; however, translations may not account for linguistic differences or differences in developmental expectations of other languages. Also cultural practices in child rearing and parent–child interaction can have an effect on these measures. Using a community informant to check the translation for cultural validity is an important part of the adaptation of parent-report measures.

The location and format for screenings should also be considered, particularly when conducted by professionals whose sociocultural backgrounds differ from the children being screened. As suggested by E. W. Lynch and Hanson (2004), in these instances, screening activities can be embedded within the natural events and activities of the local community. Cultural guides or mediators who live in and are familiar with the community may be helpful in selecting screening formats, venues, and locations. Community holidays or celebrations may be especially good times to include screening efforts, because people are already gathering, and local leaders may be able to talk with families about the importance of screening (E. W. Lynch & Hanson, 2004). In addition, screening materials, as well as materials advertising the screening, need to be in the language of the community and in alternative forms to account for variability in literacy skills.

Feedback and Follow-Up

Once screening is completed, the family is informed of the results. If the child passed, the family can be reassured that their child's communication development is proceeding well, and they can be encouraged to ask any additional questions or express any lingering concerns. Families need to be told that (a) screening is only a general estimate of the child's performance at any one time, (b) they should

Table 2. Sample Standardized Evaluation and Assessment Measures for Infants and Toddlers.

Name of Test	Represent Population[a]	Reliability	Validity	SEM[b]	Confidence Intervals	Adaptations for Children With Specific Disabilities	Direct Test, Parent Interview, Parent Report	Sensitivity/ Specificity	Active Role for Caregivers	Other Lang.
Ages and Stages Questionnaires (Bricker & Squires, 1999)	No	Yes	Yes	No	No	No	Parent report	Yes	Yes	Spanish, French, Korean
Battelle Developmental Inventory, Second Edition (Newborg et al., 2005)	Yes	Yes	Yes	Yes	Yes	Yes	Direct test, Interview		Yes	Spanish
Bayley Scales of Infant Development, Third Edition (Bayley, 2005)	Yes	Yes	Yes	Yes	Yes	Yes	Direct test, Interview	No	Yes	No
Communication and Symbolic Behavior Scales Developmental Profile (Wetherby & Prizant, 2002)	Yes	Yes	Yes	Yes	Yes	Yes	Interview, Direct test, Parent report	Yes	Yes	No
Developmental Assessment of Young Children (Voress & Maddox, 1998)	Yes	Yes	Yes	Yes	Yes	No	Interview, Direct test	Not specifically stated	Yes	No
Expressive One-Word Picture Vocabulary Test—2000 Edition (Brownell, 2000a)	Yes	Yes	Yes	Yes	Yes	No	Direct test	No	No	Spanish
Goldman Fristoe Test of Articulation—Second Edition (Goldman & Fristoe, 2000)	Yes	Yes	Yes	Yes	Yes	No	Direct test	No	No	No
Mullen Scales of Early Learning (Mullen, 1995)	Yes	Yes	Yes	Yes	Yes	No	Direct test	Some data on predictive validity	No	No
Peabody Picture Vocabulary Test—Fourth Edition (Dunn et al., 2006)	Yes	Yes	Yes			Yes	Direct test		No	Spanish based on Peabody Picture Vocabulary Test—Revised
Preschool Language Scale, Fourth Edition (Zimmerman et al., 2002)	Yes	Yes	Yes	Yes	Yes	Yes	Direct test, Parent report	Yes	Yes	Spanish
Receptive-Expressive Emergent Language Test, Third Edition (Bzoch et al., 2003)	Yes	Yes	Yes	Yes	No	Yes	Interview	No	Yes	No
Receptive One-Word Picture Vocabulary Test–2000 Edition (Brownell, 2000b)	Yes	Yes	Yes	Yes	Yes	No	Direct test	No	No	Spanish
Reynell Developmental Language Scales III (Edwards et al., 1999)	Yes	Yes	Yes	Yes		Yes	Direct test	No	No	No
Vineland Adaptive Behavior Scales: Second Edition (Sparrow et al., 2005)	Yes	Yes	Yes	Yes	Yes	No	Interview, Parent report, Teacher report		Yes	Spanish

[a]Did the standardization population represent the national population?
[b]Was a standard error of measurement provided?

continue to monitor the child's progress over time, and (c) they should return for further screening or full evaluation if their concerns persist or additional concerns arise.

When children fail a screening, an evaluation typically is conducted to determine if they meet egilibity criteria for services under IDEA and as applied in the state in which they reside. Because eligibility criteria vary from state to state, SLPs need

Table 3. Sample of Nonstandardized Evaluation and Assessment Measures for Infants and Toddlers.

Test	Criterion Referenced	Curricular/ Intervention Materials	Pilot Tested w/ Sample	Direct Test, Interview, Parent Report	Adaptations for Children With Varying Disabilities	Info. for Results of English Language Learners	Other Languages
Assessing Prelinguistic and Early Linguistic Behaviors in Developmentally Young (Olswang et al., 1987)	Yes	No	Yes	Observation	Yes	No	No
Assessment, Evaluation, and Programming System for Infants and Children (Bricker, 2002)	Yes	Yes	Yes	Direct test, Interview, Parent report	Yes	No	No
The Carolina Curriculum for Infants & Toddlers With Special Needs, Third Edition (Johnson- Martin et al., 2004)	Yes	Yes	No	Direct test, Parent report	Yes	No	No
Hawaii Early Learning Profile (Furuno et al., 1994)	Yes	Yes	No	Direct test	Yes	No	No
Infant-Toddler Developmental Assessment (Provence et al., 1995)	Yes	No	No	Parent interview, Direct observation	No	No	Spanish parent report form
MacArthur–Bates Communicative Development Inventories (Fenson et al., 1993)	Yes	No	Yes	Parent report	No	No	Spanish, others
The Ounce Scale (Meisels et al., 2003)	Yes	Yes	Ongoing research project	Observation	No	No	Spanish
Rossetti Infant-Toddler Language Scale (Rossetti, 1990)	Yes	No	No	Direct test, Interview, Parent report	No	No	No
Sequenced Inventory of Communication Development, Revised Edition (Hedrick et al., 1995)	Yes	No	Yes	Direct test, Interview, Parent report	Yes	No	Spanish (no norms)
Transdisciplinary Play-Based Assessment (Linder, 1993)	Yes	Yes	No	Direct test, Interview, Parent report	No	No	No

to know their state's guidelines to select instruments and procedures that will determine whether a given child meets that state's eligibility standards as well as the lead agency's in the state and the state's referral mechanism.

The SLP discusses with the family and team the extent to which initial observation is a valid reflection of the child's usual behavior and whether factors such as cultural communication issues, language differences, or mental or physical health status may have influenced the results. It is important to distinguish between these factors and a child's bona fide risk for a communication disorder. Screening is used only to identify children who are at risk. When screening children from families who speak a language other than English, an interpreter, preferably someone who is not a family member, and with training, should be present to facilitate accurate communication about the results. If parents/caregivers believe that the screening was not an accurate reflection of the child's abilities, further evaluation may need to be conducted. If parents agree that the child's performance on the screening is typical, the areas of concern should be discussed. In either case, SLPs and families can work together to identify the next steps in the evaluation process, and families can be provided with the information they need to pursue further evaluation at the earliest possible date.

Preassessment and Evaluation Planning Processes

In recent years, professionals across a variety of disciplines have urged the use of preassessment planning for infants and toddlers (Barrera & Corso, 2002; Boone & Crais, 2001; Crais et al., 2006). Preassessment planning includes one or more professionals (perhaps the entire team) meeting with the child and family to gather information and to plan the upcoming assessment. It is an opportune time to begin the collaborative process and facilitate shared decision making. As suggested by Boone and Crais (2001), common goals for planning can include identifying what the family wants and/or needs from the assessment process, identifying areas and activities of strength and need for the child, and determining the roles that family members and caregivers would prefer to take in the assessment. Recent findings by Crais et al. (2006) indicate that collaborative planning prior to formal assessment is not used commonly; however, most of the families and professionals in the study favored some form of planning of this type. For additional ideas for using preassessment planning, see Barrera and Corso (2002), Boone and Crais (2001), and Crais et al. (2006).

Types and Characteristics of Evaluation and Assessment Measures

There is overlap in the measures and teams that make up evaluation and assessment practices, but typical assessment practices encompass more in-depth observations and information gathering than eligibility evaluations. In addition, a broader array of professionals may participate in the assessment process. For example, as part of an overall assessment, SLPs may gather information from early care and education teachers who often assess children in their classroom as part of their routine instructional practice. Different approaches to the communication evaluation and assessment of infants and toddlers are described below. This section also addresses evaluation and assessment needs of children from diverse cultural and linguistic backgrounds.

Traditional Evaluation and Assessment

The traditional approach to evaluation and assessment typically involves the primary use of standardized test instruments for establishing eligibility and comparing children with a normative group. Standardized measures, however, are not generally designed to provide information for intervention planning or for making modifications to intervention. In addition, because these measures are developed to provide information under a “standard” set of conditions, they do not allow examination of a child's behaviors within contexts that represent daily interactions and hence have limited applicability to the evaluation and assessment process within natural environments (Neisworth & Bagnato, 2004). The role of family members is often limited by the standardization requirements. Further, most standardized tests do not focus on how the child communicates spontaneously (verbally and nonverbally), nor are there any standardized tests available for examining all aspects of language or communication.

Because the primary goals of evaluation and assessment are to obtain an adequate and representative sample of behaviors from which to make inferences concerning the child's speech, language, and communication behaviors, a number of professionals (Boone & Crais, 2001; Neisworth & Bagnato, 2004; Paul, 2007; Wetherby & Woods, 2006) have argued against the sole use of standardized testing and advocate for observational and informal assessment measures. In particular, a blend of standardized testing and nonstandardized assessment is suggested,

including direct observation of the child with familiar communication partners and family members, interaction with the child, dynamic assessment, and caregiver-supplied information. Several recent norm-referenced measures designed for young children provide more opportunities to look at functional communication than previous standardized measures. Examples include the recently revised Bayley Scales of Infant Development, Third Edition (Bayley, 2005); the CSBS DP (Wetherby & Prizant, 2002); the CDI (Fenson et al., 2006); and the Vineland Adaptive Behavior Scales: Second Edition (Sparrow et al., 2005). The SLP must be aware of the strengths and limitations of all assessment procedures in the evaluation and assessment of infants and toddlers. Table 2 contains a sample list of representative standardized tests, with some description of their properties. Whenever possible, nonstandardized measures are encouraged both for providing an evaluation of functional communication and a broader array of skill areas examined.

Contemporary Evaluation and Assessment

More contemporary evaluation and assessment approaches recognize the value of combining standardized and nonstandardized measures and include formal and informal assessment tools in a comprehensive battery. This type of battery is more conducive to active family and team member participation.

Criterion-referenced and developmental scales. Criterion-referenced instruments (e.g., a checklist of a child's accomplishments) and developmental scales are typically not standardized and often are developed based on information drawn from standardized tests, other developmental charts and scales, and clinical experiences. Table 3 provides a list of commercially available criterion-referenced and nonstandardized instruments used to evaluate and assess infants and toddlers. In addition to examining communication skills, many of these instruments also examine social, cognitive, and motor skills. While these instruments can be useful, they provide only general developmental guidance.

Parent-completed tools and observations. There is substantial evidence that parents can be reliable informants and provide accurate descriptions of their children's abilities and basic development (Crais, Douglas, & Campbell, 2004; Dale, 1991; Squires, Potter, Bricker, & Lamorey, 1998). Because parents are able to observe larger samples of their child's behaviors in naturalistic environments, their input can enhance the validity and reliability of assessments (Fenson et al., 2006; Simeonsson, Edmondson, Smith, Carnahan, & Bucy, 1995). Moreover, when parents are asked to observe and rate their child's behaviors, the results can (a) help parents and professionals synthesize their views, and (b) help parents pinpoint their children's strengths and needs (Bloch & Seitz, 1989; Bricker & Squires, 1999; Squires et al., 1998). Recent work by Crais and colleagues (Crais et al., 2006) examining actual infant/toddler assessments revealed that although few parents were offered the choice to complete assessment tools or checklists, the majority of parents and professionals thought parents should have this choice.

Play-based assessment. In this approach, play serves as the primary context for observation and documentation of a child's behavior as she or he interacts with toys and other people for the purpose of establishing baseline function, intervention planning, and monitoring of effectiveness. Play assessment may be accomplished with the parent, a primary facilitator, or multiple facilitators who take turns

eliciting targeted behaviors from the child while the other team members observe and track responses. Most play-based models include both free and structured play opportunities. Meyers, McBride, and Peterson (1996) examined the social validity of play-based assessment and reported that parents and professionals had positive perceptions of the assessment, team meetings, feedback from professionals, and resulting reports. Further, the play-based assessments were completed in a significantly shorter time frame, and the resulting reports contained more useful information that could be directly translated into intervention than traditional assessments. Linder's play-based approach (1993) also includes parent and peer interactions, motor play, and a snack time as part of the process. Linder's assessment protocol is not standardized, but rather criterion-referenced and curriculum-based, and it has been used with a variety of children. When an adaptation of Linder's play-based assessment was compared with the Bayley Scales of Infant Development, Second Edition (Bayley, 1993), the results measures were highly correlated (Kelly-Vance, Needelman, Troia, & Ryalls, 1999). Some components of tools such as the Assessment, Evaluation, and Programming System (Bricker, 2002); Casby Scale (Casby, 2003); Carpenter Play Scale (R. L. Carpenter, 1987); McCune Play Scale (McCune, 1995); and Rossetti Infant-Toddler Language Scale (Rossetti, 1990) also can be used in a play-based format for assessing infants and toddlers. Some standardized tools that make use of play-based formats have been developed, such as the CSBS DP (Wetherby & Prizant, 2002) and the Symbolic Play Test (Lowe & Costello, 1988). These may be used in evaluation as well as in assessment activities.

Routines-based assessment. A routines-based assessment, which includes a description of a child's participation in family-identified routines and activities, begins with a family interview. The interview serves to facilitate the family's active participation in the assessment and intervention process. The interview format offers family members the opportunity to discuss their concerns and priorities for their child. Often, the interview is structured by asking family members what is going well for them and what isn't in terms of their child's participation (Campbell, Milbourne, & Wilcox, in press; McWilliam, 2000). During this process, the team learns about a child's level of engagement, independence, and participation in familiar contexts as well as communication, language, social, and play skills. Information gathered through the interview serves as the context for assessment, intervention, and development of the IFSP (Wetherby & Woods, 2006, in press).

Authentic assessment. For an evaluation/assessment to be “authentic,” it must provide information about the functional behavior of children in typical/natural settings and indicate what the child actually knows and can do (Neisworth & Bagnato, 2004). Authentic assessment attempts to gain information from all of those who interact regularly with the child (e.g., family members, babysitter, teacher, other professionals). Bagnato, Suen, Brickley, Smith-Jones, and Dettore (2002) studied more than 1,350 children and 125 early care and education providers, and provided some evidence of the feasibility, utility, and validity of the use of an authentic assessment and intervention approach. Examples of tools that can be used in authentic evaluation/assessment include the Ages and Stages Questionnaires (Bricker & Squires, 1999); Assessment, Evaluation, and Programming System (Bricker, Cripe, & Slentz, 2003); Developmental Observation Checklist (Hresko, 1994); and the Pediatric Evaluation of Disability Inventory (Haley, Coster, Ludlow, Haltiwanger, & Andrellos, 1992).

Dynamic assessment. In this approach, SLPs test the child for a particular behavior, provide cues or models to facilitate the child's demonstration of the behavior, and then test the child again. As described by Feuerstein (1979) and more recently by Peña and Gillam (2000), dynamic assessment is a means to determine what the child can do alone versus what the child can accomplish with an adult (or other child) as the facilitator. The results can indicate the child's strengths as well as barriers to the child's success. This method also may provide a measure of the child's immediate "teachability" that can be used in the decision-making process to identify useful intervention practices.

Culturally and linguistically appropriate tests and methods. Assessment for children whose first language is not English or who are learning more than one language can be complex; however, with the birth-to-3 population, these issues are mitigated by the fact that very young children have limited linguistic development in any language. Infants and toddlers seen within early intervention systems typically function in the prelinguistic or emerging stages of language development, using preverbal means of communication, or acquiring first words and word combinations. Even some norm-referenced English-based measures that address this level of development provide opportunities to examine the use of gaze, gesture, and vocal forms of communication, including the CSBS DP (Wetherby & Prizant, 2002), the PLS-4 (Zimmerman et al., 2002), and the Sequenced Inventory of Communicative Development, Revised Edition (Hedrick, Prather, & Tobin, 1995). Parent report formats can be used to assess the emergence of words and word combinations, without necessitating direct testing by a monolingual SLP. For the purpose of evaluation, norm-referenced parent report forms are available in several languages (e.g., the Language Development Survey [Rescorla & Achenbach, 2002] and the CDI [Fenson et al., 2006]) or may be translated by someone familiar with the language and administered by trained paraprofessionals (e.g., the Infant-Toddler Caretaker Checklist of the CSBS DP [Wetherby & Prizant, 2002] and the Vineland Adaptive Behavior Scales: Second Edition [Sparrow et al., 2005]). These measures may be used to contribute to eligibility determination for infants and toddlers who are learning more than one language.

Assessment of culturally and linguistically diverse young children and their families for the purpose of intervention planning and monitoring can include procedures that minimize the need to be proficient in the child's home language. Observational assessment of communication behavior, examining the frequency, range, and function of intentions, can be conducted independent of the form of language used. It is important, however, to recognize and account for cultural variables that influence nonverbal communicative interactions. Guidelines for this kind of assessment can be found in Coggins and Carpenter (1981) and Paul (2007). Early speech skills can be assessed using independent phonological analyses (Stoel-Gammon, 1988), such as collecting a phonetic inventory by simply counting the different consonant sounds produced in a sample of spontaneous interaction, without regard to the adult target, or evaluating syllable complexity by counting the number of closed syllables or syllables that contain two or more different consonants (Olswang, Stoel-Gammon, Coggins, & Carpenter, 1987; Paul, 2007). Preparation for this type of assessment with children whose home language is not English should involve a review of the sound system and phonetic inventory for the home language. Play behavior, too, can be assessed independent of language using the play scales mentioned earlier; however, care should be taken because

play behaviors may not be consistent across cultures. Thus, tools and resources are available to assist with the appropriate evaluation and assessment of infants and toddlers from culturally and linguistically diverse backgrounds.

Interpreting Evaluation/Assessment Results

Once key information has been gathered from multiple sources and in multiple ways, professionals and families must integrate results to identify the next steps for the child, family, and the professionals. Various strategies for integrating and sharing the information are available and will depend on factors such as the purpose of the evaluation/assessment (e.g., eligibility determination, reassessment for program planning, goal setting), the team model used, the assessment approach and tools used, and the preferences of the individual family and professionals. In some instances, information integration and sharing will take place immediately after the assessment; other times, they may not take place for days or weeks. Regardless of the model or approach used, there are common principles and practices to promote a collaborative exchange of information between service providers and families. As with other phases of evaluation/assessment, it is recommended that all those who can contribute to and gain from the integration and sharing of the evaluation/assessment information be present (Boone & Crais, 2001). This includes family members, others who will likely be important members of the intervention team, and those who can provide support to the child and family. An important element of the information-sharing session is to set the tone and include opportunities for all members to discuss their thoughts and feelings. The manner in which information about the child and his or her communication status is discussed with the family can determine their response to this information and set the tone for future interactions with service providers.

Service providers can help prepare families for these sessions in a number of ways. For example, families may be encouraged to think about or write down characteristics of their child, what they would like their child to accomplish in the next month or year, and their perceptions of the most effective ways for their child to achieve in these areas. When there is time between the assessment activities and the information-sharing session, families may be given a list of questions to consider before the discussion (e.g., “What were your overall impressions of the evaluation/assessment?” “What were the assessment activities that went well/did not go well?” “Did we see a representative sample of your child's behaviors, and if not, how might we?” or “What area would you like to discuss first?”; Boone & Crais, 2001). Validating assessment findings and corresponding interpretations of results can facilitate consensus building.

An important element of any information-sharing session is for family and professionals to achieve mutual understanding and agreement about the child's strengths, needs, and desired outcomes. Recognizing that professionals and families may disagree, Dunst, Trivette, and Deal (1988) suggested that a source of tensions in interactions between families and professionals may stem from failure to reach consensus on any or all of these issues. Dunst et al. suggested that the early intervention process be viewed as a series of consensus-building opportunities, and they identified three critical areas where attaining consensus is important: (a) the nature of the presenting concern, (b) the need for treatment, and (c) the course of action that should be taken.

Another strategy that may build consensus and contribute to mutual understanding is to share assessment information in an ongoing manner throughout the assessment/evaluation process (Crais, 1996). In this way, as each task, tool, or series of tasks is completed, families and professionals can discuss findings and begin generating a list of ideas for further assessment and/or later intervention planning. Ongoing feedback of evaluation/assessment results also may reduce the amount of information to be shared at the conclusion of the evaluation/assessment process, as well as help families have a more accurate understanding of the information shared with them.

Some assessment findings may be unexpected or difficult for parents to hear. At these times, it may be helpful to ask families to share their ideas about why their child is having difficulties. If families have provided this information, it may be an opportune time to return to this discussion and reaffirm that their perceptions appear to be correct. Discussion of children's performance during assessment/evaluation tasks can be linked to families' anecdotes and observations, thus helping families understand evaluation/assessment results.

Finally, the written report should reflect both the professionals' and family's views of the child and the plan for the next steps for the child and family. Some professionals recommend giving families the option of reviewing the written report before it is finalized and making suggestions for modifications they think are important (Boone & Crais, 2001). Additional suggestions for sharing evaluation and assessment information in family-sensitive ways are available in Barrera and Corso (2002), Boone and Crais (2001), and Crais (1996).

Planning, Implementing, and Monitoring Intervention

Once it is determined that a child has a communication deficit, the members of the early intervention team (e.g., family, SLP, pediatrician, early childhood special educator, audiologist, physical therapist, occupational therapist, psychologist, home trainer, child care provider) develop a plan for services and supports (i.e., the IFSP or an equivalent) that includes intervention outcomes, approaches, methods, and settings. This plan will be based on information from all team members about the whole child and the overall concerns, priorities, and resources of the family. The SLP's assessment and analysis of the child's communication, language, speech, hearing, and feeding/swallowing behavior will be integrated with the other team member's assessments and observations. Because it is known that a variety of family–child interactive styles can facilitate children's development (Snow & Ferguson, 1978), the design of both assessment and intervention tasks and procedures should reflect the particular family's preferred style and level of involvement. In settings in which the SLP may not have professionals from other disciplines “on site” (e.g., hospital, private practice, university clinics), the SLP will assist the family in creating a plan with opportunities for collaboration among those who share in caring for and/or providing services to the child and family.

The purpose of early intervention provided by SLPs is to enhance the family's ability to support their child's development of effective communication (Roth & Paul, 2007; Woods & Wetherby, 2003; Yoshinago-Itano, 2003). The importance of early intervention cannot be overstated, because children are likely to make the greatest gains when services begin during the early stages of development (Dawson & Osterling, 1997; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001;

Guralnick, 1998; T. Smith, 1999). Various service delivery models, intervention approaches, and strategies are available for early intervention and are described in the following sections of these guidelines.

Service Delivery Models

The selection of a service delivery model or models will vary and will be based on the particular needs of individual children and their families or caregivers and the outcomes and strategies determined in the IFSP. Service delivery models in early intervention vary along the dimensions of location and types, both of which influence the roles of the SLP and other team members in the provision of services.

Location of Services

Historically, the location for early intervention service delivery has been in the home, center (e.g., special classroom, preschool, or child care center), or clinic. Recent federal legislation requires that early intervention services and supports be provided to the maximum extent appropriate in natural environments, including the home and community settings in which children without disabilities participate (IDEA 2004). The basic premise of intervention in natural environments is that services are most effective when they maximize the involvement of the family and caregiver in the child's learning and development in the context of daily routines and activities (Bruder, 1998).

According to IDEA 2004, services and supports should be provided in a setting other than a natural environment only when early intervention cannot be achieved satisfactorily in a natural environment. For infants and toddlers receiving services through IDEA 2004 Part C, traditional clinical or medical model service delivery is not reimbursable because it is not delivered in consultation and collaboration with the family and does not take place in the child and family's natural environment.

Federal legislation is designed to provide flexibility and effective individualized programming for the family and infant or toddler with disabilities, and to support the IFSP team in making determinations of the most appropriate location for services and supports (Stowe & Turnbull, 2001). Stowe and Turnbull (2001) indicate that a family's home is a primary natural environment for an infant or toddler; however, the number of children in single parent homes or with two parents working outside the home continues to increase and necessitates expansion of early intervention service delivery in a variety of early care and education programs. Several factors, including the family's geographical location, child and family needs and resources, and family and other team members' preferences, will help determine where services and supports will occur (Bruder, 2001). Research on interventions conducted in child care settings has documented positive developmental gains for young children with disabilities (Bruder & Staff, 1998) and increased opportunities for social interaction and communication with peers (Strain, McGee, & Kohler, 2001). An added benefit of service delivery in child care settings is the increased opportunity for interactions among related service providers and the teachers and families present (McWilliam, 1996b). Indeed, both home and community environments have value and individualized effects for the child and family (e.g., Dunst, Bruder, et al., 2001). Family home or community child care, Early Head Start, and other community-based education options afford many opportunities for caring adults to enhance children's communication. The

natural settings for early intervention services and supports are likely to change over time as family and child needs change (Hanft & Feinberg, 1997). In addition, some children may receive services in more than one setting.

Types of Service Delivery Models

Types of service delivery models in early intervention range from the traditional, one-to-one, direct clinical model (i.e., pull-out) to more indirect collaborative approaches (see ASHA, 1993, 1996, 1999). Consultative and collaborative models are closely aligned with inclusive practices, services delivered in natural environments, and focus on functional communication during the child and family's natural daily activities and routines (Harn, Bradshaw, & Ogletree, 1999; Paul-Brown & Caperton, 2001). The emphasis of these models moves from a unitary focus on direct or "hands-on" service delivery to the child, to an integrated model that includes the child, family, caregivers, and the SLP in a collaborative role (McWilliam, 2005; Wilcox & Shannon, 1996). With consultative and collaborative models, team members work together to determine the most appropriate location or locations for services (e.g., home, child care, preschool classroom) and collectively select intervention goals and strategies. Ongoing communication is necessary among all team members to identify the child's needs and strengths, to understand family and team members' preferences for service delivery, and to monitor child progress (McWilliam, 1996a; McWilliam, Wolery, & Odom, 2001).

Although research is limited on the relative benefits of one service delivery setting or model over another, Wilcox, Kouri, and Caswell (1991) examined the relative efficacy of in-class versus pull-out intervention focused on promoting early lexical acquisition in toddlers with developmental delay and found improved generalization to spontaneous language for children served within classrooms. In a similar study, McWilliam (1996a) demonstrated that services delivered in a child care setting resulted in increased discussions and information sharing among the professionals serving children and their families in comparison with a more traditional pull-out approach.

Of central interest to SLPs working in early intervention is the effectiveness of various service delivery models, especially parent-implemented interventions in which the SLP serves a consultative role. In a meta-analysis conducted by Law, Garrett, and Nye (2004), the effect sizes of parent-implemented interventions such as the Hanen Early Language Parent Programme (Manolson, 1986) were not significantly different from the effect sizes of SLP-led approaches. Ten of the 13 studies in the Law et al. meta-analysis were evaluations of studies that included infants and toddlers. While this suggests that interventions implemented by trained parents can be effective in facilitating expressive language skills (Law et al., 2004), there is a need for further research (J. Johnston, 2005). The meta-analysis focused only on children with communication and language delays as their primary disorder, which eliminated many of the children served in early intervention including children with global developmental delay, autism, or hearing loss. Further, the study did not attempt to delineate what factors enhanced parent training practices such as the use of video feedback, routine follow-up visits, individualized or packaged intervention strategies, or length of parent training or consultation services.

Research about service delivery models in early intervention is in an emerging phase (Buysse & Wesley, 2006b), and as a result, some practices may be based more on policy and professional and family preferences than theories or research (Strain, Smith, & McWilliam, 1996). Furthermore, service delivery utilization studies (Hebbler et al., 2003; McBride & Peterson, 1997) and state-reported data (U.S. Department of Education, 2003) indicate general adherence to standardized models such as weekly home visits or half-day classroom programs without individualization for child and family characteristics. These realities suggest the need for more flexibility in program implementation as well as more research on the effectiveness of various service delivery systems.

Despite the need for more research, there is a growing professional and family consensus toward developing service delivery options that are individualized; aligned with family priorities; matched to the child's communication, speech, language, emergent literacy, feeding and swallowing, and social and emotional needs; and consistently monitored (Sandall et al., 2005). In addition, due to the rapid developmental changes in infants and toddlers, service delivery models that are flexible and dynamic will allow for change as the child's and family's concerns and priorities evolve. Further, model(s) that maintain the commitment to evidence-based, family-centered, individualized, culturally responsive, linguistically appropriate, developmentally supportive, and team-based service delivery will conform most closely to the principles outlined in this document.

Intervention Approaches and Strategies: Overview

Organization of the ever-expanding research base on effective intervention approaches and strategies in early intervention is challenging for a variety of reasons. In the research, the focus of intervention may be the parent or caregiver, the child, the dyadic interaction, the environment, or combinations of these factors. The agent of the intervention may be the SLP, another team member, a family member or peer, or varying combinations. The intervention may be in small or large groups, individual or massed, or distributed opportunities throughout the day. Much of the empirical data collected to date have been on preschoolers rather than infants and toddlers, and the quality and preponderance of the evidence are lacking for some intervention practices. However, there are intervention approaches and strategies for the SLP and team to consider that have some evidence to support their use by professionals and parents in both home and community settings for young children with a variety of disabilities (Paul, 2007; Sandall et al., 2005).

In general, early language intervention strategies can be conceptualized as those that (a) *support* language acquisition and use or (b) *enable* children to expand their linguistic repertoires through acquisition of new words, grammatical structures, and grammatical morphemes. Examples of *supportive* strategies are responding to a child's communication attempts, engaging a child by following his or her attentional lead, allowing sufficient time for a child to respond, encouraging peer interactions, choosing activities and materials of high interest to a child, and providing opportunities to communicate within the context of everyday activities and routines. *Enabling* strategies are more explicit and may include expansions of a child's utterances, peer models, cloze procedures, explicit models of linguistic behavior, descriptions, comments, definitions, and use of direct cues and prompts within the context of an ongoing activity. Supportive strategies are important to

the success of enabling strategies but by themselves have not been found to have a substantive impact on language development (J. Smith, Warren, Yoder, & Feurer, 2004).

Enabling strategies fall along a continuum between responsive and directive interactions and are designed to increase the frequency and complexity of a child's communication and language. Responsive strategies are designed to encourage the child's engagement and interaction, to provide opportunities for child-initiated and directed behavior, and for reciprocal and balanced turn taking with communication partners. With directive strategies, the adult leads the interaction by selecting and expecting specific and predictable child behaviors, and supports the child in the interaction to gain the desired response. Some strategies, individually and in combination, provide varying amounts of responsive and directed interaction to promote communication competence and may be described as more naturalistic (Goldstein, Kaczmarek, & Hepting, 1996). At present, conclusive data are not available to guide selection of the most effective approach and/or strategy for infants and toddlers with varying types of delays and disabilities (McCauley & Fey, 2006; Yoder & Stone, 2006). Further, it is clear that no single approach or strategy will be equally effective for all children or their families, and not all children in outcome studies have benefited to the same degree (B. J. Smith et al., 2002; Yoder & Stone, 2006). There is an obvious need for additional research that focuses on what works best for children with varying types of delays and disabilities.

Despite the limitations noted above, general considerations can be offered to the SLP and the team. Wolery and Sainato (1996) suggest that directive strategies are more likely to be useful when teaching new or complex behaviors that have not emerged in the child's repertoire. Responsive strategies facilitate learning with children who already initiate and respond and who exhibit emerging knowledge. For example, milieu language-teaching strategies (e.g., prompting, time delay) are particularly effective for children in the early stages of communication development when teaching basic vocabulary or facilitating initial word combinations (Warren & Yoder, 1997) and have been found particularly to be relevant for children who have an MLU below 2.0 (Yoder et al., 1995). In contrast, responsive interaction techniques are well suited for facilitating acquisition of higher level morphological and syntactic skills (e.g., Nelson, 1989) and more effective than milieu teaching for children having an MLU above 2.5 (Yoder et al., 1995). Interventions typically include a combination of strategies that will vary as children develop and as family priorities and needs change.

Responsive Interaction Approaches

Responsive approaches include following the child's lead, responding to the child's verbal and nonverbal initiations with natural consequences, providing meaningful feedback, and expanding the child's utterances with models slightly in advance of the child's current ability within typical and developmentally appropriate routines and activities (Bricker & Cripe, 1992; Hancock & Kaiser, 2006; Warren & Yoder, 1998; Wilcox & Shannon, 1996, 1998). In the past 15 years, there has been increasing support of intervention occurring within the child's and family's functional and meaningful routines and experiences dispersed throughout the day rather than in tightly planned and executed activities (Bricker, Pretti-Frontczak, & McComas, 1998; Campbell, 2004; Dunst, Bruder, et al., 2001; Dunst, Herter,

Shields, & Bennis, 2001; Fox & Hanline, 1993; Horn, Lieber, Li, Sandall, & Schwartz, 2000; Losardo & Bricker, 1994; McWilliam, 2000; Wilcox et al., 1991; Wetherby & Woods, 2006; Woods, Kashinath, & Goldstein, 2004). This shift away from traditional, clinical models for services for young children and their families is aligned with the federal mandate to provide services in natural environments and is responsive to the success of parent-implemented interventions (Kaiser & Hancock, 2003).

The use of routines and everyday activities as a context for embedded instruction involves (a) identifying the sources of learning opportunities occurring regularly in family and community life; (b) selecting, with the parents and caregivers, desired participation and desired communication by the child in the routines; (c) mapping motivating aspects and the child's interests within the routines; and (d) identifying facilitative techniques that will be used to maximize the learning opportunity. The need to map intervention onto a child's interests is well supported. Specifically, Raab and Dunst (2004) examined 25 studies including more than 1,100 toddlers and preschoolers, 580 with delays or disabilities, and found that in the largest number of cases (86%), interest-based involvement in child learning was associated with more positive and less negative child behavior. Further, parent-identified child interests were associated with the largest child benefits (Dunst et al., 2000; Raab, 2005). These results support the family's input into the selection of the activities and the reduction in the development of a priori interventions that are not based on the child's preferred activities and materials.

Responsive interaction approaches derive from observational learning theory (Bandura & Harris, 1966) and typically include models of the target communication behavior without an obligation for the child to respond. The following are some examples of these strategies:

1. ***Self-talk and parallel talk.*** In self-talk, an adult describes his or her own actions while engaging in parallel play with the child (e.g., “I'm building. I'm building with blocks. See my blocks? I'm building.”). Parallel talk provides self-talk for the child. Instead of talking about their own actions, adults talk about the child's, providing a running commentary.
2. ***Imitations.*** Adults often ask children to imitate what they say in intervention. But they can also be encouraged to imitate what the child says. Folger and Chapman (1978) showed that adults often repeat what typically developing toddlers say, and that when they do, there is a substantial probability that the child will imitate the imitation. Research suggests that children who imitate show advances in language development (M. Carpenter, Tomasello, & Striano, 2005).
3. ***Expansions.*** These provide a grammatically correct form of a child's utterance that may be fragmentary (Child: “Want cookie!” Adult: “Oh, you want the cookie?”). Saxton (2005) reviewed the literature to suggest that expansions specifically have been associated with grammatical development for a number of structures in a number of diagnostic groups.
4. ***Extensions.*** Some writers call these responses *expatiations* (Fey, 1986). They are comments that add some semantic information to a remark made by the child (Child: “Want cookie.” Adult: “Oh, **you** want **the** peanut butter

cookie?"). Cazden (1965) and Barnes, Gutfreund, Satterly, and Wells (1983) showed that adults' extensions are associated with significant increases in children's sentence length.

5. ***Buildups and breakdowns.*** Weir (1962) found that the monologues of a typically developing 2-year-old commonly contained sequences in which the child took his or her own utterance, broke it down into smaller, phrase-sized pieces, and then built it back up into a sentence. This can be done for toddlers by expanding the child's utterance to a fully grammatical form. Then it can be broken down into several phrase-sized pieces in a series of sequential utterances that overlap in content (e.g., "The doggy is in the house. The house. He's in the house. In the house. The doggy is in the house. The doggy. The doggy's in the house."). Cross (1978) found that these types of responses, too, are associated with language growth in typically developing children.
6. ***Recast sentences.*** Recasting expands the child's remark into a different type or more elaborate sentence (Child: "Want cookie." Adult: "The cookie smells good—I want one too."). Camarata, Nelson, and Camarata (1994), Nelson, Camarata, Welsh, Butkovsky, and Camarata (1996), and Proctor-Williams, Fey, and Loeb (2001) showed that recast treatment was effective in teaching grammatical forms to preschoolers with specific language impairment, but only when the recasts were presented at rates that were much greater than those available in typical conversations with young children. This finding emphasizes that one of the ways therapeutic conversation differs from ordinary talk is in its conscious attempt to greatly increase the "dose" of helpful input it provides.

Strategies described as responsive interactions or interventions (RI) may be "bundled" or used as a package of supports to enhance communication opportunities, as described by Kaiser, Hancock, and Trent (in press), Mahoney and Perales (2005), and Wilcox (Wilcox, 1992; Wilcox & Shannon, 1998). Kaiser and Hester (1994) examined the effects of RI implemented by 12 parents trained to use the strategies with their preschoolers with language delays in a multiple-baseline design across groups of parent–child dyads. All children showed some positive effects, although there was variability in the specific outcomes. Children with low rates of talking typically showed increases in rate of communication and target use. Children with higher levels of language at baseline typically demonstrated moderate increases in their spontaneous use of targets, MLU, and standardized test scores. Nine of the 12 children generalized and maintained their improvements in language in observations at home. Children whose parents demonstrated mastery of the RI strategies appeared to do better in training and home sessions than those whose parents did not.

In a quasi-experimental research study, Mahoney and Perales (2005) compared the effects of a relationship-focused intervention with a group of 20 children with autism spectrum disorders and a control group of 30 children with other developmental disabilities. Relationship-focused intervention consisted of teaching parents a set of responsive interaction strategies designed to enhance the following pivotal developmental behaviors in their children: attention, persistence, interest, initiation, cooperation, joint attention, and affect, in 1-hour weekly sessions for a year. Both groups made significant increases in cognitive, communication, and socio-emotional functioning based on a play-based assessment and parent-report measures. Children's improvements were related to

increases in both parents' responsiveness and the children's gains in pivotal behaviors. While the effects of maturation or other treatments cannot be ruled out with this research design, the findings of this study are intriguing in light of the modest amount of time that professionals spent with parents.

In another series of quasi-experimental studies, Wilcox (1992) and Wilcox and Shannon (1998) trained groups of mothers to be more responsive to their children's early preintentional communications in order to enhance the children's intentional nonverbal communication. In the investigations, comparisons were made with matched samples (experimental and control) of children who had a medical diagnosis of developmental delay and had not yet demonstrated productive, intentional nonverbal communication. Experimental mothers participated in a 6-month training program that included four modules: (a) identification of the contexts of children's behavior that appeared to be intentional communication, (b) increasing sensitivity and recognition of children's communication behaviors, (c) timely (within 5 seconds) and contingent (related to potential child meaning) responding to children's nonverbal communication behaviors, and (d) increasing consistency of responses to children's communication behavior as well as use of prompts and cues for more complex behavior within the ongoing stream of dyadic interaction. Results revealed significant gains in intentional nonverbal and symbolic communication for children assigned to the experimental group. Certainly, these results are moderated and limited by the fact that the design was quasi-experimental and other variables could have been responsible for change. However, as with the Mahoney and Perales (2005) investigation, the potential for such an efficient intervention bears further examination.

Directive Interaction Approaches

This set of approaches includes a compendium of teaching strategies that can be adapted appropriately for infants, toddlers, and their families. Early intervention practices recognize the important contribution of behavioral principles and the systematic use of logically occurring antecedents and consequences within the teaching paradigm. Several techniques of adult-directed/didactic teaching strategies are highlighted below.

Prompting/prompt-cue strategies are forms of assistance or help provided to the child to gain a desired response such as a vocalization and gaze to request, or a verbal response to someone's question. Prompts can take place in natural environments, be natural and nonstigmatizing, and result in the delivery of natural consequences. Prompts may be delivered in individual instruction or in small groups, may be planned and embedded in typical routines or play, or may be delivered specific to a situation, such as a prompt for a goodnight hug. Cues may include use of complete verbal statements, phrases, vocal or facial hints, gestures, models of the target behavior, pictures, signs, and/or partial or full physical prompts based on the child's individual needs and the scope of instruction. Cues are used to support the child to respond if a response is not spontaneous. Prompt and cue fading procedures must be implemented systematically to promote independence of the child's responses, to increase initiations, and to foster generalization.

McWilliam et al. (2001) outlined other evidence-based intervention approaches in which adults or sometimes children (e.g., siblings, friends, peers) interact with infants and toddlers with disabilities in specific ways, including prompting and fading techniques, reinforcement-based techniques, and peer-mediated strategies. The authors indicate that prompting and fading procedures could be useful in teaching cognitive, motor, language, social, and adaptive skills, and include techniques such as increasing assistance and graduated guidance. They suggest that these techniques could increase complexity and frequency of child behavior and promote more social engagement and play, and include procedures such as differential reinforcement, response shaping, and high-probability activities. *Peer-mediated strategies* involve teaching children without disabilities techniques that can be implemented to facilitate the occurrence of positive social-communicative interactions with children who have disabilities and children learning more than one language (Kohler & Strain, 1999; Ostrosky, Kaiser, & Odom, 1993). For example, direct teaching of children with autism in how to interact with peers and peer-incidental teaching for typically developing peers in how to interact with children with autism have been shown to be effective peer-mediated strategies (see Strain et al., 2001, for review).

Blended Approaches

These approaches, subsumed under the rubric of naturalistic, contemporary behavioral, blended, combination, or hybrid intervention approaches, have evolved from the observation that didactic strategies, while effective in developing new behaviors in structured settings, frequently fail to generalize to more functional and interactive environments. The emphasis on teaching in natural environments using strategies derived from basic behavioral teaching procedures has been broadened to include strategies for modeling language and responding to children's communication that derive from a social interactionist perspective rooted in studies of mother–child interaction (Moerk, 1992). The blending of behavioral and social interactionist techniques for teaching language forms with a strong emphasis on arranging the environment to promote communication has resulted in naturalistic strategies that use multiple methods to promote language development in natural environments with caregivers, teachers, and peers. The core instructional strategies are often identical to those used in direct teaching (e.g., prompting, reinforcement, time delay, shaping, fading) but also may include strategies that come from a social interactionist perspective (e.g., modeling without prompting imitation, expansions, recasts, responsive communication). Naturalistic language interventions may be used as the primary intervention, as an adjunct to direct teaching, or as a generalization promotion strategy.

There is now a large body of empirical support for using naturalistic teaching methods (for a review, see Hepting & Goldstein, 1996; Warren & Kaiser, 1986). The following specific intervention strategies have been found to promote initiation and generalization of early language targets: (a) arranging the environment to provide opportunities for communicating with preferred materials, (b) encouraging child initiations and following the child's attentional focus and interest, (c) interspersing preferred and nonpreferred activities, (d) embedding instruction in the natural environment, (e) offering choices and encouraging choice making, (f) using natural reinforcers to consequate what the child is trying to communicate, (g) using time delay or waiting, (h) using contingent imitation, and (i) structuring predictability and turn taking into the activity. Examples of

approaches that incorporate some or many of these naturalistic techniques include natural language paradigm (R. L. Koegel, O'Dell, & Koegel, 1987), incidental teaching (Hart & Risley, 1975; McGee, Krantz, & McClannahan, 1985; McGee, Morrier, & Daly, 1999), time delay and milieu intervention (Charlop, Schreibman, & Thibodeau, 1985; Charlop & Trasowech, 1991; Hwang & Hughes, 2000; Kaiser, 1993; Kaiser, Yoder, & Keetz, 1992), pivotal response training (L. K. Koegel, 1995; R. L. Koegel, Camarata, Koegel, Ben-Tall, & Smith, 1998; Whalen & Schreibman, 2003), and the mand-model approach (Rogers-Warren & Warren, 1980).

One key to the success of naturalistic intervention strategies is manipulation of the learning environment. This strategy includes manipulation of both physical and social contexts to promote communication, play, engagement, and independence. McWilliam et al. (2001) listed several components of environmental arrangement, including amount and arrangement of space, the sequence and duration of activities, the amount and type of materials available, rules for gaining access to materials, and the availability of peer models. Numerous specific strategies to support language use include delaying at critical moments during natural routines, or interrupting chains of behavior by removing an object needed for completion of a routine or activity (Kaiser, 1993; Rowland & Schweigert, 1993). By making the initiation of communication a priority, natural opportunities for communicating can be capitalized upon in all settings. Examples of naturalistic approaches include the following:

Focused stimulation. This includes an adult's careful arrangement of the interactive context so that a child is encouraged to produce utterances with obligatory contexts for the forms being targeted. The adult helps the child succeed in this by providing a very high density of models of the target forms in a meaningful communicative context, usually play. A child's response is not obligated, but encouraged. Weismer and Robertson (2006) provided an extensive review of the evidence supporting the use of focused stimulation to teach language form, content, and use for both monolingual and bilingual children (e.g., Cleave & Fey, 1997; Leonard, Camarata, Rowan, & Chapman, 1982; Robertson & Weismer, 1999; Skarakis-Doyle & Murphy, 1995; Wilcox et al., 1991), when implemented by both SLPs and parents (e.g., Girolametto & Weitzman, 2006; Lederer, 2001; Robertson & Weismer, 1999) and for improving both functional comprehension and use of the target structures.

Vertical structuring. This is a particular form of expansion used like focused stimulation to highlight target structures. The adult responds to a child's incomplete utterance with a contingent question (e.g., Child: “Put truck.” Adult: “Where do you want the truck?”). The child responds to the question with another fragmentary remark (“in box”). The adult then takes the two pieces produced by the child and expands them into a more complete utterance (“Put the truck in the box”). The child is not required to imitate this expansion. The fact that children often imitate adult expansions of their own utterances in typical development is the basis for the hope that children with language impairments will take these expanded models of their own intended utterances as cues for spontaneous imitation. As with focused stimulation techniques, a response is not obligated, and if a child does not imitate, the adult simply goes on to elicit another set of related utterances from the child and offers the vertically structured expansion again. Vertical structuring has been

used primarily to target early developing language forms in toddlers and has been shown to be effective when used for this purpose (Schwartz, Chapman, Terrell, Prelock, & Rowan, 1985).

Milieu teaching. Milieu teaching is a conversation-based model of early language intervention that uses child interest and initiations as opportunities to model and prompt language use in everyday contexts (Hart & Rogers-Warren, 1978). Experimental applications of milieu teaching typically have included four sequential steps: (a) arranging the environment to increase the likelihood that the child will initiate to the adult; (b) selecting specific targets appropriate to the child's skill level; (c) responding to the child's initiations with prompts for elaboration consistent with the child's targeted skills; and (d) functionally reinforcing the child's communicative attempts by providing access to requested objects, continued adult interaction, and feedback in the form of expansions and confirmations for the child's utterances. Milieu teaching has been shown to increase children's frequency of talking both to the teacher and to each other (Hart & Risley, 1980; Warren, McQuarter, & Rogers-Warren, 1984) and to be helpful for addressing a broad range of expressive communication targets (Camarata & Nelson, 2006). These approaches are particularly useful in small-group or classroom settings in which adults want to retain some of the positive aspects of adult-directed intervention but also want to expand their effects to a broader communicative context. They allow the adult to use imitation, prompting, and cuing during the course of naturalistic activities, thus showing the child how the skills being targeted work to accomplish real communicative ends.

More than 50 studies incorporating variants of milieu teaching have been conducted, and multiple adaptations have resulted. Noteworthy extensions include the addition of the elicitive model, mand-model procedure, time delay, and incidental teaching. The majority of the literature on the generalized effects of milieu teaching includes children between 11 and 60 months of age. Approximately 60 children with language delays or disabilities have been included in 13 studies on the effects of milieu teaching. The participants in these studies have represented a wide range of disabilities: severe mental retardation, Down syndrome, cerebral palsy, Williams's syndrome, autism, pervasive developmental disorders, childhood apraxia of speech, specific language delay, general language/speech delay or disorder, and significant physical disabilities. Fourteen studies conducted by five different groups of investigators have contributed to this literature. In these studies, the child participants demonstrated language improvements following intervention, including an increase in their total turns and spontaneous turns taken during interactions and their use of targets, both prompted and unprompted, and demonstrated increases in complexity and MLU as well as diversity of vocabulary. Generalized improvements have been reported for more than 50% of all participants on measures including total utterances, spontaneous utterances, target use, spontaneous target use, MLU, and diversity. Generalization of targeted language skills has been reported consistently across studies. Findings suggest that participants have been able to generalize their training to use early syntactic relationships, two- to four-word utterances, conjunctions, single-word requests, common nouns, common verbs, functional sounds, and signs. Both spontaneous and total target use have increased for most participants across generalization contexts.

Three of the variations with applicability to the infant-toddler population are prelinguistic milieu teaching, responsive prelinguistic milieu training, and enhanced milieu teaching. Each is described below:

Prelinguistic milieu teaching (PMT) . This is an intervention for children with language delays who have a very limited or nonexistent lexical inventory and may be having significant difficulties in their production of nonlinguistic communicative acts. Unlike other less direct intervention methods (e.g., the Hanen Early Language Parent Programme [Girolametto, 1988; Tannock, Girolametto, & Siegel, 1992]), in PMT, steps are taken directly to teach specific gestures, vocalizations, and coordinated eye gaze behavior. PMT procedures are embedded within the ongoing social interactions that take place in the child's natural environment. There is a significant literature documenting the effects of the PMT approach on the prelinguistic (Yoder & Warren, 1998, 1999, 2001) and, ultimately, linguistic abilities (Yoder & Warren, 2001, 2002) of young children with developmental disabilities. In Yoder and Warren's (1998) study, children receiving individual PMT displayed greater development of intentional communication than did children who received a group intervention in which SLPs were highly responsive to child acts but did not imitate them, as is commonly done in PMT and many other approaches. However, this effect was observed only for children whose mothers responded at high rates to their children's intentional acts. This interaction between PMT and maternal responsivity was confirmed for spoken language follow-up variables (Yoder & Warren, 2001). Children who received PMT made greater gains in lexical diversity and on a standardized language test 12 months after the completion of PMT than did children who participated in an intervention in which adults were responsive but did not specifically target prelinguistic gestures and vocalizations. Once again, however, this effect was only observed for children whose parents were highly responsive to their communicative bids.

Responsive prelinguistic milieu training (RPMT) . The responsivity education component of RPMT is a parent-oriented intervention in which the parent is taught to comply with and verbally map the child's verbal as well as nonverbal acts. In RPMT, PMT is combined with a parental training component designed to increase parental responsiveness as described above. In an initial efficacy test that included random assignment to treatment versus no treatment groups, Yoder and Warren (2002) found that RPMT was effective in changing parental behavior. However, it was only effective in promoting children's communication growth with (a) those who began treatment with low frequencies of comments and canonical vocalizations, or (b) those who did not have Down syndrome. In a more recent study, which also included random assignment of parent–child dyads to treatment and no treatment groups, a medium effect size of RPMT was found for increasing overall use of intentional communication acts (Fey et al., 2006). No differences were noted relative to the presence or absence of Down syndrome.

Enhanced milieu teaching. Recent variations of milieu teaching, such as enhanced milieu teaching (Kaiser, 1993), have added responsiveness and modeling components consistent with a social interactionist perspective on language support. The components of enhanced milieu teaching include environmental arrangements, responsive interaction strategies, and the traditional milieu strategies of model, mand-model, time delay, and incidental teaching. The specific responsive interaction strategies common to the discussion on child-directed

methods include following the child's lead, balancing turns, maintaining child's topic, modeling linguistically and topically related language, matching the child's complexity level, expanding and repeating the child's utterances, and responding communicatively to the child's verbal and nonverbal communication. These strategies are used to promote communication and interaction in young children with developmental delays and disabilities, and are combined in a naturalistic, play-based intervention approach. There are two primary features of responsive interaction: nonverbal mirroring and verbal responding (Kaiser & Delaney, 2001). These two features derive from observations of typical parent–child interaction and appear to be foundational for promoting reciprocal social interactions between children and adults. *Mirroring*, defined as the contingent imitation of nonverbal behavior, requires the more capable interaction partner to attend to the nonverbal behaviors of the child with a disability. Mirroring supports turn taking and may facilitate the interaction partner in making activity-relevant comments and contingent responses during interactions with the child with a disability. Through *verbal responding*, the interaction partner is contingently responsive to the child, models language responses appropriate to the child's interest and the context, and offers the child opportunities to initiate and respond as part of verbal turn taking. In addition, responsive interaction approaches may include modeling language at the child's target level as part of the verbal responding. Enhanced milieu teaching research by Kaiser, Hancock, and Neitfield (2000) demonstrated the effects of training 6 parents of children with autism spectrum disorders to use the naturalistic language intervention strategies during training sessions and maintain the use at follow-up sessions 6 months later. Child effects generalized and maintained for 4 of the 6 children. Hancock and Kaiser (2002) demonstrated the effects of enhanced milieu teaching delivered by interventionists to 4 children with autism. All 4 children increased specific language targets and maintained these increases at 6-month follow-up observations. Collectively, these findings suggest that the components of enhanced milieu teaching as a package were effective for these children with autism.

Naturalistic interventions were shown to be beneficial within classrooms for toddlers in the Boulware, Schwartz, Sandall, and McBride (2006) Project DATA (Developmentally Appropriate Treatment for Autism) model to bridge the features of developmental and behavioral programs for children with autism spectrum disorders younger than 3 years. The primary components of Project DATA included a high-quality, inclusive, early childhood program, extended instructional time, and family support totaling 16 hours per week. The focus was on embedding social communication learning opportunities using naturalistic teaching strategies. The authors reported pretest and posttest results for 8 children ranging from 18 to 29 months at program entry with an average of 13.5 months in the program. Six of the 8 children demonstrated increases in developmental level, and 5 of 7 children given the CSBS DP (Wetherby & Prizant, 2002) showed substantial improvements. Four of 7 families contacted the following year indicated that their child was placed full-time in a general education classroom. While the study is weak in terms of the research design and small sample size, it demonstrates the feasibility of implementing an inclusive educational program for toddlers to address the need for intensity of service beyond parent-implemented interventions.

In summary, the effects of naturalistic teaching have been replicated across participants, in studies conducted by different research groups, in single-subject and group designs, and using both adult and peer agents to implement the intervention. Given the magnitude of gains reported in communication skills, naturalistic teaching has some evidence for its effectiveness. The amount of time that children spent in intervention across studies using variations of naturalistic teaching was relatively short, typically about 15 minutes, two times per week for an average of about 12–16 weeks. Naturalistic teaching strategies have been used by a range of intervention agents (SLPs, graduate students, trained staff, teachers, parents, and peers) with dependable effects on children's targeted communication, although no direct comparison across intervention agents has been made at this point. Teaching parents, teachers, siblings, and peers to implement naturalistic intervention strategies may be an efficient strategy for promoting learning and/or use of new communication skills in everyday social contexts.

Script therapy. Olswang and Bain (1991) discussed script therapy as a way to reduce the cognitive load of language training by embedding it in the context of a familiar routine. Routines appropriate for the birth-to-3 period include, for example, mealtime, bath time, bedtime, visiting the doctor, and grocery shopping. In the intervention activity, the known script is disrupted in some way, challenging the child to communicate to call attention to or repair the disruption. Disruptions can be accomplished by violating the routine. For example, the adult can begin putting a doll to bed with her shoes on. The adult also can violate the typical uses of objects in routines. For example, the adult can try to wear the child's shoes on her head or hide objects needed to complete routines.

Shared book reading and literature-based scripts. Verbal scripts derived from favorite picture books also can be used in this kind of activity. If the adult has read the child a book several times so that she or he knows it by heart, the adult can misread various portions. If a finger play such as “Where is Thumbkin?” is part of a group's routine, the adult can purposely hold up an incorrect finger for one part of the rhyme. Cloze techniques can also be used in this context (“Five little monkeys jumping on the ___”). Violations of verbal scripts also can be encouraged as a way to provide a scaffold from a known form to a slightly different or more complex variant. For example, a particular book, song, finger play, or poem can be included as part of a daily routine. The child can be encouraged to “play with” this script once it has been overlearned. For example, when reading the book *Hop on Pop*, the adult might say, “Stop! You must not flop on Pop!” and encourage the child to make similar changes.

Cole, Maddox, and Lim (2006) argued that book-sharing contexts are particularly effective because the book provides the adult with greater opportunities for asking questions, making comments, and taking turns than do unsupported conversational settings. But they emphasize that simply reading to children is not enough; the reading must be accompanied by specific interactive techniques if it is to be effective as a language therapeutic tool. They review studies (e.g., Crain-Thoreson & Dale, 1999; Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996; Hargrave & Senechal, 2000) demonstrating that children with language disorders associated with a variety of disabilities, as well as children who are dual language learners (Lim & Cole, 2002), benefit from interacting with adults who use specific picture book interaction methods. They also cite studies documenting that parents,

teachers, and librarians can be taught to use and disseminate these techniques (Crain-Thoreson & Dale, 1999; Dale et al., 1996; Huebner, 2000). The critical pieces of this method include the following: commenting, asking questions, responding by adding a little more, and giving time to respond.

Shared book reading has been shown to have strong predictive associations with later language and literacy skills (Bus et al., 1995; Dickinson & McCabe, 2001; Snow, Burns, & Griffin, 1998). Further, there is evidence that children who demonstrate early interest and engagement in storybook reading are more likely to demonstrate greater achievements in language and literacy development throughout the early school years compared with their low-interest peers (Frijters et al., 2000; Guthrie & Knowles, 2001; Olofsson & Niedersoe, 1999). The work of Justice and Kaderavek (2002) has indicated that a large proportion of children with disabilities do not enjoy storybook interactions. Thus, helping toddlers find ways to enjoy shared book reading, through more active involvement using movement, chants, and finger play, is recommended practice for both parents of children who are typically developing as well as those experiencing language difficulties (Snow, Scarborough, & Burns, 1999).

Intervention Using Assistive Technology

AAC, one area of AT, is a multimodal intervention strategy, allowing an individual to use every mode possible to communicate, including early gestures and behaviors such as looking, squirming, and postural shifts; vocalizations; existing speech; gestures; sign language; picture boards; and/or an SGD (ASHA, 2002a; Cress & Marvin, 2003). Incorporating AAC intervention strategies for infants and toddlers requires integrating knowledge of language and communication development into assessment and intervention programming.

Effective implementation of AAC interventions for young children begins with a core set of values that includes the belief that all children can and do communicate, that children can learn language and communication skills in natural environments through services and supports provided through a collaborative teaming model, and that language and communication development involves both comprehension and production (Romski, Sevcik, Cheslock, & Barton, 2006). The original rationale for using AAC with young children was simply to provide them with an alternative output mode so that they could express intentions, for example, a child with a physical disability such as cerebral palsy (Fristoe & Lloyd, 1979). This rationale has often led to the thought that AAC is a separate area of practice with the only goal of matching communication mode with the communicator. Current perspectives suggest that AT and AAC can serve a much broader role in promoting communication development in infants and toddlers by enhancing input as well as providing an output mode, augmenting existing speech and vocalizations, replacing socially unacceptable behaviors with a more conventional means of communication (Beukelman & Mirenda, 2005; Mirenda, 1997), serving as a language-teaching tool (Romski & Sevcik, 2005), and facilitating a young child's ability to more fully participate in daily activities and routines.

One of the most common reasons given by interventionists and parents for not using AAC is the fear that it may hinder speech development. A modest number of empirical studies have actually reported improvement in speech skills after AAC intervention (see Beukelman & Mirenda, 2005; Cress & Marvin, 2003; Romski &

Sevcik, 1996, for reviews). Furthermore, there are no studies showing that AAC hinders speech development. While vocal skills are not necessary for learning to communicate through augmented means, some studies have suggested that the ability to produce vocalizations at the onset of AAC intervention may contribute to a child's subsequent gains with speech in the context of the AAC system (Romski, Sevcik, Robinson, & Wilkinson, 1990; Yoder & Layton, 1988). However, AAC is a multimodal communication intervention strategy, the aim of which is to enhance both receptive and expressive communication skills. As such, it incorporates a young child's full set of communication behaviors, including any existing vocalizations, gestures, manual signs, and aided communication (ASHA, 2002a). Monitoring the emergence of intelligible speech, especially in a young child, is an integral part of the AAC intervention process.

The research base on effective intervention approaches in AAC has seen substantial growth for preschool and school-age children and adults with beginning communication skills, especially related to no-tech or low-tech AAC modes, such as sign language or picture boards. Evidence for effective AAC intervention practices for infants and toddlers with disabilities is only beginning to emerge. Romski, Sevcik, Adamson, et al. (1999) conducted a pilot study of a 34-month-old boy with trisomy 13, cerebral palsy, and significant developmental delay using an intervention approach that incorporated an SGD, naturalistic language strategies that provided opportunities to use the SGD (e.g., modeling use of both speech and the SGD), environmental arrangement, and parent training. There was, however, no requirement that the child use the SGD to communicate during natural routines. The intervention increased his symbol and speech comprehension skills, as well as his symbol usage, for the targeted vocabulary across a 12-week period. This strategy also permitted the parent to be successful in implementing the intervention strategies regardless of the child's response. Similar results were seen when these researchers used the same intervention approach to examine the communication development of 10 toddlers with established disabilities (Romski, Sevcik, & Adamson, 1999). Sigafoos, Didden, and O'Reilly (2003) conducted a study in which 1 of the 3 participants was within the birth-to-3-year age range. They used a digitized SGD, response-prompting and prompt-fading strategies, and contingent reinforcement to successfully teach functional requesting of preferred items.

The body of empirical evidence about effective early intervention practices with young children and their families is larger when considering AT as a whole. Upon review, Campbell, Milbourne, Dugan, and Wilcox (2006) identified 118 articles published over the past 25 years that focused on the use of AT in early intervention, but only 23 included any data, and of these only 1 article met criteria for strong evidence; all others included data best viewed as emerging evidence or interval evidence. The 23 articles that reported strategies for teaching young children how to use AT included the categories of switch interface (12), computer use (6), power mobility (4), and AAC (1). The primary teaching strategy common to AT devices in all studies reviewed was opportunity to access and use the device either independently or with adult or peer facilitation and prompts. Collectively, the young children across the studies had a variety of disabilities including speech and language delay. Most young children successfully learned to use the targeted device through practice and support. The lone AAC study with strong evidence (Schepis, Reid, Behrmann, & Sutton, 1998) included a single-subject, multiple-baseline design to teach 4 children with autism to use an SGD using naturalistic

strategies, which consisted of using child-initiated communication and child-preferred stimuli, expectant waiting, and verbal and gestural prompts all within natural routines. Results demonstrated that all 4 children increased their communicative interactions. Similar to the AAC specific studies above, the Campbell et al. (2006) review of effective practices in AT also included the use of naturalistic intervention strategies.

Monitoring Intervention

Because young children often change very rapidly, and families respond differently to their children at various periods in development, systematic plans for periodic assessment of progress are needed. Beyond the federally required IFSP review every 6 months, SLPs need to monitor intervention results and progress toward outcomes on an ongoing basis, revising or establishing new outcomes as appropriate to meet the changing needs of the child and family. This includes continuous monitoring of priorities and needs, strategies and approaches, and models and locations of service delivery.

As noted by Wolery (2004), the three broad purposes of monitoring are to (a) validate the conclusions from the initial evaluation/assessment, (b) develop a record of progress over time, and (c) determine whether and how to modify or revise intervention plans. Thus, the evaluation/assessment and intervention processes can be viewed as a continuous cycle of service delivery. Monitoring includes attention to both the child's IFSP as well as broader aspects of the child's development and behaviors, such as participation in routines, play, social interactions, and problem behaviors to determine appropriate goals in these areas. For children in early care and education programs, attending to their levels of engagement in activities can help determine whether changes are needed in their classroom environment (Raspa, McWilliam, & Ridley, 2001; Wolery, 2004).

Various progress-monitoring options are available, including narrative descriptions, direct observation, and parent and other caregiver report. Types of narrative descriptions include traditional progress reports (i.e., tracking goals, activities, and progress) and event recording (i.e., keeping a running record of what happens in a set period of time). The purpose of progress monitoring is to gather information to answer specific questions (e.g., How is the child participating? What facilitators or barriers are present? How do others interact with the child?). Direct observations include identifying a particular set of behaviors to document, choosing a data collection system, selecting when and how long the observation will take place, and making interpretations and decisions about the child's progress. Parent and other caregiver report can take any form that fits the needs of the child and the adults' preferences.

A further function of monitoring intervention is to ensure its fidelity, consistency, frequency, and intensity (Sandall, McLean, & Smith, 2000) to determine the extent to which intervention is implemented as it was originally planned. As children's outcomes may be associated with intervention integrity, this type of monitoring is critical. Excellent guidelines for monitoring children's progress and intervention integrity are provided in Wolery (2004).

Consultation and Collaboration With the Family and Other Team Members

The principle of family-centered practice and the requirements of IDEA 2004 Part C guide practitioners to work in collaborative partnerships with families and caregivers, and to share essential information and support (Buysse & Wesley, 2006a; Rushmer, 1992). In delivering early intervention services and supports, SLPs assume important collaboration and consultant functions with team members, including the family and other caregivers, and other agencies and professionals.

As part of the early intervention team, the SLP is uniquely qualified to help a family enhance their child's communication development through consultation and education. Consultation may include the provision of information regarding a variety of topics, including typical cognitive, social, and communication development; the developmental course and characteristics of an individual disability or etiology; and various intervention approaches and strategies. Because young children learn through familiar, natural activities, it is important for the SLP to provide information that promotes the parents' and other caregivers' abilities to implement communication-enhancing strategies during those everyday routines, creating increased learning opportunities and participation for the child. Dunst (1999) and Dinnebeil et al. (1996) advocate for facilitation that is an interactive and collaborative process with the parents and caregivers.

Several studies demonstrate the promise of parent/caregiver-implemented interventions for children with a variety of developmental disabilities (e.g., Dunlap & Fox, 1999; Girolametto, 1988; Hemmeter & Kaiser, 1994; Kaiser et al., 2000; R. L. Koegel, Bimbela, & Schreibman, 1996; Law et al., 2004; T. Smith, Buch, & Gamby, 2000; Wilcox, 1992; Woods, Kashinath, & Goldstein, 2004). Emerging empirical evidence suggests that parents can learn specific intervention techniques, such as modeling, shaping, prompting, reinforcing, and fading, to teach specific language forms and functions to their children (Charlop & Walsh, 1986), as well as a group of strategies, such as incidental teaching or pivotal response training, that promote communication (Kaiser et al., 2000; R. L. Koegel et al., 1996; Mahoney & Perales, 2005; Yoder & Warren, 2002). As a result of parent- or other caregiver-implemented interventions, positive changes in child outcomes have been documented, including increased frequency of verbalizations and spontaneous speech (Laski, Charlop, & Schreibman, 1988), increased use of target utterances (Kaiser et al., 2000), increased percentage of engagement and responsivity in target tasks, and decreased amount of disruptive behaviors (R. L. Koegel et al., 1996). The SLP also has the responsibility to educate family members about the importance of early communication development and intervention and the family's role in their child's communication development.

Just as each child has a unique learning style, adult learning styles, too, are varied. The SLP, then, has the responsibility to convey information in a manner that is consistent with individual family members' preferred ways of learning. Supports and resources provided by the SLP to the family can combine information, competency-enhancing experiences, and participatory opportunities that strengthen family functioning and promote parenting knowledge and skills using a variety of adult learning strategies appropriate to each family's cultural, linguistic, and educational background and learning style. In addition, research on parent- and other caregiver-implemented interventions supports the need for variability in information sharing as these interventions have relied upon a variety of training

methods for the caregivers. One caregiver may learn by watching a videotaped implementation of a specific intervention strategy, while another may derive greater benefit from written or verbal instruction. Coaching, video feedback, modeling, parent workshops, and didactic training sessions are among the methods with reported success.

Recommendations from the National Research Council's *How People Learn* (National Research Council, 2000), based on principles set forth by Knowles (Knowles, 1978; Knowles, Holton, & Swanson, 1998), elucidate the research base for adult learning and provide guidelines for enhancing the learning of families and caregivers. These include (a) acknowledgment of learners' preexisting knowledge, values, beliefs, and experiences; (b) provision of in-depth and multiple exemplars of targeted practices; and (c) integration of learning opportunities through encouragement of ongoing reflection of practices.

A variety of communication strategies can be used by the SLP in working with adult learners. These include:

1. Asking a range of questions that support the family and caregiver's own problem solving, including questions that raise alternatives, encourage evaluation, lead to clarification of key issues, support a broader exploration, identify additional information needed before recommendations can be made, and lead to future planning. Using these questions, the SLP can help parents pinpoint aspects of their child's behavior that they may not have recognized before.
2. Hypothesizing or “wondering” (e.g., “I wonder what would happen if you tried giving him a choice between a food he really loves and one he doesn't like at all”) as an alternative to direct instruction. The SLP offers a suggestion and asks for the caregivers' opinions. This strategy acknowledges the family and caregiver's expertise regarding their child.
3. Commenting or making an observation without an interpretation or suggestion (e.g., “I've noticed that when you let Allie pick her own book, she seems to want to look at every single page” or “I saw that you waited for Jimmy to ask you for more juice before giving it to him, rather than just automatically filling his cup. Did you see how he pointed and used his voice?”).

An SLP's approach with each family and caregiver may be individualized based on factors such as learning preferences, literacy level, and access to technology. SLPs may recommend parent-to-parent support networks and early intervention resource centers, which also may assist with family and caregiver decision-making roles. The IFSP process provides a useful context for gathering information regarding a family's priorities, resources, and concerns, and helps to establish the teaching and learning relationship with the family and caregivers as adult learners.

In some cases, an indirect or consultant role is warranted. In this role, the SLP works with parents and other professionals to include language stimulation within other activities being addressed in the child's program. The consulting SLP can provide information and support to the parent and/or professional regarding the rationale and methods for providing indirect language stimulation, during a range of activities and routines. The SLP will continue to consult directly with the family and professional to monitor progress, and participate in development or revision

of intervention plans. The indirect consultant role, while flexible to meet the child and family needs, is ongoing to ensure progress and appropriate implementation of the chosen strategies.

An SLP also may be called upon to evaluate the effect of some aspect of early intervention or to consult for the purpose of modifying a particular program (e.g., educational or motor) so that a child's communication, language, speech, or feeding/swallowing development may be improved. Collaboration with team members to enhance the child and family's early intervention program should aim to promote optimal communication development as integral to the child's overall development and well-being.

SLPs may be asked to provide consultation and education to families, professionals, and agency representatives on areas of communication development that may not be immediately recognized as part of the central functions of the communication specialist. For example, an SLP may be asked to provide consultation regarding the communication function of challenging behavior. As such, SLPs have the opportunity to participate in developing positive behavior supports and promoting children's use of communication to replace challenging nonverbal behaviors.

Finally, SLPs consult for the purpose of increasing public awareness regarding speech, language, communication, feeding/swallowing concerns, and various strategies for prevention and general development. The unique knowledge and skills of the SLP are fundamental to the development of a high-quality program for young children. SLPs can seek opportunities to consult with early care and education programs to promote the infusion of early literacy and language skills necessary for later academic and social development within the curriculum.

Service Coordination

Service coordination is mandated under IDEA 2004 Part C and is defined as an active, ongoing process that assists and enables families to access services and ensures their rights and procedural safeguards. It is provided at no cost to families. The service coordinator is responsible for ensuring that every child and family receives the following:

- A multidisciplinary evaluation and assessment
- An IFSP
- Provision of services in natural environments
- Service coordination

The SLP, as a member of the IFSP team, may in some instances assume these functions and therefore needs an understanding of the roles and responsibilities of the service coordinator.

One of the primary responsibilities of the service coordinator is serving as the single point of contact for the family in helping to identify and obtain the services and assistance needed. Thus, the service coodinator may be the first person within the early intervention system encountered by families seeking help for their young child. The service coordinator has the opportunity to play a very important role in assisting the family to understand the nature of their child's disability; to develop, implement, and monitor an effective intervention plan; to access and coordinate available services and resources; and to develop the advocacy skills to support their

child in the future. Perhaps most importantly, the family's first interactions with a representative of the early intervention system will influence their trust and expectations of the system as a whole. Currently, families often report that service coordination is the least satisfactory aspect of their early intervention services (Dunst & Bruder, 2002). Families often report that when there are multiple service providers, they often do not communicate with each other about the child's current goals/objectives, types of services delivered, or times of day of services. This lack of communication is hard on the family, and at times professionals may provide conflicting information to families.

The primary responsibility of a service coordinator is to ensure a family-centered, collaborative, multidisciplinary team approach to service delivery. Once a referral is made, a service coordinator is assigned as soon as possible so that she or he can be actively involved in every step of the IFSP process to

- ensure that families are informed of their rights and procedural safeguards, and attend to the various timelines specified by federal legislation;
- inform families right from the start that a primary purpose of early intervention is to help them best support their child's development;
- establish collaborative, respectful relationships with families;
- gather information about family priorities, resources, and concerns, and daily routines and activities;
- support the family's own problem-solving skills in determining a course of action;
- help families and other team members plan the developmental evaluation/ assessment, formulate questions that reflect the family's concerns, and address state eligibility standards;
- integrate information from various sources into a comprehensive developmental profile of the child;
- facilitate communication among the various team members and the family so that together they can develop functional outcomes that are meaningful within the child and family's daily routines and activities;
- ensure that intervention services are directly related to functional outcomes;
- maintain ongoing communication and active collaboration among team members;
- oversee the evaluation and review of the IFSP;
- monitor services specified on the IFSP;
- take the lead in planning for the child's transition from the early intervention system, typically at age 3.

Without effective service coordination, the family may be left to integrate information from multiple sources on their own and may lack a good understanding of their child's challenges and strengths. Intervention services are likely to be fragmented, and the family may not be informed about available resources. They are much less likely to learn how the early intervention system works and to develop the skills that would help them navigate service delivery systems in the future (Bruder, 2005; Harbin et al., 2004).

There are several different models of service coordination, and the SLP working in early intervention should become familiar with his or her state's model. For example, in some states the same agency may provide service coordination and intervention services, although the same individual may not. In others, an

individual person, such as the SLP, may be permitted to perform the dual roles of service coordinator and service provider. This may be especially common for some children, such as those with AT needs, where the SLP may have specialized knowledge of technology, acquisition processes, and financial possibilities for families. In yet other states, these functions are assigned to altogether separate agencies. Regardless of the particular model, the SLP will be working as part of an early intervention team. As such, it is important that she or he has comprehensive knowledge about the state early intervention system, including the lead agency, as well as the federal regulations governing Part C services. The National Early Childhood Technical Assistance Center (NECTAC) maintains a Web site (www.nectac.org) that includes information regarding early intervention models for each of the states.

When SLPs are not in service coordination roles, they will need to develop an understanding of these roles in their setting and actively seek to collaborate with the service coordinator. It can be difficult for some families when individual team members are not fully informed about the service delivery system as a whole and fail to collaborate effectively with one another (Bruder, 2005; Harbin et al., 2004). Training resources to assist early intervention providers in learning more about the role of the service coordinator can be found on the NECTAC Web site.

Transition Planning

A major goal of IDEA 2004 is to ensure a seamless transition process for families moving from one program to another as well as timely access to appropriate services. To this end, it is stipulated that there be a transition plan, that representatives of the sending and receiving programs take part, and that families play an active role. Although there are several types of transitions, including hospital to community-based programs, home-based to center-based programs, provider to provider, and early intervention to community-based preschool, the most dramatic transition occurs when the child moves from Part C early intervention to Part B school-based services, typically at age 3. In this latter transition, a range of options exists, and the SLP will offer the level of assistance to families and team members appropriate for their particular role with that family. Families should have the opportunity to begin to consider the transition to preschool services at the time of the first IFSP, as highlighted by the requirement for notation of the transition plan date on the original IFSP document. SLPs working in early intervention may, if they are performing the functions of service coordinator, have direct responsibility for oversight of transition activities. Alternatively, as members of the IFSP team, SLPs will assist the family and the other team members.

SLPs should be knowledgeable about best practices for transition planning. By the time the child is 2 years old, the early intervention team, including the SLP, generally begins to discuss the transition process with the family. The family is provided with specific information about the transition planning process to prepare for the transition meeting. This information frequently includes clarifying expectations, establishing priorities for future services, and discussing possible options and settings for future placement. The SLP should contribute to the preparation of updated assessment data as needed. At the transition meeting, the local educational agency will determine the types of additional assessment that will be necessary to determine eligibility for services.

SLPs functioning as the service coordinator will have the primary responsibility for convening the transition meeting at a time that is convenient for the family, for ensuring that the family is adequately prepared for the meeting, and for gathering all the information needed for the meeting. During the meeting, the service coordinator ensures that the parents have an opportunity to ask any questions and are presented with all possible options (e.g., Head Start or other appropriate community settings). After the meeting has taken place, SLPs may have various responsibilities related to helping the family explore the identified program options and preparing the child and family for the transition (e.g., visiting the new class). In some instances, the SLP might be invited to attend the individualized education program conference.

Whatever the specific role, whether as IFSP team member or service coordinator, the SLP has the responsibility to help make the transition process as smooth and positive as possible for the family. Establishing relationships with personnel in the local school district (e.g., the SLP in the receiving school) can help the family. It can be very reassuring to families to know that staff members who have been working with them and their child have a positive relationship with staff in the receiving program. These kinds of connections can help families feel that their child is going to a safe place, where people will know something about them and care for them. It can be stressful for families to transition from a home-based, one-on-one service delivery model to a center-based classroom model. They may fear that they will be losing the personal attention and safety of the early intervention services. By being knowledgeable about the various program options available in the local community and available to assist families in their exploration, the SLP can ease this transition. Being aware of the specific assessment protocols and processes used by the receiving district also will help the SLP gather as much useful information as possible to send on to the district and help families to avoid extensive and redundant assessments. It will also help the receiving staff build on what has been accomplished through the early intervention program.

Comprehensive transition reports, or portfolios, that contain information about the child's likes and dislikes, successful intervention strategies, progress on specific outcomes, and a comprehensive, integrated, developmental assessment are of great value to the family and to the receiving program (Hanson, 2005). One of the most important outcomes for early intervention services is a successful transition on the part of the child and family to an appropriate preschool program. If the family leaves early intervention with an understanding of the special education system and with confidence in their ability to support their child within that system, then an important goal has been met. All IFSP team members have an opportunity and a responsibility to help meet that standard.

Advocacy

Key factors in the provision of family-centered, culturally and linguistically appropriate services are the policy decisions that guide the implementation of these practices. The early intervention system continues to evolve, with families and professionals working together to identify the most efficient and effective means to address the concerns and priorities of individual children and their families while enhancing the availability of resources that are needed. This includes the provision of funding, infrastructure (e.g., workload parameters), and time necessary for productive collaborative partnerships among providers. In particular, the costs and benefits of varying team-based service delivery models must be considered by

providers in states that have contract or fee-for-service models in place rather than intact provider models. The costs involved in communication (e.g., for role extension and role release) and team meeting time must be weighed and articulated, given that few states have policies reimbursing contract providers for these costs. Additional considerations include loss of income for providers with unnotified cancellations, drive time, need for technology to support ongoing communication, and the importance of timely, adequate, and stable funding for service provision. Resources also must be dedicated to conducting research in evidence-based practices. This includes enriching our understanding of internal evidence (based on policy, informed clinical opinion, values and perspectives of consumers and professionals, and professional consensus) as well as the information obtained from external evidence—that is, empirical research.

Advocacy activities and products that raise awareness about the importance of early intervention are essential. Mechanisms include working with other professionals; writing and editing textbooks and other resource materials to provide up-to-date and accurate developmental information; involvement in local, state, and national efforts to influence public policy; and development and dissemination of information to families, health care professionals, and others involved in the care of young children. ASHA and state speech, language, and hearing associations provide a number of products and strategies to promote Better Hearing and Speech Month, as well as advocacy campaigns to promote the services of SLPs and audiologists. Periodic announcements appear on the ASHA Web site along with requests for comment on drafts of position statements and policy papers. In this way, SLPs can have an impact on the early intervention policies developed for the Association. In addition to the Association advocacy activities, ASHA encourages individual practitioners to contact their local and national political leaders about policy positions and legislation related to working with children with disabilities. Through this process, individuals can collectively have an influence on national policies. For more information related to advocacy activities, visit the ASHA Web Site, www.asha.org.

Awareness and Advancement of the Knowledge Base

The early intervention system continues to evolve, with families and professionals working together to identify the most efficient and effective means to address the issues involved in fostering the development of young children at risk. It is essential that university training programs meaningfully integrate course work and practicum experiences designed to develop student knowledge and expertise in early development and disabilities. Academic and clinical instructors involved in the preservice training of future professionals must continue to advance the knowledge base of the field by modeling and guiding students in using best practices, as outlined by groups of documents such as these. In addition, these professionals need to further their own education by staying abreast of advances in the discipline, including implementation of evidence-based practices. Effective student preparation also may include participation by consumers (e.g., family members, child care providers) who might present in or co-teach courses, serve as mentors for students, and provide input in evaluations of student progress. When there is participation of consumers, students have multiple opportunities to hear their perspectives, establish relationships, and receive information and feedback. Further, additional emphasis on interdisciplinary course work and practica could provide meaningful opportunities for students to gain knowledge and experience working collaboratively with other professionals. Indeed, there is increasing

evidence that the degree to which students are prepared in interdisciplinary ways at the preservice level is associated with the degree to which they seek out interdisciplinary opportunities after they graduate (Crais, Boone, et al., 2004; Mellon & Winton, 2003).

Practicing clinicians, both novice and experienced, also have the responsibility to engage in ongoing professional development that offers contemporary evidence-based practices and the theory and application of these practices to service delivery. Attending and contributing to local, state, and national in-service opportunities, taking part in journal clubs, reading journal articles for continuing education credit, responding to requests from ASHA and other policy makers for reviews of technical reports, and serving on state and national committees are just some of the ways practicing clinicians can keep up to date. Professionals who provide continuing education opportunities must also strive to keep abreast of current theory and practice in the field of early intervention and to promote the use of evidence-based practices. For professionals who conduct research, advancing the knowledge base includes not only generating research but also closing the gap between research and practice. Particular strategies could include sharing research findings in formats readily accessible to practicing professionals; promoting active participation of practicing clinicians and families in designing, implementing, and evaluating research studies; and utilizing natural environments as the setting for components of research studies. Further, both SLPs who provide clinical services and those who conduct research also have a responsibility to work collaboratively to enhance the knowledge base in order to

1. identify risk factors and generate prognoses more precisely;
2. clarify the interaction between risk and resilience factors that affect the likelihood or severity of early communication difficulties;
3. extend the use of evidence-based interventions to prevent and treat developmental communication difficulties;
4. develop and refine methods to increase the accuracy of detecting children in need of services;
5. carry out scientifically sound studies to demonstrate and quantify the efficacy and effectiveness of current intervention approaches;
6. create, field-test, and evaluate new methods and procedures for enhancing early communication.

In sum, early intervention providers, families, and higher education faculty all share a responsibility to advance the knowledge base in early intervention services for infants and toddlers with communication disorders. Through this shared responsibility, there is the potential for a strong and positive impact at several levels within the early intervention system, including policy making, university personnel preparation programs, continuing education activities, and service delivery by individual clinicians.

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Appendix

Ad Hoc Committee on the Role of the Speech-Language Pathologist in Early Intervention

The following people served on the ASHA Ad Hoc Committee on the Role of the Speech-Language Pathologist in Early Intervention. Credentials and affiliations are indicated for each committee member. Committee members were selected to serve on the committee because of their expertise in the area of early intervention and speech-language pathology. Two of the committee members are parents of children with special needs. They shared their parental/professional perspectives at all stages of the development of the guidelines and formation of recommendations. During the development of the guidelines, committee members discussed recommendations with additional parents of children with disabilities to gain their ideas and perspectives. Some parents were asked to review sections of the guidelines during the time they were being written.

M. Jeanne Wilcox, PhD, CCC-SLP
Committee Chair
Professor and Director of Infant Child Communication Research Programs
Arizona State University
Tempe, AZ

Melissa A. Cheslock, MS, CCC-SLP
Coordinator, Toddler Language Research Project
Georgia State University
Atlanta, GA

Elizabeth R. Crais, PhD, CCC-SLP
Professor
University of North Carolina at Chapel Hill
Chapel Hill, NC

Trudi N. Norman-Murch, PhD, CCC-SLP
Director of Services for Children with Disabilities
Southwest Human Development
Paradise Valley, AZ

Rhea Paul, PhD, CCC-SLP
Professor
Southern Connecticut University
New Haven, CT

Juliann J. Woods, PhD, CCC-SLP
Professor
Florida State University
Tallahassee, FL

Diane R. Paul, PhD, CCC-SLP
ASHA Ex Officio
Director, Clinical Issues in Speech-Language Pathology
American Speech-Language-Hearing Association
Rockville, MD

The following members of ASHA's Executive Board monitored the work of the committee:

Celia R. Hooper, PhD, CCC-SLP
ASHA Monitoring Vice President (2003–2005)
Professor and Department Head
University of North Carolina at Greensboro
Greensboro, NC

Brian B. Shulman, PhD, CCC-SLP
ASHA Monitoring Vice President (2006–2008)

Acting Dean
Seaton Hall University
South Orange, NJ

Declaration of Competing Interest

All members of the Ad Hoc Committee on the Role of the Speech-Language Pathologist in Early Intervention agreed to declare any interest or connections with any commercial programs or products discussed in the guidelines. No member had any paid consultancy or any other conflict of interest with any of the commercial programs or products described in this document.

Early Intervention Literature Search Methodology

Electronic Databases Searched:

- Cumulative Index to Nursing & Allied Health (CINAHL)
- Combined Health Information Database
- Education Abstracts
- Embase
- ERIC
- Health Source: Nursing
- Linguistics Language Behaviour Abstracts
- PsycARTICLES
- PsycINFO
- PubMed
- REHABDATA
- Science Citation Index
- ScienceDirect
- Social Science Citation Index

Search Criteria:

- English language only.
- Must be a study with original data that is relevant to one or more of the search terms.
- Subjects must include children under 3 years old.

Search Terms:

- Discrete trials
- Applied behavioral analysis (ABA)
- Parent training
- Indirect language stimulation
- Facilitated play (FP)
- Script therapy
- Focused stimulation
- Milieu teaching
- Incidental teaching
- Task analysis
- Hearing impairment
- Cochlear implants
- Language delay
- Autism/pervasive developmental disorder (ASD/PDD)
- Cerebral palsy

Mental retardation

Expanded Search Terms:

(Discrete trials or applied behavioral analysis or parent training or indirect language stimulation or facilitated play or script therapy or focused stimulation or milieu teaching or incidental teaching or task analysis) AND cochlear AND children

(Discrete[All Fields] AND trials[All Fields] OR applied[All Fields] AND behavioral[All Fields] AND ("analysis"[Subheading] OR analysis[Text Word]) OR (("parents"[TIAB] NOT Medline[SB]) OR "parents"[MeSH Terms] OR parent[Text Word]) AND ("education"[Subheading] OR ("education"[TIAB] NOT Medline[SB]) OR "education"[MeSH Terms] OR indirect[All Fields] AND ("language"[MeSH Terms] OR language[Text Word]) AND stimulation[All Fields] OR facilitated[All Fields] AND ("play AND playthings"[MeSH Terms] OR play[Text Word]) OR script[All Fields] AND ("therapy"[Subheading] OR ("therapeutics"[TIAB] NOT Medline[SB]) OR "therapeutics"[MeSH Terms] OR therapy[Text Word]) OR focused [All Fields] AND stimulation[All Fields] OR milieu[All Fields] AND ("education"[Subheading] OR "teaching"[MeSH Terms] OR teaching[Text Word]) OR incidental[All Fields] AND ("education"[Subheading] OR "teaching"[MeSH Terms] OR teaching[Text Word]) OR task[All Fields] AND ("analysis"[Subheading] OR analysis[Text Word])) AND cochlear[All Fields] AND (("child"[TIAB] NOT Medline[SB]) OR "child"[MeSH Terms] OR children[Text Word])

Discrete trials AND cochlear implant AND (speech OR language OR communication) (Discrete trials OR applied behavioral/behavioural analysis OR parent training OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis) AND cochlear

(Autis* OR pervasive developmental disorder OR PDD OR PDD-NOS OR ASD OR AD OR ADSL OR Asperger* OR Rett*)

(Autis* OR pervasive developmental disorder OR PDD OR PDD-NOS OR ASD OR AD OR ADSL OR Asperger* OR Rett*) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)

(Cerebral palsy OR (neuromotor dis*)) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)

Mental retard* AND ((hearing impair*) OR (hard of hearing) OR (hearing loss) OR deaf*)

Mental retard* AND ((hearing impair*) OR (hard of hearing) OR (hearing loss) OR deaf*) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)

((Language OR speech OR communication OR development*) AND (delay OR disorder OR impair* OR comprehension OR expression)) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)

Cochlear AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)

(Autis* OR pervasive developmental disorder OR PDD OR PDD-NOS OR ASD OR AD OR ADSL OR Asperger* OR Rett*) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)

(Cerebral palsy OR (neuromotor dis*)) AND mental retard* AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)
((Hearing impair*) OR (hard of hearing) OR (hearing loss) OR deaf*) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)
((Language OR speech OR communication OR development*) AND (delay OR disorder OR impair* OR comprehension OR expression)) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)
(Young child* OR toddler OR preschool OR infant OR child*) AND (discrete trials OR applied behavioral analysis OR applied behavioural analysis OR parent train* OR indirect language stimulation OR facilitated play OR script therapy OR focused stimulation OR milieu teach* OR incidental teach* OR task analysis)

Additional Searches:

- The reference lists of all relevant articles identified were scanned for other possible studies.
- Reviewed all references from: Larsson, E. V. (2004, Fall). *Data-based research in support of intensive early intervention.* Retrieved November 15, 2004, from http://members.tripod.com/~RSaffran/IBIrefs.html#top.

The literature search was conducted from January to February 2005. References were managed using the bibliographic database EndNote.

Supplemental Early Intervention Literature Search Methodology

An additional literature search was performed for “family-centered care” in March 2005.

Electronic Databases Searched:

Cumulative Index to Nursing & Allied Health (CINAHL)
Combined Health Information Database
Education Abstracts
Embase
ERIC
Health Source: Nursing
Linguistics Language Behaviour Abstracts
PsycARTICLES
PsycINFO
PubMed
REHABDATA
Science Citation Index
ScienceDirect
Social Science Citation Index

Search Criteria:

English language only.
Must be a study with original data that is relevant to one or more of the search terms.
Subjects must include children under 3 years old.

Search Terms:

Family-centered care
Hearing impairment
Cochlear implants

Language delay
Autism/pervasive developmental disorder (ASD/PDD)
Cerebral palsy
Mental retardation

Expanded Search Terms:

Family-centered care AND (cochlear implants OR (autis* OR pervasive developmental disorder OR PDD OR PDD-NOS OR ASD OR AD OR ADSL OR Asperger* OR Rett*) OR (cerebral palsy OR (neuromotor dis*)) OR mental retard* OR ((hearing impair*) OR (hard of hearing) OR (hearing loss) OR deaf*) AND ((language OR speech OR communication OR development*) AND (delay OR disorder OR impair* OR comprehension OR expression))

Additional Searches:

- The reference lists of all relevant articles identified were scanned for other possible studies.

The literature search was conducted in March 2005. References were managed using the bibliographic database EndNote.