

# Family-Centered Developmental Assessment

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*L*inda, a mother of a 3-year-old deaf child, turned, with tears in her eyes, to the early intervention team gathered around the table to discuss the results of the recent assessment. "Thank you," she said. "Kari really enjoyed herself! I learned so much being able to watch and ask questions as the assessment happened. I enjoyed playing with her, too. For the first time since we found out Kari was deaf, I feel like the assessment is accurate. I feel like you really know the little girl that we love."

What happened during the assessment that caused Linda to feel so positive about the experience? Why did Kari enjoy herself so much? Why does Linda think that this assessment yielded accurate information when other assessments never had before? Understanding what happened during Kari's assessment is at the heart of best practices in assessing young deaf and hard of hearing infants, toddlers, and preschoolers.

This chapter describes recommended practices in the developmental assessment of young deaf and hard of hearing children in order to answer three basic questions that parents ask: "what's wrong with my child?"

"What will my child be like later?" and "what can be done to help my child?" (Bagnato, Neisworth, & Munson, 1997). Two assessment models, the Developmental Assessment Process for Deaf Children (DAP-D) and the FAMILY Assessment (Stredler-Brown & Yoshinaga-Itano, 1994) from the Colorado Home Intervention Program are described. Philosophies and practices common to both are highlighted, and strategies and practical suggestions for the assessment process are outlined.

## **THEORETICAL PERSPECTIVE**

The assessment process for young children who are deaf or hard of hearing has changed over time. During the early 1970s, assessment of young children with special needs was not connected to intervention (Bagnato et al., 1997). Rather, emphasis was placed on categorizing and labeling children using traditional, norm-referenced tests for the purpose of placing students in appropriate educational settings. Testing procedures for young children with special needs were often adapted from protocols recommended for older children and children without disabilities; these highly structured practices often proved inappropriate for assessing young children. Finding assessment reports of little value in planning interventions, teachers became frustrated and often had to develop intervention plans based solely on their own observations.

Since the passage of the Education of the Handicapped Act Amendments of 1986 (PL 99-457), assessments have been structured as processes to gather information about a child to help parents answer the three questions outlined in the introduction to this

chapter. Assessment sets the foundation for planning effective and supportive experiences for the child and his or her family to promote healthy development.

How do professionals help answer the three basic questions that parents ask? what tools and materials are available? what is the assessment process? who should be a member of the assessment team? Most important, how can assessment occur in a collaborative environment with parents and professionals? The following sections provide a discussion of the information both parents and professionals need to answer these questions.

### **Developing a Philosophy**

Before developing an assessment process for young children who are deaf and hard of hearing, professionals should examine their beliefs about working with young children and their families, by considering the following philosophies and how they intersect with their own beliefs and practices (Winton & Bailey, 1994, p.26):

- *Family centered*: The family is a constant factor in their child's life, although services and systems may be involved only episodically.
- *Ecologically based*: Professionals need to consider how the various contexts that surround the child and family are interrelated.
- *Individualized*: Because the needs of each child and each family differ, services should be individualized to meet those unique needs.
- *Culturally sensitive*: Families come from different cultural and ethnic groups. Families reflect their diversity in their views and expectations of themselves, of their children, and of professionals. Services should be provided in ways that are sensitive to these variations and consistent with each family's values and beliefs.
- *Enabling and empowering*: Services should foster a family's independence, their unique skills, and each family member's feelings of competence and self-worth.
- *Needs based*: A "needs-based" philosophy starts with a family's expressed needs and helps families identify and obtain services commensurate with their priorities.
- *Coordinated service delivery*: Resources from a variety of informal and formal sources should be coordinated.
- *Normalized programs*: Intervention promotes the inclusion of the child and the family in their natural environments within the community.
- *Collaborative*: Early intervention services should be planned, implemented, and evaluated collaboratively, including input from parents and professionals.

Next, professionals should develop a program philosophy for working with families of young deaf and hard of hearing children. For example, a program, which should seek to serve the unique needs of each child and family (individualized), might develop a statement that incorporates the professionals' beliefs about respecting all cultures (culturally sensitive) and how it is important for parents and professionals in the child's life to work together (collaborative). The program philosophy helps to determine program

goals and provides a framework for staff development. Periodic review of the philosophy will accommodate new information gathered from clinical practice and experiences.

Assessments, historically based only on a medical model to help children develop their auditory and spoken language skills, now may utilize a sociocultural model for planning and implementing education programs for deaf and hard of hearing children. Programs that employ a sociocultural perspective describe deafness as a difference, rather than a disability. The role of deaf and hard of hearing adults and the use of American Sign Language (ASL) or its various derivatives are also viewed as contributing to the child achieving academic and social success.

### **Inclusion of Deaf and Hard of Hearing Adults in Assessment**

In addition to a commitment to working with families, a program's philosophy statement can describe the potential role of members of the Deaf community in the lives of families and how programs can include deaf and hard of hearing adults in assessment and service delivery. Deaf and hard of hearing adults can help to answer, in an authentic way, the three questions that parents usually ask. The wisdom, life experiences, and perceptions of deaf and hard of hearing adults are invaluable to a parent facing decisions regarding communication and education. Assessment programs not already employing deaf and hard of hearing adults can turn to deaf and hard of hearing people from the community to participate in the assessment process. (See Lane, Hoffmeister, & Bahan, 1996, and Padden & Humphries, 1988, for a thorough discussion of Deaf life.)

In 1913, George Veditz, President of the National Association of the Deaf, observed, "They [deaf people] are facing not a theory but a condition, for they are first, last, and all the time the people of the eye" (p1). Because many deaf and hard of hearing children are visual communicators and visual learners (Bodner-Johnson, Sass-Lehrer, Hafer, & Gatty, 2000; Mohay, 2000), deaf and hard of hearing adults become an essential resource in the assessment process. Deaf and hard of hearing adults are uniquely qualified to design the environment and assessment activities to support young deaf and hard of hearing children. This perspective can change in a fundamental way how assessments are conducted for deaf and hard of hearing children. Every effort should be made to professionalize the services provided by deaf and hard of hearing adults by paying a fee for their services.

### **Considerations for Assessment**

Professionals who assess the strengths and needs of a young child who is deaf or hard of hearing can use the following best practices to ensure the assessment process yields the most accurate and helpful information. The assessment process includes a variety of measures that provide a comprehensive picture of the child's communicative abilities including verbal, nonverbal, spoken, and signed utterances. Few instruments assess this range of production; therefore, it is beneficial to use a variety of tests and tools to observe the child, and to conduct parent interviews. Consider the impact for children with limited hearing and speech when professionals score their individual test items during assessment. Do assessment protocols allow flexibility in how the questions or tasks are presented (e.g., can questions or tasks be presented using sign language, repetition, cues, and assistive listening devices)? Professionals who assess children who are deaf and hard of hearing need to communicate directly with the child. This requires

having at least one professional who is skilled in the preferred method or mode of communication used by the child. These skills may include ASL and English sign systems, as well as spoken language.

### **Best Practices in Assessment**

What are the best practices for assessing young children? Three key points are recommended by the Division for Early Childhood (DEC) (Hemmeter, Joseph, Smith, & Sandall, 2001, p.23):

1. *Family involvement:* Professionals need to recognize and value the role parents have in the assessment process and the development of intervention plans.
2. *Developmental appropriateness of assessment:* The type and methods of the assessment must fit together with each child's unique needs and developmental stage.
3. *Team approach* The team should include people in the child's life. Parents, caregivers, and early interventionists can participate in planning the assessment and interpreting the results.

Bagnato et al. (1997) and Hemmeter et al. (2001) expanded on these three points with the following additional recommendations. Italics are added by the authors of this chapter to indicate special considerations for children who are deaf or hard of hearing.

1. *Use of multiple perspectives:* Several informants including parents, the early interventionist, and primary care physician can make contributions regarding the strengths and needs of a child. *Whenever applicable, a deaf or hard of hearing adult can contribute his or her perspective on the child's use of visual information. The deaf or hard of hearing adult can also clarify the child's communicative attempts and recommend strategies for enhancing the child's communication skills* (Hafer, Spragins, & Hardy-Braz, 1996).
2. *Use of multiple techniques:* The assessment process includes more than one type of instrument. Observations made of the child in his or her typical routines and natural settings yield functional information. Checklists, formal and informal testing, parent interviews, and parent questionnaires provide useful information and complement observations that are made. *The use of videotape, although beneficial for assessing all children, is particularly important for documenting the visual nature of communication with deaf and hard of hearing children. Reviewing the videotape of an assessment provides a means of examining the nuances of visual communication and how it relates to spoken communication efforts. It also can easily be made available to an outside expert for review.*
3. *Assess on multiple occasions:* To be responsive to the child, information can be collected in more than one session. This can include collecting information during multiple settings (e.g., home, child care facility, clinic), *when the child is with hearing children, or when the child is with other de~ and hard of hearing children.*
4. *Use of functional item content:* Item content may identify specific developmental milestones, functional skills, and atypical behaviors. Determining developmental

milestones is useful to identify age-appropriate skills, possible delays, and challenges. *Accommodations to each item can be made when the child relies on visual communication. For example, if the item asks if a child can say his or her name, the item must be administered in the communication mode used by the child. This may include fingerspelling or signing his or her name instead of or in addition to actually saying his or her name.* Functional competence stresses unique adaptations to accomplish a skill rather than meeting a typical "standard." Documenting how a child communicates (e.g., speaking, signing) or how he or she moves across the room (e.g., scooting, walking) is fundamental to functional assessment.

5. *Making collaborative decisions:* Parents should be treated as true partners in the entire assessment process. To achieve collaboration, the professional should use clear language with limited jargon and allow family members to identify their role in the assessment process.

## **EXAMPLES OF EFFECTIVE DEVELOPMENTAL ASSESSMENT PROCESSES FOR YOUNG CHILDREN WHO ARE DEAF AND HARD OF HEARING**

Following are two approaches to assess the developmental strengths and needs of young children who are deaf and hard of hearing. Though there are many *tools* available to practitioners that provide pieces of information about a child, an *assessment process* yields a more complete picture of the strengths and needs of a child and his or her family. The Developmental Assessment Process for Deaf Children (DAP-D) is used to train graduate students in the Family Centered Early Education Program at Gallaudet University. The Colorado Home Intervention Program, the statewide early intervention program, uses the FAMILY Assessment. Both assessment procedures incorporate the ideas discussed in this chapter, but in different ways. Both models utilize a variety of assessment tools and practices that are appropriate for use with young children who are deaf and hard of hearing.

### **The Developmental Assessment Process for Deaf Children Model**

The Developmental Assessment Process for Deaf Children (DAP-D) model is based on the Transdisciplinary Play-Based Assessment (TPBA) created by Linder (1993). The DAP-D model makes specific adaptations to Linder's model in order to accommodate the needs of young children who are deaf and hard of hearing. The DAP-D model also makes accommodations for deaf and hard of hearing adults who participate in the assessment. The arena assessment piece is conducted in the home or in a center.

*The Transdisciplinary Team-Traditional Team Members* The transdisciplinary approach incorporates perspectives from multiple team members to yield a holistic, accurate assessment of the child's strengths and needs. Members of the team include professionals who have expertise in specific areas of development, including medical, psychological, motor, speech, and language. The child's parents are members of the team, providing valuable information on their child's abilities and interests. During the

assessment, a parent facilitator acts as the primary contact between the parent(s) and the other team members. The parent facilitator supports the family by explaining the assessment process, answering questions, and conducting the post assessment meeting. A play facilitator interacts with the child throughout the assessment session and a video camera operator videotapes the assessment for later use.

*The Transdisciplinary Team-Additional Team Members* In addition to the team members already described, the DAP-D team can also include a deaf or hard of hearing adult, an interpreter for both signed and spoken languages, and a communication coach. These additional team members address the visual communication needs of the deaf or hard of hearing child and the deaf or hard of hearing adults who have joined the team.

Deaf adults have had a role in research projects assessing the communication skills of deaf toddlers and preschoolers since the advent of research on sign language in the 1970s (Klima & Bellugi, 1979; Spencer, 1993). In these research projects, analyses of videotapes that include sign language are routinely conducted by a person who is deaf in order for the analyses to be valid and reliable. Extending this role beyond the confines of research to the assessment of young children who are deaf and use sign language seems logical, especially when a child who is deaf uses ASL as a first language. The deaf or hard of hearing adult can fulfill many roles on the team. For example, the deaf or hard of hearing adult can be the play facilitator. He or she is able to use a wide range of visual communication strategies during the assessment that support the child's communicative attempts, such as bringing the object of conversation into the sign space to support visual attention. Second, deaf and hard of hearing adults may assume the role of the communication coach, helping observing team members and the play facilitator to communicate without disrupting the play process. Deaf and hard of hearing adults may also assume any role of an observing team member. Typically, they lead the evaluation of the child's communication and language skills. Sometimes this role is divided between an ASL specialist and a speech clinician.

Ten years of experience using the DAP-D model has demonstrated that the inclusion of deaf and hard of hearing adults enhances the assessment process. The assessments are generally conducted with very young children who are deaf and hard of hearing who live in different communication environments, both oral and signing. In addition to ensuring effective communication with the child, the participation of a deaf or hard of hearing adult provides an "authenticity" to the discussions about communication issues with the parents. Rather than only having hearing people making decisions about children who are deaf and hard of hearing, adults who are deaf and hard of hearing who experience the reality of being deaf offer a valuable perspective to the process. The deaf or hard of hearing adult can offer the parents an opportunity to see how an adult who is deaf or hard of hearing communicates and share their perspective on issues such as communication choices and educational options.

A sign language interpreter can also be on the transdisciplinary team. The sign language interpreter ensures that all members of the team have communication access. The interpreter may voice for some team members and sign for others. The interpreter is a valued team member in both the preassessment and postassessment meetings.

A communication coach can also be a valuable team member. It is important to create an accessible visual environment to accurately assess a child who is deaf or hard of hearing. To understand the importance of an accessible visual environment, it is necessary to consider the sequential nature of sign communication. When people who are deaf are involved in the assessment they can visually attend to only one thing at a time. The communication coach must attend to the child, the play facilitator, and the other team members in a systematic way. The coach visually scans the environment in order to check in with all team members. The observing team members make their requests to the communication coach when they want the play facilitator to elicit certain skills. The communication coach serves as a liaison between team members and the play facilitator by relaying these requests at a visually appropriate moment. The communication coach also functions as the timekeeper and alerts the team members when it is time for a transition to a new activity.

*Assessment Procedure* Prior to the assessment, the parent facilitator and play facilitator make a home visit. One benefit of this session is to identify parents' concerns and priorities and to establish rapport with the child. The preassessment meeting provides an opportunity to document the developmental skills of the child and to obtain an impression of the communication setting. Background information is collected at this meeting and the parent facilitator explains the assessment process and the assessment schedule. The play facilitator gets to know the child and gathers information that will be helpful in the assessment (e.g., name signs of significant people in the child's life, favorite toys, favorite activities). Taking a Polaroid picture of the play facilitator playing with the child helps in the transition to the arena assessment that is conducted at a later date.

Linder recommended a six-phase process for the assessment process that includes unstructured play, structured play, play with parent, play with peer, motor play, and snack. The order and timing of these phases are flexible. In the DAP-D model, the assessment session begins with the parent and child interacting together. This gives the team an opportunity to identify the characteristics of the communication between parent and child. The play facilitator then joins the parent child dyad and helps the child transition to play with the play facilitator alone. At this time, the parent joins the parent facilitator to observe the remainder of the session. The child and the play facilitator then move through unstructured play in which the play facilitator follows the lead of the child. Then the child and the play facilitator move on to structured play in which the play facilitator attempts to elicit behaviors requested by the observing team members. Next, the play facilitator makes the transition to peer play. This is an opportunity to observe how the child interacts with hearing and deaf or hard of hearing children. Team members pay special attention to the communicative strategies used as the child interacts with his or her peer. Finally, the child and play facilitator participate in snack time. This activity gives the observing team members the opportunity to observe oral motor skills as well as social and functional skills.

*Postassessment Meeting* After the assessment session, the team meets to discuss and record their observations and to review the videotape of the assessment. During this meeting, parents have an opportunity to ask questions and contribute additional information about their child. The deaf or hard of hearing adult team member contributes

their information as well, as their information may help parents to make decisions about the next steps in the intervention process.

Suggestions are made for additional assessment sessions as needed. For example, the team may determine that the child needs more in-depth assessment of his or her speech *skills*. If this recommendation is made, an assessment with a speech language pathologist is scheduled. If more information is needed regarding the child's functional auditory skills, a follow-up assessment for this analysis may be scheduled. The DAP-D assessment may also indicate that the child needs further evaluation in other developmental domains. These recommendations are discussed with the family, and referrals are provided.

*Formal Report* The DAP-D report, written in the style suggested by Linder (1993), is a positive narrative of the child's strengths and needs. The use of jargon is carefully monitored. The report tends to be long because supporting examples are provided. The DAP-D team looks at the preferred and optimal modes the child uses for communication. (See Table 5.1 for examples of items that are typically documented in the DAP-D report but rarely noted in assessments that are not designed for deaf and hard of hearing children.) Care is taken to record examples of both signed and spoken utterances. Educational jargon is eliminated and necessary technical terms are defined. Also, parents are given an opportunity to review and modify the report, and a copy of the report and the videotape are given to them. These two items, in addition to the postassessment meeting, provide parents with multiple ways to understand the assessment results. The videotape helps the family to explain the assessment to other family members and other professionals. The report and the videotape also serve as educational materials for the parents.

**Table 5.1. Examples of visual communication competencies**

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Makes appropriate eye contact with others
When following a conversation between two other people, shifts eye gaze from one person to another
Shifts eye gaze from a signer to an object when the signer points to an object, then shifts eye gaze back to the signer
Uses single signs or a single sign in combination with a point, facial expression, or another sign
Watches a signer and gives feedback to the signer by using facial expressions, single signs (e.g., "yes," "that," "wrong," "no"), gestures (e.g., nodding or shaking the head)
Manually babbles: uses sequences of gestures that resemble signing but are not recognizable or meaningful
Signs reflect simple, unmarked handshapes (e.g., "B" [mine], "C" [bowl], "0" (more), "A" (help), "S" [milk], "L" [mom], "5" [tree])
Signs with appropriate facial expression
Uses sign phrases such as FINISH and YOU-WANT-MORE?

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*Supplemental Materials* The TPBA process makes provisions for the use of supplemental assessment tools. The same is true for the DAP-D process. Supplemental materials are needed to assess the visual communication skills' of deaf and hard of hearing children. This area of assessment is still emerging, with few thoroughly researched tools. Many early intervention programs have developed their own checklists that include developmental items culled from the research conducted on the development of sign language. Fenson and colleagues (1992), for example, have developed the MacArthur Communicative Development Inventories and provide normative data for children who are deaf and use American Sign Language as their first language. Other tools that are used include Gallimore's American Sign Language Development Checklist (Western Oregon State College, Monmouth), the Gallaudet University Kendall Conversational Proficiency Levels (Kendall Demonstration Elementary School, the Clerc Center at Gallaudet University, Washington, D.C.), and the California School for the Deaf ASL Skills Observation Record (California School for the Deaf, Fremont, Parent Infant Preschool Kindergarten Program).

*Ongoing Documentation Using Portfolios* After the initial developmental assessment is completed, ongoing observation and documentation of a child's behavior and developmental skills should continue (Katz & Swann, 1998). Observation notes, anecdotes from home, and pictures or video clips of play experiences can be collected and reviewed routinely with the family to determine progress and to establish new goals. Portfolios are an efficient and effective way to help parents and professionals document, analyze, interpret, and organize all of the important assessment data that are collected over time from multiple developmental assessments.

*Summary of the DAP-D Method* The DAP-D method is a holistic, play-based, team process that is used to assess the developmental status of young children who are deaf and hard of hearing. This process recognizes the value of including deaf or hard of hearing adults in the assessment process, as their own skills contribute to an accurate determination, particularly with regard to communication, of the child's skills. The process also helps the parents understand their child's development. Use of videotape to document and analyze communication skills is an effective way to record communication. The videotape can be reviewed periodically during the intervention. Use of supplemental materials to analyze visual language, as it is used by children who are deaf and hard of hearing, is incorporated into the process. Finally, the maintenance of a portfolio for the ongoing documentation of the child's development is incorporated into the process.

### **The FAMILY Assessment Model**

The FAMILY Assessment was started in the mid-1980s. It was developed as an assessment protocol for the Colorado Home Intervention Program (CHIP), a home-based, parent-centered early intervention program. At that time, the administration of the program was asked to prove that the intervention program was effective, cost-efficient, and valuable for children and their families. This assessment protocol was developed to obtain aggregate data to measure the progress children made over time while they were enrolled in CHIP.

As the assessment protocol was being developed, many criteria needed to be considered. First, the age of the population needed to be considered. Children in the

program ranged in age from 2 months to 3 years of age. Consequently, the assessment instruments needed to be appropriate for very young children. Next, the assessment needed to portray a child's profile in a variety of developmental domains. Several tests would need to be included to obtain information about communication and language, physical development, cognitive development, motor skills, and personal-social skills. In addition to gathering information about the child's development, the assessment needed to identify the benefit parents were receiving from the program. Because CHIP used a family-centered paradigm, with the parents and/or caregivers as the primary recipients of the intervention (Winton & Bailey, 1994), it was important to measure outcomes for the family. The next consideration was the amount of time that would be needed to assess each child. How much time would it take to gather information, score the protocols, summarize the results, and review these results with the family? Another consideration was gathering reliable information. The assessment protocols needed to be sensitive to the special needs of children with hearing loss and the effects of the hearing loss on other developmental domains. And last, the assessment needed to be valid when conducted at repeated intervals.

The FAMILY Assessment (Stredler-Brown & Yoshinaga-Itano, 1994), a naturalistic assessment procedure, was launched in 1987. Although some protocols included in the assessment have changed, the aforementioned criteria and the method of collecting information have remained the same. The assessment takes place in a family's home, the most natural setting for an infant or toddler, and includes active participation by the family. The information is gathered in two ways. First, a 30-minute videotape is made of a parent and/or caregiver interacting with the child. Both the adult and the child are filmed during play or typical daily routines. The adult is instructed to select activities that will elicit typical behaviors from their child and the best language their child can use. A phonologic analysis of the child's utterances, a language sample of the child's words, and a list of communicative intentions used by the child are obtained from the videotape.

Second, the parents are asked to complete a series of parent questionnaires and protocols. Some of the questionnaires evaluate the child's skills in a variety of developmental domains. Others give the parent an opportunity to report on their own needs as parents of a child with a hearing loss. For families choosing to use sign language, parents complete an inventory of the signs they have learned. Some protocols are completed using an interview format. Using this format develops a collaborative relationship between the parents and their interventionist. The interventionist can teach the family about hierarchical development and the parents can share their observations with the interventionist. In addition, this provides an opportunity for the interventionist and the parents to converse and, subsequently, develop a trusting relationship. Mezirow (1991) and Brookfield (1957) propose that critical reflection is best achieved through dialogue with others. And, activities that engage parents in discussion about being the parent of a child with disabilities can help to make their thoughts explicit, which often increases their understanding (Bodner-Johnson, 2001).

When the videotapes, questionnaires, and protocols are complete, they are sent to the Department of Speech, Language, and Hearing Sciences (SLHS) at the University of Colorado. Through a contractual agreement supported by state funds and federal grants, the University has created a process to code and score the videotapes, protocols, and

questionnaires. Undergraduate and graduate students in the department are trained to code the videotape. (Incidentally, coding the tapes has proven to be an effective way for clinicians-in-training to learn about the development of children with hearing loss). Analysis of the videotape provides information about the child, the parents, and the communicative interaction between the parent and child. Specifically, the speech skills of the child, language of both parent and child, and language strategies used by the parent are all identified when the video is coded. The information from these tools is summarized within 4 weeks. A report is generated, and this report is returned to the early interventionist working with the family. The early interventionist shares the assessment results with the family during the next home visit. The information is also used for development of the individualized family service plan (IFSP). Using these two methods to gather information, a comprehensive profile of the child is acquired, an inventory of the parents' needs is obtained, and the dynamics of the interaction between the parent and the child can be documented and analyzed. With this information, the early interventionist can obtain a baseline of the child's development, monitor changes that occur over time, and/or compare a child's skills with those of his or her hearing peers. Strategies and techniques used by the parents can be identified, and the needs identified by the family can be noted.

*Uses of Videotapes* Videotapes are used for several reasons, some by design and others by chance. By design, videotape was included in order to evaluate a child's spontaneous speech, expressive communication at a preverbal level, and expressive language. After the videotape is created, a transcript is made of all oral utterances produced by the child during the assessment. The transcript includes vocalizations (referred to as non-true words) and true words. The phonologic transcript is analyzed and summarized. The summary describes the number of vowels and the vowel types that were used, the number and type of consonants and consonant blends produced, the total number of utterances, the mean number of syllables per utterance, a rating of speech intelligibility, and an evaluation of the prosodic elements of the child's speech. For true words, the Logical International Phonetics Program (1993) is used to compare the accuracy of the vowels and consonants that are produced with the target word that was intended.

Another transcript is made of all of the words produced by the child. Words produced orally and those produced in sign language are recorded using the Systematic Analysis of Language Transcripts (SALT) (Miller, 2002), a computer-assisted language sampling analysis program. SALT is capable of providing many different analyses. The FAMILY Assessment has chosen to identify the number of utterances, the percentage of utterances using spoken language and/or signed language, the types of utterances, the mean length of the utterances, the number of words, the types of words, and the type token ratio. In addition, the FAMILY Assessment evaluates the simultaneous use of voice and sign and the use of fingerspelling.

The same language sampling analysis program is used to examine the parents' language. Oral and/or signed samples of the parents' language are collected and analyzed. This information is used in several ways. First, this is a convenient way to identify the quality of the language input provided by the parent. In addition, for families learning sign language, the language sample analysis provides quantitative and qualitative

measures of the number of signs used, the length of signed utterances, and the syntactical patterns that are used. From one assessment to the next, the parents can identify the improvement they make acquiring signs, when parents use both signed and spoken language, a comparison of the language produced in both modes is obtained. This is an efficient way to objectively measure the language model provided to the child.

*Added Benefits of Using Videotape* Although using videotapes to evaluate a child's speech and language skills continues to be valued, the use of the videotape has had another unexpected benefit. This benefit is actualized when the family and interventionist watch the tape. The videotape is viewed in the home giving the parents the opportunity to objectively observe the characteristics of their child's communication and the features of their interaction with their child. The interventionist facilitates a discussion to help families become good observers. For example, the interventionist and parent may identify specific characteristics of the child's oral language or sign language. Perhaps the child used "baby signs" that the parent did not understand or acknowledge at first. Or, the interventionist may take this opportunity to point out strategies the parent used that promoted the child's communication. And sometimes, parents will notice that they missed an opportunity to respond to their child. Over time, as parents develop their observation skills, they can regularly observe their child during typical daily routines. A good observer is able to notice what is working and feel good about it. This will help parents to determine their child's progress and to identify continued needs. Also, parents are offered a copy of the videotape, giving them an ongoing record of their child's development. The videotapes are a "baby book" of sorts, giving the family a longitudinal view of their child's development.

The early interventionists have actualized a similar benefit. During a scheduled home visit, the interventionist needs to focus on many different matters including the dynamics among family members, the behaviors of the child, the needs of the parents, and the characteristics of the parent-child interaction. Attending to all of these issues at the same time can restrict the interventionist's ability to observe particular characteristics of the child's communication and the specific strategies and techniques used by the parents. By viewing the videotape, with the parents or alone, the interventionist is able to critically analyze the appropriate issues. The interventionists laud this opportunity. Many interventionists report that, after they have viewed a videotape, they can more carefully identify strategies to teach parents during ensuing intervention sessions.

*Parental Questionnaires and Protocols* Early childhood programs support parents' participation in the assessment process (McWilliam & Scott, 2001). Parents are the most constant people in the child's life. And, because parents spend countless hours with their children, they are likely to be the most familiar with their child's skills. Research has shown that parents can reliably assess the development of the child (Miller, Sedey, & Miolo, 1990; Saylor & Brandt, 1986). The FAMILY Assessment uses protocols that are designed for parent report. Some are completed through interviews and others are completed by the parents with help from their early interventionist as requested.

One protocol completed by the parent is the Minnesota Child Development Inventory (Ireton & Thwing, 1972), which provides information about the child's development in seven domains: expressive language, receptive language, gross and fine motor, personal-social, self-help, and situation comprehension. Both the Situation

Comprehension Subtest and the Self Help Subtest correlate with measures of cognitive development (Yoshinaga-Itano & Snyder, 1999). Another protocol, the Play Assessment Questionnaire (Calhoun, 1987; Fewell, 1984), assesses the symbolic play skills of the child. This measure also correlates with cognitive development.

The child's vocabulary is measured using the MacArthur Communicative Development Inventories (Fenson et al., 1992). These checklists provide information about the quality of the gestures used by the child, the number of words the child understands, and/or the number of words the child produces. It describes the types of words the child has in his or her repertoire. The measure provides an easy way to track vocabulary development. Hart and Risley (1995) have identified a correlation between the rate at which vocabulary grows with rates of cognitive growth. Qualitatively, measuring vocabulary helps the interventionist to identify the categories of words that are most prevalent or occur least often.

For the child with a hearing loss, it is especially important to ensure vision skills are optimal. There are many temporary and permanent vision problems that young children may have. These vision problems can often be detected through observation. Parents and interventionists observe a child's functional visual behavior using the Observation of Vision Problems developed by Anthony (1992) to screen for problems.

Through an interview with the early interventionist, the parents complete the Functional Auditory Performance Indicators (Stredler-Brown & Johnson, 2001) to evaluate the functional auditory skills of their child (Robbins, Svirsky, Osberger, & Pisoni, 1998). While the entire scale is completed over time, the performance profile is submitted with the other assessment protocols. The profile describes the child's use of auditory stimuli in natural settings and the ability of the child to generalize these skills to different listening environments. The scoring of the protocol provides a way to objectively quantify a child's auditory development in several areas including sound awareness, identifying meaningful sound, auditory feedback, localization, auditory discrimination, short-term auditory memory, and linguistic auditory processing.

Along with considering their children's needs, parents also have the opportunity to consider their own needs and to request information. Using the Family Needs Interview (DeConde-Johnson, 1997), parents can identify information they would like their interventionist to share with them. The Rating of Parenting Events (Greenberg, 1981) asks parents to identify issues that are challenging for them in their daily routines with their child. Through this type of assessment, families gain insight about their concerns and priorities for themselves and for their child (McWilliam & Scott, 2001).

*Benefits of Using Parental Involvement* There is substantial research supporting use of parent-administered assessments. Moeller (2000) studied 112 children with various degrees of hearing loss. She evaluated the language development of children and rated the family's involvement in their child's intervention program. The most successful children were those with high levels of family involvement. She found that success is achieved when early identification is paired with early interventions that actively involve families. Furthermore, she found that strong levels of family involvement can buffer the effects of late enrollment to some degree. Enlisting families in the assessment process is an efficient way to promote family involvement.

Calderon (2000) studied parent-child interaction as a predictor of child outcomes. She studied 28 children with prelingual hearing loss. She measured parent involvement in the child's education program and the characteristics of maternal communication. Calderon's research showed that maternal communication skills correlate with higher language, earlier reading skills, and fewer behavior problems. Involving parents in assessing their child is a way to cultivate parent involvement. And, providing parents with an analysis of the language model they provide encourages parents to develop better communication skills.

Based on these findings, we are encouraged to look for ways to include parents in their child's early intervention program. Including parents in the assessment process is one way to encourage parent involvement. In addition, using parent-administered questionnaires and protocols, the child's behaviors are evaluated as they occur in many different situations over a period of time. This is in contrast to clinician-administered tests that assess a child's performance on specific tasks administered by a less familiar person at a specific point in time.

*Sharing Assessment Results* A summary of the results of the videotape analysis and the parent-completed protocols are returned to the early interventionist who shares the information with the family. The results are also used during the development of the IFSP. The information in the summary report identifies the developmental profile of the child in many developmental domains. It provides information to identify the parents' needs. Using norms for typically developing children and knowledge about child development, the interventionist can identify the unique strengths of the child and developmental areas that are delayed. The assessment information can be interpreted in three ways. Some of the information is provided in the form of developmental quotients or age equivalents, allowing a comparison of a child to his or her typically developing peers. Some tests have norms that compare a child with hearing loss to peers with similar profiles (these data obtained by Yoshinaga-Itano, Sedey, Coulter, & Mehl in 1998 at the University of Colorado can be found at [www.colorado.edu/slhs/mdnc/research](http://www.colorado.edu/slhs/mdnc/research)). These norms compare children according to the degree of hearing loss, the age of identification of the hearing loss, and the presence or absence of additional disabilities. Furthermore, the information can be used to measure a child's progress by comparing information gleaned from the first FAMILY Assessment, which is used to obtain a baseline of the child's skills, with the results of subsequent assessments. Used in this way, the information quantifies the growth that has occurred between assessments.

It can be an eye-opening experience for the parents as the strengths and needs of their child are identified. The assessment information is shared in a way that encourages parents to learn about their child, share their priorities and hopes and dreams, and develop realistic expectations. Delivering the information is not a goal in and of itself. Rather, it is part of the process by which parents discover more about their child and through which the interventionist guides the parents' learning. When subsequent tests are administered, the interventionist can explain the changes that have occurred. One goal of early intervention is to maintain a rate of development commensurate with the growing child. Hopefully, a child demonstrates 6 months of developmental gain in 6 months time.

The assessment information is also used to plan the intervention program. One caveat in choosing each assessment protocol is the availability of a developmental

hierarchy. Almost all of the protocols provide a guide to help interventionists identify skills that come next in the developmental continuum. Through discussion with the parents and others involved in the child's assessment team, the child's strengths and needs can be identified, the needs of the parents can be discussed, and specific strategies and techniques for the parents to learn can be identified.

The early interventionist and the parents forge a relationship that fosters communication. The early interventionist obtains information about the child not only through observation but through the assessment process as well. Although the protocols are designed for parent report, the interventionist and the parent are encouraged to complete the assessments together. They can work collaboratively to identify the child's skills. Parents learn about child development and the sequence of activities children typically follow. This empowers parents to understand the impact of hearing loss on their child, to celebrate accomplishments, and to identify areas requiring more attention. Early interventionists in the Colorado Home Intervention Program report that the time they spend acquiring assessment information contributes to parents' understanding about the effect of hearing loss on their child's development and, subsequently, the parents' enthusiasm with the early intervention program. The interventionist learns more about the parents' expectations for their child and the parents' need for information.

An unintended benefit of the assessment is the opportunity to objectively measure the modalities a child uses to communicate and the effectiveness of the communication method. As the interventionist and the parents view the videotape and review the objective information on the summary report, they can identify the child's natural and spontaneous style of communication. Having objective information helps the intervention team and the parents to make objective decisions about communication mode and eliminates the emotional turmoil some parents have experienced.

*Summary of the FAMILY Assessment Model* The FAMILY Assessment is one procedure for collecting information about child development and family needs. It can be used in its entirety, or specific protocols can be selected. It meets the requirement of Part C of the Individuals with Disabilities Act Amendments of 1997 (PL 105-17) to provide a multidisciplinary assessment for each child. It can be used to plan intervention, and it relies on parent participation that helps to empower parents. It also provides sufficient information to assist in program planning for each child. Another unintended benefit of using this assessment, which has been conducted for more than 15 years, is the extensive database that has been developed. Extensive research has been published identifying the efficacy of early identification and trends in the development of speech and language for young children who are deaf and hard of hearing (Mayne, Yoshinaga-Itano, & Sedey, 2000; Mayne, Yoshinaga-Itano, Sedey, & Carey, 2000; Obenchain, Menn, & Yoshinaga-Itano, 2000; Wallace, Menn, & Yoshinaga-Itano, 2000; Yoshinaga-Itano, 2000; Yoshinaga-Itano & Sedey, 1999, 2000; Yoshinaga-Itano et al., 1998).

## **PRACTICAL STRATEGIES**

These following practices can help to ensure that the assessment process will be functional, comprehensive, and helpful to the family.

1. Develop a philosophy statement that will support assessment practices.

2. Incorporate deaf and hard of hearing adults in the assessment process.
3. Be aware of cultural differences, including Deaf Culture, that may influence the assessment process.
4. Establish play as the "centerpiece" in the assessment process. Supplement with additional tools.
5. Use a videotape of the assessment for parent education. Focus on the documented strengths of both parent and child.
6. Present information, both written and in person, to parents in a positive way. Emphasize the strengths of the child and family.
7. Write "jargon-free" reports that are understandable and usable for the families. If technical terms must be used, define them in the report.
8. Maintain a portfolio that includes observation notes, photos of a child's play (e.g., building towers, kitchen play) and videotape samples.
9. After the assessment, provide the family with "fridge facts": a brief list of the most important activities parents can use to support their child's development. This colorful fact sheet can be posted on the refrigerator for easy reference.
10. Use systematic observation to update skills and adjust strategies between more formalized assessments typically scheduled twice a year.

## CONCLUSION

Developmental assessment of young deaf and hard of hearing children yields the most comprehensive information when a *process* is used rather than a few individual tests. The process involves parents and professionals (including deaf and hard of hearing adults) who observe the child in natural settings over time. Videotape is an essential tool in accurately documenting the communicative abilities of deaf and hard of hearing children. When professional judgment dictates, supplemental tests and checklists are used to further document the depth and range of developmental skills.

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