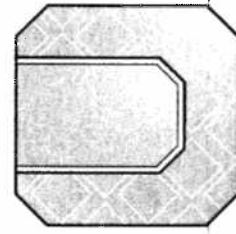


Understanding and Assessing the Communication of Children with ASD



Patricia A. Prelock

QUESTIONS TO CONSIDER

In this chapter, you will be exposed to some of the theoretical perspectives that have been used to explain the language and communication impairments of children with autism spectrum disorders (ASD). You will also learn about the communication difficulties and pragmatic challenges that plague their ability to engage in reciprocal exchanges with their communicative partners. Profiles for assessing communication strengths and challenges will be highlighted in an effort to move you closer to an understanding of the critical connections between assessment and intervention planning. The disablement framework described in Chapter 3 will be applied to the assessment practices described for evaluating the communication skills of children and adolescents with ASD. Consider the following questions:

1. What theoretical frameworks are used to explain impairment in language and communication in children with ASD?
2. What early communication challenges are typical for children with ASD?
3. What pragmatic language challenges interfere with the ability of verbal children with ASD to engage in conversation?
4. How can communication profiles be used to assess the strengths and challenges of children with ASD in this core deficit area?
5. What areas of communication assessment should be considered across the three dimensions of the disablement framework?

I

ntroduction

Impairment in communication is one of the core deficit areas historically associated with autism. In the *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition* (DSM–IV; American Psychiatric Association [APA], 1994) and its text revision (DSM–IV–TR; APA, 2000), communication impairment has been characterized in the following manner:

- delay in or lack of development of spoken language and gestures,
- impairment in the ability to initiate or maintain conversation,
- repetitive and idiosyncratic use of language, and
- lack of pretend play.

The central role that language and communication play in both diagnosis of and intervention for children with ASD highlights the critical role speech–language pathologists (SLPs) have in assessment. It also requires the SLP to collaborate with families and other practitioners in creating profiles of communication strengths and challenges for this population, as was discussed in Chapter 3. Further, it has been suggested that the long-term positive outcomes seen for individuals with ASD are predicted by the level of communicative competence they achieve (Garfin & Lord, 1986; McEachin, Smith, & Lovaas, 1993). It is important, therefore, to understand the communication challenges experienced by children with ASD and explore ways to effectively assess and support their needs in this area. This chapter will emphasize the descriptions of early language learning, gestural communication, and conversation that impair the ability of children and adolescents with ASD to participate fully in their home, school, and community. Aspects of imagination and play will be discussed separately in Chapter 5. Although individual chapters have been devoted to the assessment of communication, play, and social–emotional development (to be discussed in Chapter 6), it is important to recognize the interrelationships among each of these aspects of development that present challenges for children with ASD.

Theoretical Views of Language Impairment in Children with ASD

Some researchers have suggested that impairment in the development of theory of mind, which is often used to explain the social impairments in ASD, also provides a theoretical framework for explaining the language and communication impairments characteristic in ASD (Happe, 1993, 1994; Tager-Flusberg, 1993, 1996, 1997a, 1997b). Tager-Flusberg (1997a) believes that this theoretical framework can be used to explain what is and is not

spared in the language of children with autism. For example, those children with ASD who develop functional language often have little difficulty with the form of language (i.e., phonology and syntax). However, their development of certain aspects of language use (i.e., pragmatics), requiring perspective taking or understanding the minds of others, is a frequent area of impairment. The failure to orient to social stimuli (Dawson, Meltzoff, Osterling, Rinaldi, & Brown, 1998) and the inability to make sense of the affective signaling in interactions, which were described in Chapter 1 as early and persistent indicators of the core deficits in ASD, are key components of communication development and perspective taking. Tager-Flusberg (1997a) suggests that the “disconnects” between language form and use in verbal children with ASD highlight the complexity among several neurocognitive mechanisms. These mechanisms involve processing linguistic information such as phonological and syntactic structures, developing conceptual structures such as semantics, and processing visual and vocal input in social contexts, as in pragmatics (Tager-Flusberg, 1997a).

In the past, researchers have also explained the acquisition of language in children with ASD as different from their typical peers (Menyuk & Quill, 1985). More recently, however, similarities in language acquisition have been observed, particularly in the development of language form (Tager-Flusberg et al., 1990). Tager-Flusberg and her colleagues found that although the development of language form was slower than that reported for children without autism, the order of and processes involved in the acquisition of syntactic and morphological structures were similar. In contrast, aspects of pragmatic language seem to be significantly delayed or fail to develop in children with ASD (Tager-Flusberg, 1997a). Thus, Tager-Flusberg proposes that a more appropriate view for understanding the language impairment seen in ASD is a dissociation between language form and use, as opposed to a deviance view. She also suggests that using a theory of mind framework for explaining the language and communication deficits identified for children with ASD supports a “connection between these aspects of autistic dysfunction and current neurobiological theories of autism” (Tager-Flusberg, 1996, p. 171).

Early Communication Challenges

Children with ASD exhibit early and persistent communication challenges (Wetherby, Prizant, & Schuler, 2000). In fact, nearly half of the children with ASD never develop speech or demonstrate limited speech and language development (Lord & Paul, 1997; Lotter, 1978). Comprehension of verbal and gestural communication is also poor for many children along the spectrum. Three specific areas of early communication challenge have been described for children with ASD, including the development of intentional communication, gesture use, and the use of unconventional verbal behavior (Camaioni, Perucchini, Muratori, & Milone, 1997; Mundy, Sigman, & Kasari, 1990; Peck & Schuler, 1987; Prizant, 1987; Prizant & Rydell, 1993; Wetherby & Prizant, 1996; Wetherby et al., 2000). Each of these warrants

further discussion to aid in understanding the importance of early communication experiences and later language development in children with ASD. It is also important to recognize the heterogeneous nature and emergence of different communicative functions for children with ASD, and the potential for change in the type and degree of impairment over time (Camaioni et al., 1997).

Intentional Communication

A continuum of intentional communication development exists for children who are typically developing that begins preverbally and moves to a linguistic stage (Bates, 1976). A range of intentions have been described in the literature, from attention seeking, requesting, and greeting at the preverbal stage (Bates, Camaioni, & Volterra, 1975; Dore, 1974; Halliday, 1975; Roth & Spekman, 1984a, 1984b) to naming, commenting, and protesting at the single-word stage (Dale, 1980; Dore, 1974; Halliday, 1975; Roth & Spekman, 1984a, 1984b).

Three specific communication intentions emerge in children during their first year of life (Wetherby & Prizant, 1992). These are behavior regulation, social interaction, and joint attention. *Behavior regulation* is the use of specific acts to regulate or control the behavior of others for the purpose of obtaining something desirable. *Social interaction* involves children's use of specific acts to call attention to them, to greet another, or to sustain a social routine. *Joint attention* occurs when children initiate a communicative act that directs the attention of others for the purpose of sharing an event (Wetherby & Prizant, 1992). The communicative acts children with ASD use to signal intentional communication are more limited in function than has been reported for children who are typically developing. Unlike children who are typically developing and easily engage others in social interaction and joint attention, children on the autism spectrum generally use verbal or nonverbal means to regulate behavior to meet their immediate needs without developing the capacity for social interaction and joint attention (Wetherby, 1986).

The limited communicative functions reported for children with ASD compromise their opportunities for social engagement. In particular, deficits in the capacity for establishing joint attention highlight the lack of communication for social purposes described for children with ASD (Wetherby et al., 2000). Research suggests that joint attention emerges before words, is present in young children, predicts language development, and helps to coordinate attention between objects and people (Mundy et al., 1990; Wetherby & Prizant, 1992; Wetherby, Prizant, & Hutchinson, 1998; Wetherby et al., 2000). Further, failure to develop joint attention has been linked to limitations in play and in the development of peer relationships. Considering the critical role of joint attention in making early social and symbolic connections, it is an important target for both assessment and intervention.

Gesture Use

Gestures are used to convey information and provide a means for sharing affective experiences (Stone, Ousley, Yoder, Hogan, & Hepburn, 1997). Gestural communication develops early in children who are typically developing. This is not true of children with ASD (Buffington, Krantz, McClannahan, & Poulson, 1998; Camaioni et al., 1997; Mundy et al., 1990). In fact, children with ASD demonstrate a limited range of nonverbal behaviors (Baron-Cohen, 1988). They have been reported to use less frequent eye contact, decreased pointing to and showing of objects, and fewer gestures combined with meaningful vocalization. Curcio (1978) found that children with ASD seldom demonstrated “showing” gestures to call attention to themselves and gain the attention of another. Children with ASD have also been described as using less conventional gestures and exhibiting more primitive motoric gestures than their typical peers (Wetherby et al., 1998), as well as minimal to no expressive gestures (Stone & Caro-Martinez, 1990). In fact, the lack of gestures to establish joint attention has been identified as a predictor of language development in children with ASD (Mundy et al., 1990).

The ability to coordinate gestures with vocalizations appears to increase with age in children who are typically developing (Stone et al., 1997). In contrast, children with ASD have been reported to use a higher number of isolated gestures and a lower use of gesture plus vocalization in comparison to their typical peers (Wetherby et al., 1998). The ability to coordinate multiple nonverbal cues increases the salience and interpretation of a communicative act and increases the probability of responsiveness to the communicative attempt (Yoder, Warren, Kim, & Gazdag, 1994). Limitations in gesture use for children with ASD certainly compromise the quality of their meaningful communicative attempts.

Unconventional Verbal Behavior

Those children with ASD who are verbal often exhibit unconventional verbal behavior in the form of echolalia, perseverative speech, or excessive questioning (Prizant & Rydell, 1993). *Echolalia* is described as the repetition of exactly what is said or heard. The timing of the echoed response varies. It may be immediate, as in the following example of a 4-year-old with ASD:

FATHER: Give that to me, Joshua.

CHILD: Give that to me, Joshua.

Or the echolalia may be delayed, as in a 12-year-old saying, “Christopher, come on down,” a phrase heard on a TV game show a week earlier. Children with ASD sometimes exhibit variations in echoic behaviors. This variation, known as *mitigated echolalia*, might involve a modification in the words used, the prosody of the utterance, or the context in which it occurs (Prizant,

1987). For example, if a child with ASD observes milk spilling on the kitchen floor and hears someone say, "Clean it up!" he might repeat this statement in another highly charged situation (i.e., child hears words in one situation and repeats those words in another similar situation). Mitigated echolalia also can be immediate or delayed. Prizant (1987) and Fay and Schuler (1980) suggest that it is best to consider echolalia on a continuum, as the actual repetitions made, the understanding demonstrated, and the intent of the repeated utterance vary for children on the spectrum at different points in time.

Although some researchers explain echolalia from a deficit perspective, others have attached meaning to echoic productions. At the very least, echolalia may serve a function to request, to label, or to maintain contact or take a turn with a potential communicative partner (Prizant, 1987; Prizant, Wetherby, & Rydell, 2000; Rydell & Prizant, 1995). It may also be a response to a highly aroused state, serve as an aid to comprehension, or help to regulate behavior. Prizant (1987) and Prizant and Rydell (1993) have defined several functional categories for immediate and delayed echolalia that have both interactive and noninteractive roles and can provide a framework for assessing this unconventional verbal behavior in children with ASD. Further, they have suggested that depending on the cognitive level of the individual with ASD, echolalia may be analyzed into more spontaneous and creative language forms or remain repetitive and inflexible as a memorized unit of language.

Perseverative speech is also frequently observed in verbal children with ASD (Prizant & Rydell, 1993). This type of speech is characterized by either imitated or self-generated utterances that are produced repeatedly by a child with ASD with no real evidence of intent. It has been related to an increase in arousal level, anxiety, or processing difficulties. For example, a child might say, "Come on down" repeatedly across settings after hearing it on a TV game show, with no real intent but seemingly related to heightened anxiety. In the following example, a 4½-year-old boy with autism exhibits perseverative speech in what seemed to be an unsuccessful attempt at answering a question by his mom, as well as a way to fill time as he waited for his dad to go to the market:

MOTHER: Daddy is coming back.

CHILD: Daddy, mommy, baby [as he looked to where his dad had gone and where his mom and baby brother were standing].

MOTHER: Who are you?

CHILD: Daddy, mommy, baby.

MOTHER: Taylor, what is your name?

CHILD: Daddy, mommy, baby. Father, mother, brother.

MOTHER: Very good, Taylor.

CHILD: Father, mother, brother [as he pointed to each].

MOTHER: Who are you?

CHILD: Father, mother, brother.

Kanner (1971), in his review of 11 children with autism who were first described in his 1943 study, provides an example of perseverative speech as a child finds a toy train in a closet, sets it up, and says many times as he connects and disconnects the cars: “More train—more train—more train” and then counts the train windows, “One, two windows, four windows, eight windows” (p. 133).

A third type of unconventional verbal behavior that is sometimes observed in children with ASD is *excessive questioning*. Often a child will repeatedly direct a question to a communicative partner with intent and an expectation of a response. These repeated questions usually occur following a response. Even though the answer has been provided, the child continues to ask the question, which raises the likelihood that there is a relationship to increased arousal level, anxiety, or processing difficulties. For example, a child might repeatedly say, “Jennifer coming?” in reference to a respite provider who is picking up the child with ASD after school, even though a teacher has repeatedly indicated that this would occur. Another example follows, as a 6-year-old girl with ASD questions her SLP:

- CHILD: Are you wearing a watch today?
SLP: Yes, I am.
CHILD: What time is it?
SLP: 9:00 A.M. It is time for morning meeting.
CHILD: Do you have a watch? What time is it?
SLP: Do you remember what I said?
CHILD: 9:00 A.M. Is it time for morning meeting? Do you have a watch?

A third example is offered by Barron (2001), who describes how he used repetitive questions as a child with ASD to gain some sense of control in his life. He would repeatedly ask potential conversational partners if they had been to a particular state, and then would ask the same question about all 50 states. Once he completed that mantra of questions, he would cycle back and ask if the person had visited the capital of the state and so on.

Prizant and Rydell (1993) suggest that some excessive questioning and perseverative speech may be forms of echolalia that are facilitated by a communication partner's previous utterance or by a particular context. They also report that repeated questions and perseverative speech can be self-generated with little connection to previously heard utterances. Recognizing unconventional verbal behavior and then attempting to understand the purpose it may serve for particular children with ASD are important steps to more effective intervention planning for a child. We must identify those behaviors children with ASD use to indicate potential linguistic confusion or increasing anxiety in response to approaching a task or meeting an expectation. It may also be that some children with ASD require repeated input to map information as part of their preparation for engaging in or responding to a particular activity.

Pragmatic Challenges for Verbal Children with ASD

Over the last 30 years, researchers and practitioners have recognized the importance of considering the action component of language, or pragmatics (Bates, 1976; Dore, 1974; Ochs, 1979; Ochs & Schieffelin, 1979; Prutting, 1982; Prutting & Kirchner, 1983; Searle, 1969). *Pragmatics* is the use of language in social contexts. Searle (1969) has described language understanding and use as a speech act in which the speaker has a particular intent, the utterance selected to represent that intent has a particular meaning, and the listener interpreting the message infers a specific intent. How an individual uses words can change an event or activity and influence the direction of a conversation. Children who understand the rules for pragmatic language appropriately select the syntactic and semantic constructs needed to share their intent across a variety of contexts.

Pragmatic language difficulties have been reported as a significant area of weakness for children with ASD who have high cognitive skills, particularly children with Asperger disorder (Church, Alisanski, & Amanullah, 2000; Twachtman-Cullen, 1998). Several key features in the use of language for social purposes create problems for verbal children with ASD. These include paralinguistic features, extralinguistic features, linguistic features, and conversational features (Koegel, 1995; Twachtman, 1995; Twachtman-Cullen, 1998). Understanding each of these pragmatic components offers insight into the message and intentional communication of both the speaker and the listener in conversational exchanges. It is critical to assess these pragmatic components more carefully in the communication of children with ASD.

Paralinguistic Features

The skills speakers possess that manage their speech intelligibility and prosody are known as *paralinguistic features* of communication. Intelligible speech is critical to establishing communicative intent and maintaining listener engagement. Shriberg et al. (2001) found an increased prevalence of distortions in the speech of adolescents and adults with ASD in comparison to peers who were typically developing. They suggested that these speech distortions might indicate “a speaker’s failure to attend to and/or allocate resources for fine-tuning speech production to match the model of the ambient linguistic community” (Shriberg et al., 2001, p. 1109).

The *prosody* or rhythm of speech involves intonation or an emphasis on particular words that can distinguish subtle word meanings, signal whether an interpretation should be literal or nonliteral, and add emotion. It has been reported that children with ASD often exhibit a monotone voice quality (Baltaxe & Simmons, 1985; Fay & Schuler, 1980). Many children with ASD fail to use appropriate pitch (inappropriately high or low), intensity (inappropriately loud or soft), and intonation (inappropriately flat or unusual) during

conversation (Fay & Schuler, 1980; Lord & Paul, 1997). Shriberg and his colleagues (2001) completed a prosody–voice analysis with adolescents and adults with ASD compared to those without ASD and found significant differences in phrasing, stress, and nasal resonance. Individuals with ASD exhibited nonfluent phrasing, including sound, syllable, and word repetitions. They also placed emphatic stress within an utterance rather than marking stress grammatically or lexically and used speech that was inappropriately loud and high pitched. These features of pragmatic communication require attention to and understanding of how a change in pitch, intensity, or intonation can impact the intent of the message heard. Interpretation and use of prosodic information appear to be significant problems for children with ASD. Shriberg et al. (2001) recommend that speech–language pathologists at least screen verbal individuals with ASD for possible difficulties in prosody and voice, recognizing the potential impact of involvement in these areas on social and vocational adjustment.

Extralinguistic Features

The nonverbal components of pragmatic communication are called *extralinguistic features*. These include the use of gestures and body movements to aid communicative intent and the expression of feelings or emotions of an utterance in discourse. Children with ASD often lack the expected hand and arm movements, facial expressions and head nods (Ricks & Wing, 1975), and body posturing that are important in conversation. Mundy and Sigman (1989) reported that children with ASD send less clear affective messages with their facial expressions than children who are typically developing. Bieberich and Morgan (1998) also found that children with ASD exhibited less positive affect with their mothers when engaged in play than children with Down syndrome. This inability to coordinate movements and send appropriate affective signals during the reciprocal exchange that occurs in conversation and play seriously detracts from their ability to communicate intent and to make sense of the information they are taking in. Further, the reported difficulty of children with ASD in interpreting the meaning of facial expressions beyond the emotion of “happiness” has important implications for interacting in social contexts (Feldman, McGee, Mann, & Strain, 1993). For example, Barron (2001) described his difficulty as a child with ASD integrating the facial expressions of others and understanding the motivation behind those facial expressions. This deficit in a critical nonverbal component of pragmatic communication compromised his ability to relate to others.

Linguistic Features

Several linguistic features support successful engagement in social discourse. Most important, though, children must be able to use utterances that demonstrate what they know and understand about the listener. Children

with ASD have significant challenges in two areas of linguistic intent. First, their ability to attend to their communicative partner so that an actual participatory exchange can occur is compromised. As was learned in Chapter 1, children with ASD have difficulty disengaging, orienting, and shifting attention (Harris, Courchesne, Townsend, Carper, & Lord, 1999; Townsend & Courchesne, 1994; Townsend et al., 1999). The *ability to disengage* allows communicators to respond to unexpected information that is not immediately within their attentional focus. *Orienting* allows communicators to focus on the location of information that is being presented, increasing the speed and accuracy of their processing. The *ability to shift attention* allows communicators to change their focus quickly from one source to another. Children with ASD appear to be slow to disengage and are often slow and inaccurate in their processing of both social and nonsocial information (Harris et al., 1999; Townsend et al., 1999). Further, because they are generally slow and inaccurate in their ability to shift attention between sights and sounds, children with ASD often miss important information. As an added challenge, Dawson and her colleagues (1998) found that the impairments they observed in the ability of children with ASD to orient to social stimuli (e.g., another person's eyes or facial expressions) may account for the lack of shared attention reported for this population. Therefore, it is not difficult to understand the problems children with ASD demonstrate in their ability to interpret incoming linguistic information (including all its paralinguistic and extralinguistic features). In addition, they are challenged to formulate an utterance that is responsive to what has been said and how it has been related, and that accurately interprets the intent of what has been communicated.

The second area of deficit in expressing linguistic intent lies in the actual linguistic skills children with ASD possess and use to express themselves. Often, their language is characterized by unconventional verbal behavior, as previously described, which fails to engage a communication partner. For example, the use of recurring linguistic forms that do not consider the linguistic information a communication partner provides is sure to terminate a conversation. Further, the quality and extent of a communicative exchange are influenced by the linguistic repertoire of the communicator. Children with ASD are limited in both the quantity and the quality of the linguistic information they can understand and express, particularly in the pragmatic (language use) aspects of language. The following example provided by one mother of a child with ASD is a clear example of the challenges her son and their family experienced when Eddy used the language he had to communicate a need in an unconventional way. In spite of Eddy's linguistic limitations, however, his family figured out how to meet his needs building on the language and intent he had.



It was Thursday afternoon, about 6 p.m., when Eddy came up to my husband, Brian, and me, and said, "I want Dr. Mike!" (Eddy's pediatrician). We said fine and put him in the car to take him to the local

health center. Fortunately for us, the emergency room was open and Dr. Mike was there. I told him what was happening, so he waited in the hallway. Eddy did not acknowledge Dr. Mike, but walked right past him to the last waiting room. He entered the room, went over to the table, opened a jar, took out a Band-Aid, put it on a scratch on his leg, and said, "I want Dr. Mike." At that point, Dr. Mike and I remembered that Eddy had had a blood drawing the previous week in that same examining room, and Dr. Mike had put a Band-Aid on the site of the blood draw. He had wanted a Band-Aid for a cut, and this was the only way he knew how to ask. Over the next few weeks, we worked with Eddy to cue him to ask for a Band-Aid for a paper cut and a scraped knee. He finally started requesting a Band-Aid. About 2 months later, he had been quite grumpy most of the day. When putting him to bed, he asked for a Band-Aid. I gave him one, and he put it on his stomach. About 10 minutes later, he became very sick with a stomach flu. From this point, we have been able to teach him stomach ache, headache, and other ailments. He now can use his words and/or picture symbols to tell us about his illnesses.

Conversational Features

The verbal and nonverbal skills used by speakers during communicative interactions are important in monitoring the effectiveness of discourse as well as ensuring the flow of that discourse. Comprehension of specific speech acts and the ability to make judgments in the context of discourse also contribute to the success or failure of a communication exchange (Twachtman-Cullen, 1998).

The verbal aspects of communication that are important to successful conversational exchanges include the following:

- selecting, maintaining, and changing topics
- taking turns
- initiating topics of conversation
- responding to conversational topics presented by another
- knowing when and where not to pause, interrupt, or overlap
- giving feedback to the listener or the speaker
- providing responses contingent on those of the conversational partner
- using concise utterances
- knowing how much or how little to say

Each of these verbal skills in conversational exchanges contributes to the reciprocal nature of communication. Tager-Flusberg (1996) suggests that

the tendency for children with ASD to restrict their language use for instrumental functions (e.g., requesting a desired object from an adult) limits their conversational abilities. Children with ASD appear to struggle with the discourse rules Grice (1975) proposed for successful conversational interaction. Frequently, verbal children with ASD are unable to judge conversational cues to tell when they have said too much (quantity), how important a specific comment is to the conversational topic (relevance), or whether they have been clear about the information conveyed (clarity) (Lord & Paul, 1997; Lord et al., 1989; Twachtman-Cullen, 1998). For example, Volden, Mulcahy, and Holdgrafer (1997) described the referential communication skills of adolescents and young adults with ASD and found their conversation to be more redundant, non-task related, and linguistically peculiar than that of a group of adolescents and young adults without ASD. These observed responses tended to interrupt the flow of discourse and led to more inefficient communication for the group of individuals with ASD. During a semistructured conversational exchange around vacation, friends, and school, Capps, Kehres, and Sigman (1998) found that children with ASD were able to sustain their dialogue but often failed to respond to questions and comments, and usually made less relevant contributions to the conversation than children with other developmental disorders.

There are also two important nonverbal aspects of successful conversational exchanges. The first, *eye gaze*, tells speakers that their conversational partners (i.e., the listeners) are attending and listening to what is being said. Effective eye gaze by the listener informs the speaker that the listener is interested in the information being shared. Eye gaze also tells listeners that their conversational partners (i.e., the speakers) are directing the information to them to hear and understand. Effective eye gaze by the speaker engages the listener in the conversational exchange. Snow, Hertzog, and Shapiro (1987) found that children with ASD direct less eye gaze to individuals during interactions. The second nonverbal aspect of conversation is *proximity*, or the use of space and body orientation. Recognizing a comfortable "talking" area during conversational exchanges is critical to the successful initiation and sustainability of social discourse.

In addition to the verbal and nonverbal aspects of reciprocal conversational exchanges, a level of comprehension is required to participate successfully in discourse. Specific areas of understanding may pose difficulties for children with ASD, including understanding the use of indirect requests, interpreting and responding to nonliteral language, and making presuppositions or assumptions about the listener's needs (Twachtman-Cullen, 1998). For example, a teacher might say to a student with ASD, "Kevin, there is a lot of noise coming from your group," and he would respond, "I know," instead of quieting down, which was the indirect intent of the teacher's utterance. Teenagers might be talking about someone who "kicked the bucket," and the peer with ASD would not understand that the nonliteral interpretation in that context is that someone has died. A student with ASD might explain something to his teacher about a boy named Tom who came over to his

house, without identifying who Tom was, assuming the teacher knew that Tom was his cousin.

Children with ASD struggle in their ability to participate in the reciprocal nature of conversational exchanges. Their limited communication means may lead to more unconventional, inappropriate communication attempts (Wetherby et al., 1998). Failed attempts to communicate intent in conversation might lead to aggressive acts. In the example that follows, the preschool child with ASD became physically aggressive and began to scream when approached by his teacher, who did not initially understand what the child was trying to communicate:

- TEACHER: Kevin, it's time to get ready to go outside on the playground [as she approached with a pair of boots].
- CHILD: Screeches [and shakes head no].
- TEACHER: You are almost done with the train. Once you put it away, I will help you with your boots.
- CHILD: [Gets up from the table and throws himself on the floor]
- TEACHER: [Approaches the child]
- CHILD: [Attempts to slap the teacher]

This aggressive behavior continued for some time before the teacher realized that the child was upset because the boots she was bringing to him were not his. He did not have a conventional way to inform his communicative partner what was wrong and why he was so upset.

Less conventionally appropriate attention-seeking behaviors (e.g., pacing, yelling out) may also be used to initiate an exchange or at least get the attention of a potential communicative partner, as demonstrated in the following example.



A 4-year-old with ASD frequently raced around the learning areas in his preschool classroom. This pacing and bolting behavior continued for several weeks. Initially, the team interpreted this behavior as a result of his increased anxiety and arousal level in this new environment. Each time an adult approached him, he bolted from that person as well. Upon further observation and assessment, however, the SLP realized there was a pattern to the pacing and bolting behavior. She also noted some attempts by the child to touch or look at another child, or peer into the activity in which the children were engaged (e.g., making cookies or painting). When there was no response to the child's subtle and unconventional attempts to engage, he would bolt and try again in another area of the room.

Once these unconventional behaviors were interpreted as meaningful attempts to engage potential communicative partners, the child's initiation

behaviors were shaped using peer-mediated intervention strategies (discussed in Chapter 10). Again, the importance of careful and critical assessment of the unconventional behaviors children with ASD demonstrate cannot be understated if effective intervention planning is to occur.

More able children might avoid conversational discourse altogether because they lack facility with the conversational features listed above. To a potential communicative partner, they may appear generally aloof or unapproachable for discourse. For example, a highly verbal teenager with ASD who lacks an understanding of the humor so often expressed by his peers might ignore their attempts to engage him because of his weak knowledge of this abstract form of language. The result is often a discontinuation of the peers' attempts to involve the adolescent with ASD.

Recognizing the bidirectional influence and general interdependence of language and social interaction makes it easier to understand the complexities of social communication that individuals with ASD so often experience. It is not difficult to see the social challenges brewing for children with ASD who have limited linguistic capacity and thus fewer opportunities to experience and participate in reciprocal social discourse. Lack of involvement in a sufficient number of quality interactions limits the ongoing feedback children with ASD can integrate into their scripts for social interaction. Children who have limited opportunities with typical language models lack the powerful linguistic input and feedback provided in that context that can be used in future social discourse encounters. In addition, when opportunities for conversation present themselves, breakdowns are likely. For example, children with ASD may fail to recognize the speaker's intent (e.g., in indirect requests), misinterpret the use of nonliteral or figurative language, or misunderstand the active and reciprocal roles of speaker and listener. Such breakdowns in conversation make it difficult for children with ASD to sustain their discourse with potential communication partners.

Other Language Challenges

Several other language problems are reported for verbal children with ASD that impact on their semantic understanding and linguistic performance (Landa, 2000). Difficulties in word choice and meaning exhibited by children with ASD often reflect an inflexible cognitive style, a need for control of the linguistic environment, and an attempt to make sense of the world. Some of the specific challenges described for individuals with ASD include the use of metaphoric language, literal meanings, gestalt processing, theme building, and inference making. Each of these language difficulties is explored more fully in the paragraphs that follow. It is important for professionals to understand the importance of both assessing the occurrences of these language challenges and making determinations about how best to ameliorate them through intervention planning.

Metaphoric Language

Although children with ASD have been observed to assign words to the same categories as other children, some use metaphoric language, in which they make associations that have private meanings (Lord & Paul, 1997; Twachtman, 1995; Twachtman-Cullen, 1998; Volden & Lord, 1991). For example, a child might say, "Help the alligator" to a teacher during math class, which seems out of context. With probing and help from the child, the teacher learns there is a tear in the child's math book that creates an image similar to a picture of an alligator the child saw in his science book earlier in the day. The child does not possess the linguistic skill to report his concern in a more conventional way, so he creates an association recycled from information previously seen, heard, or read. Twachtman-Cullen (1998, 2000) suggests that the use of inappropriate metaphoric language by verbal children with ASD is an indication of their poorly developed knowledge of the importance of sharing understanding in a social context. She also states that the inappropriate use of metaphors may be related to the lack of perspective taking that is reported for children with ASD. It would be important, then, to examine perspective taking more comprehensively in verbal children with ASD and define situations of metaphoric language use. In addition, Prizant (1987) indicated that metaphorical language may involve delayed echolalia, including variations of repeated utterances that have some creativity. If so, it would be important for families and practitioners to trace such utterances to determine their meaning. Considering the need for making sense and the cognitive inflexibility described for many children with ASD, the use of metaphors associated with private meanings is not surprising.

Literal Meanings

Responding to literal versus implied meanings also poses challenges for children with ASD (Landa, 2000; Twachtman, 1995). Consider the classroom context in which many instructions make assumptions about how a student will respond. For example, when a teacher asks her students to "sign your name" at the top of a paper, she would not expect students to write "your name," although that might be the literal interpretation the student with ASD makes. Similarly, the tendency of children with ASD to interpret information literally is reflective of a cognitive style that is inflexible even when the context suggests an alternative interpretation (Ozonoff & Miller, 1996; Twachtman-Cullen, 1998). Sean Barron, an adult who has described his early experiences with autism, remembers being very literal, rote, and concrete in his use of words (Barron, 2001). He has described how he compensated for his difficulty with imagination, concrete thinking, and relating by looking up words in the dictionary so that he would at least have a plethora of words to use. Kanner (1971) offers an example of literal interpretation in his review of 11 children with autism whom he first studied in 1943. Kanner

provides this scenario of a 5½-year-old child asking his father about a picture he saw in an office:

"When are they coming out of the picture and coming in here?" He was serious about this. His father said something about the pictures they have at home on the wall. John corrected his father: "We have them *near* the wall." (p. 137)

Gestalt Processing

Descriptions of early language development in children who are typically developing have proposed the occurrence of both an analytic and a gestalt processing style (Peters, 1977, 1983). Children exhibiting an analytic approach to early language learning are described as recognizing, analyzing, and producing individual words or parts of language (e.g., using nouns to label objects). In contrast, children demonstrating a more gestalt approach exhibit more conversational features (e.g., rising and falling intonation, producing multiple syllables without clearly marking individual words) and favor the use of "whole" units of language or phrases (e.g., "How are you?") in their early language learning. Peters (1977, 1983) even proposes a dual storage notion in which some "gestalts" that children learn and use can be analyzed further as the need arises, whereas others remain essentially unanalyzed language wholes. Nelson (1973) described a similar phenomenon in early language learning style differences in her explanation of referential and expressive language learners. She suggested that the two different learning styles eventually merge, and language growth moves forward.

Two perspectives have been shared on the child's use of a gestalt style of language learning (Duchan, 1994). One perspective, the deficit view, suggests that the use of such gestalts is not productive and that learners who use the gestalt approach may be less proficient language learners (Krashen & Scarcella, 1978; Prizant, 1983). Seeing gestalt processing from a deficit perspective assumes that children learn best through an "analytic" approach (Duchan, 1994). A second perspective is more competence based, indicating that a gestalt style is creative and productive for many children who use it (Landau & Gleitman, 1985; Peters, 1983).

The use of a gestalt processing style has been reported as a specific challenge for children with ASD (Prizant, 1983; Prizant & Schuler, 1987). Prizant (1987) has considered the occurrence of echolalia in children with ASD as a potentially extreme form of gestalt processing in which children process their language and experience as whole units rather than segmenting language into meaningful rule-based components. Duchan (1994) proposes that how professionals perceive gestalt learners should depend on the flexibility of the gestalts used and how they are understood and function for the gestalt language learner. Therefore, it would be important to more carefully examine the role of gestalts in children with ASD. The type of gestalts

that may occur include single utterances, events, or discourse scripts that follow a routine (Duchan, 1994). A single-utterance routine might occur as follows: A child with ASD goes to touch a pizza that has just been placed on the table. Because it is very hot, his mother says, "Don't touch the pizza!" The child processes this unit of language as a whole and then applies it to similar situations. For example, the same child goes to the stove that is turned on for dinner and says, "Don't touch the pizza!" or the child sees his mom using a hot iron and says, "Don't touch the pizza!"

The use of some single-utterance gestalts might be likened to using immediate, delayed, or mitigated echolalia, as described earlier. What is important, though, is to determine whether the child has a means for breaking down the utterance. It may be that the use of mitigated echolalia reflects a growing awareness of how language might be used (Twachtman, 1995) even if that use is somewhat unconventional, as in the preceding example. Certainly, the child's use of "Don't touch the pizza!" in similar situations suggests he has an understanding of things or situations that are hot and should be avoided or not touched. He does not, however, have the linguistic flexibility to adjust the content of the utterance to describe the specific situations more accurately.

Assessment of gestalt processing should also consider the routines in events or discourse that children with ASD sometimes display. Again, children who are typically developing also exhibit some gestalt-like processing in familiar event (e.g., bedtime routine) or discourse (e.g., first learning to talk on the telephone) routines. Depending on the perspective taken and the flexibility within the gestalt, the use of such routines can be seen as productive or nonproductive. An event routine for a child with ASD might be similar to that of a child without ASD. However, it may be less flexible (e.g., a bedtime routine that requires only Mom to read a book and no one else; driving to see Grandma must follow the same roads without diversion). A discourse routine in which a child with ASD has memorized a script from a television program and uses it in response to questions about his favorite television show may limit the meaningfulness of his communication encounter. It would be important, then, to define the gestalts that do occur for children with ASD, determine whether they contain elements that are used elsewhere, assess what level of flexibility exists in their use, identify and determine the appropriateness of the contexts of their use, and describe how the gestalts function. Approaches to intervention addressing those gestalts that remain seemingly unanalyzed for children with ASD will be discussed in Chapter 9.

Theme Building

Language use in conversational exchanges is not just about introducing a topic. It often facilitates a cognitive process of theme building that individuals use to make sense of the world (Twachtman, 1995). The perseverative speech

of children with ASD has been described as locking into a theme, whereas stimulus overselectivity has been described as reflecting a more rigid focus on a larger theme (Twachtman, 1995). An adolescent with ASD who will talk only about the players and scores of a regional baseball team and repeatedly names the team players and game scores has locked onto a theme. The young child who plays only with trains and fails to make connections with related vehicles is overfocused on the stimulus he has selected that has a particular motivating interest. The challenge in conversational exchanges is realized when the adolescent is unable to divert his attention to consider other activities or the young child limits his ability to learn and talk about other objects that can do similar and different things. For some children with ASD, themes that interfere with conversational discourse often satisfy a need for making sense. Consider the following example:

An 8-year-old boy with ASD often engaged in conversation by explaining how to get from one place to another. His ability to map out trips across the state was detailed and accurate. Upon further probing of this ability, it became evident that the maps he created had a specific theme. The child's father worked in several towns across the state. The little boy was mapping out all these trips as a way to know how his father would get to his destination, where he would be, and how he would be returning.

In this example, the child used the creation of maps as a conversational theme that helped him to make sense of the world that was important to him.

The general tendency of verbal children with ASD to initiate topics of their particular interest without regard to the listener's interest indicates poor recognition of both the nonverbal and indirect verbal cues offered by listeners (Landa, 2000; Wing & Attwood, 1987). For some individuals with ASD, focusing on a topic of interest or theme is the only way to make sense of their world. In describing his attempts to eliminate the symptoms of autism, Barron (2001) explains the need to feel a sense of comfort, security, and control in his life. That need for control dictated his rigid, rhythmic pattern of speech early on and focused his speech on those themes or topics that he knew a lot about (e.g., states, numbers, chemical elements).

Inference Making

Children with ASD have sometimes been reported to have difficulty making judgments about the physical world based on information that is present at the time (Landa, 2000; Twachtman-Cullen, 1998). For example, if a student with ASD walks into a classroom and another student is placing birthday treats on everyone's desk in the room, the student with ASD might not make the logical connection—that is, that the student passing out the treats is celebrating her birthday with the class that day. This challenge in inference making is not surprising considering the reliance on cues that are usually

indirect and socially determined. Twachtman-Cullen suggests difficulties in inferring might also be used to explain the preference for factual information frequently reported for individuals with ASD.

Some researchers have proposed that the inferring required in tasks with more complex humor, which is so difficult for people with ASD, may be explained by their rigid and concrete thinking process (Ozonoff & Miller, 1996). This rigidity causes the individual with ASD to focus on an initial interpretation and does not allow for a reinterpretation based on the context. Others have suggested that the abstract language challenges experienced by individuals with ASD are a result of an underlying deficit in ability to process complex information (Minshew, Goldstein, & Siegel, 1995). Barron (2001) has described rigidity in his own cognitive processing, stating that he could not take information that was learned in one situation and apply it in another situation. He also indicated some difficulty with complex information processing, describing "word islands" as words he knew and understood but whose meaningful contexts he could not process. It is clear that during assessment, practitioners should consider the ability of children with ASD to make inferences, and should identify those situations in which both successful and unsuccessful attempts at inference making affect communication, social interaction, and play.

Creating Profiles of Communication Strengths and Challenges

Once a diagnosis has been made, it is important to begin to develop a holistic and comprehensive view of children with ASD by profiling their communication strengths and challenges. This is particularly important if practitioners are to implement a developmentally and individually appropriate curriculum and have the information they need for prioritizing communication intervention goals (Wetherby et al., 2000).

There are several considerations as practitioners prepare to create a profile of a child's communication strengths and challenges. First, situations need to be designed that will foster observation of a child's attempts to communicate. Wetherby and her colleagues (Wetherby & Prizant, 1992, 1993; Wetherby et al., 1998; Wetherby et al., 2000) have suggested the use of communicative temptations (e.g., placing a desirable object in a closed container near a child) to assess a child's communication functions and means. A number of communicative temptations are described in the *Communication and Symbolic Behavior Scales* (CSBS; Wetherby & Prizant, 1993). The CSBS is a standardized assessment tool Wetherby and Prizant developed for young children, which has value in profiling the communication strengths and challenges of children with ASD who have no or limited verbal skills.

The second consideration is that practitioners must observe what the child does to communicate both nonverbally and verbally. Third, an assessment of joint attention should be made, including whether the child's shared

attention is object or person focused. Fourth, the child's repertoire of gestures, sounds, and words should be defined. Fifth, it is critical to describe at what point the child's existing communication skills no longer meet his or her communication needs. Finally, a closer inspection of the child's echolalia or other unconventional verbal behavior should be completed.

Specific assessment strategies that can be used for determining the communication strengths and challenges of children with ASD who have no or limited verbal skills, those with unconventional verbal behavior, and those with verbal skills are described in the following sections.

Communication Assessment for Nonverbal Children with ASD

Clinical researchers have suggested three important preverbal areas to assess in all children but that have important implications for children with ASD (Bruner, 1981; McLean & Snyder-McLean, 1978; Wetherby & Prizant, 1993). First, practitioners must determine the presence of communication functions in the nonverbal behaviors of children with ASD. Wetherby (1986) and Wetherby and Prizant (1992, 1993) have offered descriptions of three categories of communicative function that should be assessed in children with ASD: behavior regulation, social interaction, and joint attention. A child can regulate the behavior of another by requesting objects or action. Attempts at social interaction would include requesting a social routine (e.g., peek-a-boo), seeking comfort or permission, calling out, greeting, and showing off (Wetherby & Prizant, 1992, 1993). Joint attention would involve "commenting" on objects or actions or requesting information.

The second preverbal area that is important to assess is the means used for communication across the three categories of communicative function. Wetherby and Prizant (1992, 1993) have described the use of contact and distal gestures, as well as vocalizations. In the preverbal child, contact gestures that have a communicative function might include showing, giving, and pushing where there is some contact with an object or a communication partner. Distal gestures that serve a communicative function include pointing, reaching, and waving. These gestures do not require actual physical contact with an object or a communication partner. Vocalizations in preverbal children can also potentially serve a communicative function. Therefore, practitioners should carefully assess the use of noises, crying, laughter, and sound productions, including syllable shapes and phonetically consistent forms, to establish some communicative connection.

A third area of assessment in preverbal children with ASD requires an examination of nonlinguistic comprehension. It is possible that some children with ASD who have no or limited verbal skills understand some of the nonverbal, situational, and paralinguistic cues used among communication partners. For example, practitioners would want to assess whether the child with ASD knows that pointing or looking (nonverbal cues) at an object or

activity means that the communication partner should attend to it. The ability to respond to a situational cue like observing someone placing an object in a container and following along should likewise be assessed. Responses to paralinguistic cues should also be examined. For example, does the child with ASD understand that a loud voice accompanying an instruction might mean that a parent or teacher is angry?

The CSBS provides an effective framework for examining the communicative functions and means and nonlinguistic comprehension skills of children with ASD (Wetherby & Prizant, 1993). In my experience, although many children with ASD are unable to comply with the formal requirements of this tool, the actual framework is useful in creating a meaningful profile of the communication strengths and challenges of children with ASD.

Communication Assessment for Children with ASD Who Exhibit Unconventional Verbal Behavior

As previously discussed, Prizant (1987) and Prizant and Rydell (1993) describe three specific areas of unconventional verbal behavior that interfere with the communication success of children with ASD: echolalia, perseverative speech, and excessive questioning. Prizant and Rydell also suggest that unconventional verbal behavior seems to increase in situations with heightened cognitive and social demands. For example, adult communication partners who employ a highly directive interaction style place greater demands on the child with ASD because of their control of the social and learning environments and their expectations for specific responses. These social and cognitive demands to follow the communication partner's lead tax the child's processing and may lead to a more familiar, predictable response by the child with ASD (e.g., echolalia). In contrast, a more facilitative style follows the child's lead, placing fewer social and cognitive demands for responding on the child and yielding more social initiations and fewer echoic responses (Rydell & Mirenda, 1991).

Knowing the challenges that face children with ASD to comply with the cognitive and linguistic demands of their learning environments, it is important to understand unconventional verbal behavior as part of the strategies used by children on the spectrum to communicate their intent. A careful assessment of this behavior is needed if we are to understand not only their possible intentions but also the situations in which unconventional verbal behavior is likely to occur. Several factors should be considered in the assessment of unconventional verbal behavior (Prizant, 1987; Prizant & Rydell, 1993; Rydell & Prizant, 1995):

- situations of frequent occurrence (e.g., transitions; unstructured, unfamiliar, or difficult tasks; emotionally arousing activities; communication partner's style; complexity of linguistic input);

- antecedent events (e.g., what happens preceding the observed behavior);
- range of functions potentially served (e.g., labeling, requesting, greeting, commenting);
- interference with successful communication; and
- any progressive change in behavior.

It is important to obtain a complete history of the unconventional verbal behavior from the family, as well as from those who have the most consistent experience with the child. Observation of the behavior in a variety of contexts is also critical.

Other considerations for examining echolalic responses require attention to timing, context, and conversational role (Prizant, 1987). First, determine the latency of the response (e.g., Is the response time greater for more intentional forms?). Second, identify the impact of context (e.g., Does echolalia occur more in two-way or large group situations?). Finally, assess whether the echoic behavior is an initiation or a response. Figure 4.1 is a sample format that could be used to guide the assessment of unconventional verbal behavior in children with ASD so that a more complete communication profile could be developed.

Semantic Assessment in Verbal Children with ASD

Despite the production of often well-formed syntactic structures (e.g., gestalt or echolalic utterances), meaningfully expressing semantic relationships in socially appropriate ways is a particular challenge for children with ASD. Landa (2000) suggests that an assessment of semantic knowledge is critical for this population. She proposes that both receptive and expressive vocabulary be examined as well as the comprehension and production of a variety of semantic relationships, word categories, antonyms, synonyms, figurative language, inferencing, and prediction skills. Considering the tendency of verbal children with ASD to create their own metaphors to represent private meanings, as well as their overreliance on literal interpretation, careful analysis of word selection and responses to literal versus abstract language is critical across settings and communication contexts. Further, an assessment of narrative and discourse comprehension is important.

Semantic knowledge makes an important contribution to academic and social learning. It gives students access to the gist of what goes on in the classroom, as well as among peers. For children with ASD who are included in general education classrooms, an assessment of their semantic knowledge is crucial. Some of the formal tools that might be considered for determining particular areas of semantic strength and weakness are highlighted in Table 4.1. An observational framework for more carefully examining semantic understanding and use can be found in Figure 4.2.

(text continues on p. 191)

Assessment of Unconventional Verbal Behavior

Child's name: _____ Date: _____

Observer: _____ Location: _____

Unconventional Verbal Behavior (i.e., immediate or delayed echolalia, perseverative speech, excessive questions)	Context (e.g., task difficulty, transition, familiarity, partner style)	Antecedent Event (i.e., what happened just before)	Function Served (e.g., labeling, requesting, directing attention, commenting)	Response (i.e., successfully communicated intent; demonstrated comprehension)	Rigidity in Form and Function (e.g., any novel production or adjustment in form)

FIGURE 4.1. Assessment of unconventional verbal behavior.

© 2006 by PRO-ED, Inc.

TABLE 4.1**Selected Assessment Tools for Semantic Language**

Test	Age range	Description	Reliability and Validity
<i>Figurative Language Interpretation Test</i> (Palmer, 1991)	9 to 16+ years (4th through 10th grades)	A norm-referenced diagnostic tool designed to assess a student's ability to comprehend figurative language, including <ul style="list-style-type: none"> • similes, • metaphors, • hyperbole, and • personification. 	Inter item consistency: reliability coefficient of .84. Reliability across Forms A and B: .77 correlation. Construct validity: Correlated with reading total on the California Achievement Tests. Concurrent validity: Correlated with figures of speech from basal readers and trade books.
<i>Language Processing Test—Revised</i> (Richard & Hanner, 1995)	5 to 11 years	Assesses ability to organize information and make sense of what is heard; identifies breakdowns in processing that affect memory and word retrieval.	Test–retest reliability: .86 across ages for total test. Validity: Item–test correlations and differences between children with and without language impairments.
<i>Test of Word Knowledge</i> (Wiig & Secord, 1992)	5 to 17 years	Assesses semantic knowledge, both the understanding and the expression of the content or meaning of language. Two levels of word knowledge are assessed: Level 1—Referential and relational aspects <ul style="list-style-type: none"> • receptive vocabulary, • word opposites, • expressive vocabulary, and • word definitions. Level 2—Relational and metalinguistic aspects <ul style="list-style-type: none"> • synonyms, • figurative language, • word definitions, and • multiple contexts. 	Content validity: The test content is clearly defined and supported by research. Construct validity: Correctly identified participants as language learning disordered (LLD) or non-LLD in comparison to several other tests making the same discrimination. Concurrent validity: Correlated with the <i>Clinical Evaluation of Language Fundamentals—Revised</i> . Internal consistency: Ranged from .86 to .96 for the total composite scores. Test–retest reliability: Higher for total scores (.94) than for subtest scores (.46–.96).

(continues)

TABLE 4.1 *Continued.*

Selected Assessment Tools for Semantic Language

Test	Age range	Description	Reliability and Validity
<i>The Word Test 2: Elementary</i> (Bowers, Huisingsh, LoGiudice, & Orman, 2004)	7 to 11 years	Assesses the following aspects of semantic language: <ul style="list-style-type: none"> • association, • synonyms, • semantic absurdities, • antonyms, • definitions, and • multiple definitions. 	Test–retest reliability: .93 for total test, with a range from .70 to .80 for subtests. Validity: Item–total test correlations; subtest intercorrelations; mean differences between individuals with and without language impairments.
<i>The Word Test 2: Adolescent</i> (Bowers, Huisingsh, LoGiudice, & Orman, 2005)	12 through 17 years	Assesses the following aspects of semantic language: <ul style="list-style-type: none"> • brand names, • synonyms, • signs of the times, and • definitions. 	Normed on over 1,600 students. Test–retest reliability: .91 across all ages. Validity: Large differences between students with and without language impairments.

Pragmatic Assessment in Verbal Children with ASD

Following the work of Bates (1976) and others suggesting that because language is learned and used in a social context, it should be studied in a social context, it is important for practitioners to consider this in their assessment of children suspected of pragmatic difficulties, particularly children with ASD. With its multifaceted and context-bound nature, an ecologically valid assessment of pragmatics is a difficult yet critical element for profiling the communication skills of children with ASD (Landa, 2000).

Many attempts have been made to incorporate what has been learned about pragmatics into an assessment framework for clinical use. In particular, Prutting and Kirchner (1983) created a speech act framework for examining pragmatics that extends the description of the utterance act from verbal information alone to nonverbal (e.g., physical proximity, body posture, gestures) and paralinguistic (e.g., intelligibility, prosody or intonation and stress patterns, message rate) information. This framework has value for the assessment of pragmatic language in verbal children with ASD, considering the challenges described earlier for paralinguistic, extralinguistic, linguistic, and conversational features of pragmatic language. Further, in the assessment of pragmatic language, practitioners must consider levels of analysis, assessment contexts, and the specific pragmatic parameters examined.

Assessment of Semantic Language in Children with ASD

Child's name: _____ Date: _____

Observer: _____ Location: _____

Semantic Parameters	Understanding	Use	Influence of Contextual Variables (including physical environment, props, adult or peer interaction style, prompts)
Word Categories			
Antonyms			
Synonyms			
Figurative Language <ul style="list-style-type: none"> • Metaphor • Simile • Idiom 			
Inferences			
Atypical Semantic Behavior <ul style="list-style-type: none"> • Metaphoric language representing private meanings • Literal vs. abstract understanding 			

FIGURE 4.2. Observational framework for examining semantic language in children with ASD.

Levels of Analysis. Roth and Spekman (1984a) described an organizational framework for examining pragmatic communication skills. They proposed three levels of analysis: communicative intentions, presupposition, and social organization of discourse. At the first level, the intent of a speaker's message (e.g., to comment on, acknowledge, or request information) should be assessed. Second-level analysis occurs when the communication focus is broadened to include not only the speaker's intent but also how that intent reflects the information needs of the listener. It requires an assessment of presupposition, or an individual's ability to infer the needs of a conversational partner. The third area of analysis deals with the ability to maintain or sustain a dialogue or conversation among partners through multiple turns. This last level of assessment focuses on the reciprocity in social discourse.

Assessment Contexts. To investigate fully the three levels of pragmatic analysis, the different contexts of interaction must be considered (Roth & Spekman, 1984a, 1984b). The physical environment, the communication skills of the conversational partners, and the channels used for feedback should be examined. These are the kinds of variables that will influence the message type and form, the information presupposed, and the conversational organization (Roth & Spekman, 1984a).

Social discourse, as well as the conversational exchanges that occur in the home and in educational settings, may be the most useful contexts in which to evaluate a child's pragmatic strengths and deficits. As an initial screening of the pragmatic language skills for children with ASD, parental and teacher input could provide useful information because parents and teachers observe children in social contexts throughout the day.

Pragmatic Parameter: Communicative Intentions. Both the intent of the speaker and the effect of that intent on the listener should be assessed in the communication of verbal children with ASD. It is important to know, too, that intent can be expressed in a variety of ways: through gestures (nonverbal), changes in intonation and emphatic stress (paralinguistic), and the actual words selected (linguistic). Intentional language at the multiword stage generally includes requesting information, responding to requests, and regulating conversational behavior (Dore, 1974, 1986; Roth & Spekman, 1984a).

The form of intentional communication can be examined by exploring the linguistic, paralinguistic, and other nonverbal means used to communicate a message. The use of different sentence types and the explicit nature of a communication utterance can be assessed to determine the different ways children with ASD might get what they want (e.g., by using directive forms). Further, the ability to recognize situations that require more indirect expression of intent (e.g., use of a polite form versus a directive) is important to examine, particularly for determining social success (Landa, 2000). Practitioners should attend to the flexible use of linguistic forms in children with ASD. Inflexible or rigid linguistic forms are likely to affect the child with

ASD in a negative way, leading to social isolation and limited cooperation from potential communicative partners (Landa, 2000).

Pragmatic Parameter: Presupposition. It is important to determine the ability of verbal children with ASD to understand their communication partners' perspectives. Speakers infer information about their listeners just as listeners infer the intentions of speakers (Roth & Spekman, 1984a). Affective and linguistically based prosodic cues frequently reported as inefficient in children with ASD (Baltaxe & Simmons, 1985; Fine, Bartolucci, Ginsberg, & Szatmari, 1991) challenge their ability to both recognize and understand the attitudes and intents of speakers—for example, when using jokes and sarcasm (Landa, 2000). In addition, the tendency of children with ASD to engage in conversations based on themes or areas of interest they have developed or inferences they have made about specific topics compromises their ability to attend to the nonverbal and indirect verbal cues displayed by their listeners (Landa, 2000). Such disregard for the listeners' relative level of interest leads to unsuccessful social encounters.

The following areas of assessment are likely to provide the practitioner with a greater understanding of the perspective taking of verbal children with ASD:

- topics children choose to talk about (e.g., examine tendency for theme building);
- their ability to comment versus add new information;
- their approach to representing new information;
- their use of vague or ambiguous messages;
- their ability to talk about items, events, or people that are present versus not present; and
- their ability to interpret indirect expressions (e.g., attend to inferences being made).

Social context variables must also be integrated to achieve perspective taking. Often, children with ASD have difficulty adjusting their language to the changing contexts typical for conversation (Landa, 2000). Therefore, the ability of children with ASD to talk differently to different conversational partners, depending on their age, ability level, and shared experiences, should be assessed. In addition, their appreciation of the communication requirements in conversations where their communication partner is present (e.g., face-to-face conversations) versus not present (e.g., telephone conversations) should be observed, as well as the discourse rules for home, school, and community.

Pragmatic Parameter: Social Organization of Discourse. The pragmatic skills necessary for assuming and interchanging the roles and responsibilities of speaker and listener require careful investigation for children with ASD. Practitioners need to observe children's talking time, their ability to take turns and initiate conversation, and their ability to engage in rele-

vant conversations, providing on-topic comments, questions, and responses throughout a communication exchange. An assessment of conversational repairs should also be completed. Roth and Spekman (1984a, 1984b) suggest evaluating communication breakdown through an analysis of the cause, any attempt at repair, who initiates the repair, what repair strategy is selected, and the outcome of the repair attempt.

Organizing information within a conversational exchange requires providing some background early on. Often speakers will use words as cohesive devices to help the listener make connections between old and new information presented in discourse (Landa, 2000). The use of such devices decreases potential confusions that might occur in the use of referents that are not specifically defined. Deficits in reciprocal social communication appear to be a consistent challenge for children with ASD (Landa, 2000). The tendency to be associative and to build conversation around familiar topics and comfortable themes may cause children with ASD to make quick topic shifts. This limits their ability to develop a back-and-forth exchange with a potential communication partner. Therefore, practitioners should carefully assess the use of cohesive devices and topic shifting in children with ASD.

Some of the formal tools that might be considered for determining particular areas of pragmatic strength and weakness in children with ASD are highlighted in Table 4.2. An observational framework for more carefully examining pragmatic understanding and use can be found in Figure 4.3.

Communication Assessment Across Impairment, Activity, and Participation

Communication assessment that addresses the ICF dimensions of disability (as described in Chapter 3) takes multiple forms, including record review, interview, observation in clinical or natural environments, and the use of standardized and nonstandardized tools appropriate for the age of the child and the experience of the examiner. It is important that assessments in this area of deficit for children with ASD consider all three dimensions of disability—impairment, activity, and participation—in light of personal and environmental contextual factors. This ensures that interventions developed and planned for a child with ASD will be responsive to each of the levels. Table 4.3 describes the dimensions of disability proposed by the World Health Organization (2001) and the relevant communication assessment areas for children with ASD.

Record Review

A current and historical perspective on the communication development and performance of children with or suspected of ASD is an important component of the assessment process. The development of communication plays

(text continues on p. 199)

ASD in a negative way, leading to social isolation and limited cooperation from potential communicative partners (Landa, 2000).

Pragmatic Parameter: Presupposition. It is important to determine the ability of verbal children with ASD to understand their communication partners' perspectives. Speakers infer information about their listeners just as listeners infer the intentions of speakers (Roth & Spekman, 1984a). Affective and linguistically based prosodic cues frequently reported as inefficient in children with ASD (Baltaxe & Simmons, 1985; Fine, Bartolucci, Ginsberg, & Szatmari, 1991) challenge their ability to both recognize and understand the attitudes and intents of speakers—for example, when using jokes and sarcasm (Landa, 2000). In addition, the tendency of children with ASD to engage in conversations based on themes or areas of interest they have developed or inferences they have made about specific topics compromises their ability to attend to the nonverbal and indirect verbal cues displayed by their listeners (Landa, 2000). Such disregard for the listeners' relative level of interest leads to unsuccessful social encounters.

The following areas of assessment are likely to provide the practitioner with a greater understanding of the perspective taking of verbal children with ASD:

- topics children choose to talk about (e.g., examine tendency for theme building);
- their ability to comment versus add new information;
- their approach to representing new information;
- their use of vague or ambiguous messages;
- their ability to talk about items, events, or people that are present versus not present; and
- their ability to interpret indirect expressions (e.g., attend to inferences being made).

Social context variables must also be integrated to achieve perspective taking. Often, children with ASD have difficulty adjusting their language to the changing contexts typical for conversation (Landa, 2000). Therefore, the ability of children with ASD to talk differently to different conversational partners, depending on their age, ability level, and shared experiences, should be assessed. In addition, their appreciation of the communication requirements in conversations where their communication partner is present (e.g., face-to-face conversations) versus not present (e.g., telephone conversations) should be observed, as well as the discourse rules for home, school, and community.

Pragmatic Parameter: Social Organization of Discourse. The pragmatic skills necessary for assuming and interchanging the roles and responsibilities of speaker and listener require careful investigation for children with ASD. Practitioners need to observe children's talking time, their ability to take turns and initiate conversation, and their ability to engage in rele-

vant conversations, providing on-topic comments, questions, and responses throughout a communication exchange. An assessment of conversational repairs should also be completed. Roth and Spekman (1984a, 1984b) suggest evaluating communication breakdown through an analysis of the cause, any attempt at repair, who initiates the repair, what repair strategy is selected, and the outcome of the repair attempt.

Organizing information within a conversational exchange requires providing some background early on. Often speakers will use words as cohesive devices to help the listener make connections between old and new information presented in discourse (Landa, 2000). The use of such devices decreases potential confusions that might occur in the use of referents that are not specifically defined. Deficits in reciprocal social communication appear to be a consistent challenge for children with ASD (Landa, 2000). The tendency to be associative and to build conversation around familiar topics and comfortable themes may cause children with ASD to make quick topic shifts. This limits their ability to develop a back-and-forth exchange with a potential communication partner. Therefore, practitioners should carefully assess the use of cohesive devices and topic shifting in children with ASD.

Some of the formal tools that might be considered for determining particular areas of pragmatic strength and weakness in children with ASD are highlighted in Table 4.2. An observational framework for more carefully examining pragmatic understanding and use can be found in Figure 4.3.

Communication Assessment Across Impairment, Activity, and Participation

Communication assessment that addresses the ICF dimensions of disability (as described in Chapter 3) takes multiple forms, including record review, interview, observation in clinical or natural environments, and the use of standardized and nonstandardized tools appropriate for the age of the child and the experience of the examiner. It is important that assessments in this area of deficit for children with ASD consider all three dimensions of disability—impairment, activity, and participation—in light of personal and environmental contextual factors. This ensures that interventions developed and planned for a child with ASD will be responsive to each of the levels. Table 4.3 describes the dimensions of disability proposed by the World Health Organization (2001) and the relevant communication assessment areas for children with ASD.

Record Review

A current and historical perspective on the communication development and performance of children with or suspected of ASD is an important component of the assessment process. The development of communication plays

(text continues on p. 199)

TABLE 4.2

Selected Assessment Tools for Pragmatic Language

Test	Age range	Description	Reliability and Validity
<i>Test of Pragmatic Skills—Revised</i> (Shulman, 1986)	3 through 8 years	Using 4 different tasks and examiner probes in a play-based format, this tool attempts to elicit the following conversational intentions: <ul style="list-style-type: none"> • answering, • informing, • naming, • rejecting, • requesting, • reasoning, • closing, and • calling. 	Normative raw score data is provided for the individual tasks and the test composite across six age groups; no specific reliability and validity data are reported.
<i>Test of Pragmatic Language</i> (Phelps-Terasaki & Phelps-Gunn, 1992)	5 through 13 years	Using pictures to establish a social context, this tool assesses a child's use of pragmatic language, including abstraction, topic selection and use, speech acts, visual-gestural cues.	Internal consistency: .82 average across age groups. Interscorer reliability: .99. Content validity: Model created to construct and control test item selection. Concurrent validity: Measured against teacher ratings of pragmatic skills and yielded a coefficient of .82. Construct validity: Ability measured was shown to be differentiated by age and related to spoken language and school achievement.
<i>Test of Problem Solving—Adolescent Version</i> (Zachman, Barrett, Huisinigh, Orman, & Blagden, 1991)	12.0 through 17 years (7th through 12th grades)	Using spoken stimuli, children's critical thinking is assessed, including <ul style="list-style-type: none"> • clarifying, • analyzing, • generalizing solutions, • evaluating, and • affective thinking. 	Test-retest and internal consistency measures revealed highly satisfactory reliability across age level for the total test. Internal consistency and contrasted groups validity measures indicated acceptable levels of item consistency and an ability to differentiate subjects with language disorders.

(continues)

TABLE 4.2 *Continued.*

Selected Assessment Tools for Pragmatic Language

Test	Age range	Description	Reliability and Validity
<i>Test of Problem Solving—Revised Elementary Version</i> (Bowers, Barrett, Huisingsh, Orman, & LoGiudice, 1994)	6 through 11 years	<p>Employing photographs of familiar contexts and probing questions, this tool assesses a child's ability to</p> <ul style="list-style-type: none"> • explain inferences, • determine causes, • understand and respond to "why" questions, • determine solutions, and • consider ways to avoid problems. <p>It also includes a teacher checklist for rating student's classroom problem-solving behavior.</p>	<p>Test-retest and internal consistency measures revealed highly satisfactory reliability across age level for the total test.</p> <p>Internal consistency and contrasted groups validity measures indicated acceptable levels of item consistency and an ability to differentiate subjects with language disorders from subjects developing language normally.</p>
<i>Test of Language Competence—Expanded</i> (Wiig & Secord, 1989)	<p>Level 1: 5 to 9 years (pre-school and early elementary-age children)</p> <p>Level 2: 9 to 18+ years (older children and adolescents)</p>	<p>As a measure of language competence and metalinguistic ability, this tool assesses a child's understanding of</p> <ul style="list-style-type: none"> • ambiguous sentences, • making inferences, • recreating speech acts, and • figurative language. 	<p>Content validity: The test content is clearly defined and supported by research.</p> <p>Concurrent validity: Moderately with the <i>Test of Adolescent Language</i>, the <i>Test of Language Development—2</i>, the <i>Clinical Evaluation of Language Fundamentals—Revised</i>, and the <i>Peabody Picture Vocabulary Test—Revised</i>.</p> <p>Construct validity: Moderate correlations among subtests.</p> <p>Internal consistency reliability: Composite reliabilities for Level 1 are .86 to .92 and for Level 2, .75 to .82.</p> <p>Test-retest reliability: Moderate to high stability.</p>
<i>Evaluating Communicative Competence: A Functional Pragmatic Procedure—Revised Edition</i> (Simon, 1986)	4th through 12th grades	The tasks on this tool probe the auditory processing, metalinguistic, and expressive skills that are critical to successful classroom performance.	Provides a pragmatic model for expressive communicative competence and for encouraging functional flexibility; no reliability or validity data are reported.

Assessment of Pragmatic Language in Children with ASD

Child's name: _____ Date: _____

Observer: _____ Location: _____

Pragmatic Parameters	Understanding	Use	Influence of Contextual Variables (including physical environment, props, adult or peer interaction style, prompts)
Paralinguistic Features <ul style="list-style-type: none"> • Intelligibility • Prosody • Resonance • Vocal pitch • Vocal intensity 			
Extralinguistic Features <ul style="list-style-type: none"> • Gestures • Facial expressions • Proximity 			
Conversational Features <ul style="list-style-type: none"> • Attention shifting • Pausing • Concise language • Speaker role • Listener role 			
Communication Intentions <ul style="list-style-type: none"> • Directive forms • Polite forms • Indirect forms 			

(continues)

FIGURE 4.3. Observational framework for examining pragmatic language in children with ASD.

Pragmatic Parameters	Understanding	Use	Influence of Contextual Variables (including physical environment, props, adult or peer interaction style, prompts)
Presupposition <ul style="list-style-type: none"> • Representing old information • Representing new information • Vague or ambiguous messages • Inferences 			
Social Organization of Discourse <ul style="list-style-type: none"> • Topic initiation • Topic maintenance • Topic change • Turn taking • Contingent responses • Communication breakdown and re-pair 			

© 2006 by PRO-ED, Inc.

FIGURE 4.3. *Continued.*

a role in early and differential diagnosis (see Chapter 1), and some clinical researchers have identified the following communication markers as clear discriminators of ASD at 2 years of age (Lord, 1995):

- Fewer than five meaningful words
- Cessation of talking after saying three or more meaningful words
- Saying no meaningful words
- Poor understanding of words out of context
- Lack of attention to voice
- Failure to demonstrate joint attention

Practitioners should carefully examine early reports and records of communication development, as well as changes in development, to identify any

TABLE 4.3

Dimensions of Disability and Aspects of Communication To Be Assessed in Children with ASD

Impairment: Function and Structure at the Body Level	Activity: Performance at the Person Level	Participation: Involvement at the Societal Level
<ul style="list-style-type: none"> • Voice (e.g., intensity, pitch, inflection, rate) • Speech intelligibility • Gestural understanding and use • Facial expression understanding and use • Intentional communication (e.g., behavior regulation, social interaction, joint attention) • Pragmatics (e.g., presupposition, social discourse) • Semantics (e.g., word understanding and use, figurative language, abstract terms) • Syntax, phonology, and morphology • Hearing 	<p>Quality and quantity of skill performance; what child can and cannot do in everyday activities:</p> <ul style="list-style-type: none"> • simple activities (e.g., communicate basic needs; respond to basic requests); and • complex activities (e.g., engage in a conversation with peers and adults; take on speaker and listener roles; read and write; understand oral and written instructions). 	<p>Compared to the standard or norm for participation of other children without disabilities, participation in typical activities:</p> <ul style="list-style-type: none"> • school, • home, • church, • restaurants, • recreational programs, • friendships, • other community activities or programs, and • work.
<p>Context</p> <ul style="list-style-type: none"> • Personal: Age, gender, health conditions, past and current experiences, educational level, fitness, lifestyle, habits, coping styles, or other personal–social characteristics. • Environmental: Societal attitudes, cultural norms, laws, educational systems, architectural characteristics, or other environmental conditions. 		

indication of regression in the use of language. Further, a history of auditory responsiveness should be gathered, including documentation of valid and reliable hearing testing.

Interview

As highlighted in Chapter 3, interviewing is an important component of the assessment process and has a critical role in obtaining valuable information about a child's understanding and use of communication. Interviews should be conducted with those individuals who have had a consistent opportunity to observe a child's communication attempts and to engage as a communication partner across environments. Watson, Lord, Schaffer, and Schopler (1989) developed a *Home Assessment Interview* as part of the spontaneous communication curriculum for the Treatment and Education of Autistic and

Related Communication Handicapped Children (TEACCH) at the University of North Carolina at Chapel Hill. This interview format is designed to obtain information about the purposes or functions of communication that families describe for their children with ASD, the semantic categories and words used by the children, the contexts for communication, and the form communication takes.

Recognizing the value of parents and primary caregivers, Peck and Schuler (1987) designed an informal interview process, the *Communication Interview*, to identify the communicative means and functions used by children with ASD and other severe disabilities in the context of their interactions with their caregivers. Practitioners are guided through the interview process by “What if” questions that reflect common contexts for communication (e.g., What if _____ wants an adult to sit near? What if _____ wants an object that’s out of reach?). The interviewer then codes the specific means used by the child per parental report.

A sample format for completing a home or school communication assessment interview for children with ASD can be found in Appendix 4A.

Observation

To gather relevant information that will guide a practitioner to intervention planning, it is important to observe communication and social interactions during spontaneous exchanges in a variety of environments. A number of different approaches are described in the research literature. Hobson and Lee (1998) suggest that behavior be systematically observed in socially significant settings with familiar and unfamiliar adults. They found that children, adolescents, and adults with ASD were less likely than people without ASD to spontaneously greet an unfamiliar adult using an utterance, nod, or smile, and that eye-to-face contact was also limited. Further, the combination of eye-to-face contact with a smile and verbalization did not occur even after prompts were given, as compared to children, adolescents, and adults with mental retardation (Hobson & Lee, 1998). Snow and colleagues (1987) also found that children with ASD show less eye gaze and positive affect with unfamiliar adults. Considering the contexts for observing communication, Volden and Lord (1991) noted that semistructured communication exchanges (e.g., describing a poster) were difficult for children with ASD. Knowing the potential communication strengths and challenges experienced by children with ASD across a variety of situations, observations should be made in the following contexts:

- with familiar and unfamiliar adults,
- with familiar and unfamiliar peers,
- in structured and unstructured situations,
- in small and large groups, and
- at home, at school, and in the community.

Quill (1995) suggests that if one of the goals of communication assessment is to identify relationships between children's communicative behavior and that of their communication partners, then a child's skills must be observed within a meaningful context. She goes on to state that an analysis of social communicative interactions requires systematic classification of behavior in both natural and contrived situations. This is needed to determine when interactions occur, what is communicated during interactions, how the individual child communicates, and what characteristics of the context and the communication partner affect the child's ability to communicate (Quill, 1995).

Finnerty and Quill (1991) created a *Communicative Means-Function Questionnaire* to describe how children with ASD communicate functionally. This questionnaire focuses on the kinds of opportunities children have to initiate communication, as well as on those contexts that appear to be the most motivating for communication to occur (Quill, 1995). The *Communicative Means-Function Questionnaire* serves to identify how children with ASD communicate, for what purposes they communicate, and in what contexts they communicate. Another example of an observation format used to assess the communicative means of children with ASD is the *Request for Assistance Protocol* (Peck & Schuler, 1987). In this protocol, the practitioner sets up a situation in which the child must solve a problem (e.g., requesting assistance to open a clear plastic container that holds an object of interest and cannot be easily opened). The observer then codes whatever communicative behavior the child initiates. The goal throughout this protocol is to answer the question "What communicative behaviors does the student use to get assistance?" (Peck & Schuler, 1987).

For practitioners interested in an ecologically based communication assessment of young children, Wilcox (1988) recommends an assessment of four parameters (communication mode, use, effectiveness, and needs) across activities, settings, and communication partners. Her *Assessment Worksheet* is used to determine the ecological sensitivity of a practitioner's communication assessment. Wilcox states, "Although communication modes, per se, can be examined independently, a more meaningful picture of communication abilities is drawn when modes are considered in conjunction with their use during communicative interactions" (Wilcox, 1988, p. 2).

Efforts have been made to observe more effectively the social communication of children with ASD in the context of interaction. For example, Quill (1995) developed an *Interaction Analysis* to code the responses children with ASD make to adult or peer messages in spontaneous interactions. The *Interaction Analysis* can be used to assess the relationships between the characteristics of the communication partner and the social communication competence of the child being observed. This framework for analyzing interaction helps practitioners to recognize partner features that both enhance and hinder a child's communicative competence.

Peck and Schuler (1987) also developed an observational framework, the *Social Interaction Observation Guide*, for assessing the social communication skills of children with ASD in the context of interaction. This frame-

work assesses the child's ability to initiate, respond to, maintain, or terminate social interactions. As opposed to quantifying the rate of particular interactive responses, this guide is used to describe actual behavior and define the contextual variables that affect the child's social interactions.

Based on what we have learned about the social discourse needs of children with ASD to be successful communication partners, practitioners should sample social communication behavior by designing opportunities for observing the following:

- initiating interactions;
- responding to attempts at interaction;
- requesting information from a communicative partner;
- commenting on an activity or event or during an interaction;
- following routines;
- providing or offering information; and
- understanding requests or expectations for performance.

Within the observations made to gain information about the communication skills of a child with ASD, it would also be useful to identify the contextual supports that aided the child's communication attempts. This might include a description of the environmental arrangement (how the environment is set up), the props used, and the level of prompting needed.

Standardized and Nonstandardized Tools

The use of standardized and nonstandardized tools may be useful in gathering specific information about the communication strengths and needs of children with ASD. For young children or those with limited verbal skills, the *Communication Symbolic Behavior Scales* (Wetherby & Prizant, 1993) is a valuable standardized norm-referenced tool. It uses communication temptations within a semistructured play sequence to assess children's communication functions (behavior regulation, social interaction, and joint attention), communication means (gestural, vocal, and verbal), reciprocity, social/affective signaling, and symbolic behavior. It is normed for typical children from birth to 2 years old and is appropriate for assessing children up to 8 years old who perform developmentally at a much younger age.

The *MacArthur Communicative Development Inventories* (CDI; Fenson et al., 1993) are also appropriate for use with very young children in the early stages of language development. The CDI is a norm-referenced tool that taps the knowledge of parents and offers an efficient and valid strategy for assessing early language. There are two components to the inventory. One part of the inventory, "Words and Gestures," is designed for 8- to 16-month-olds and yields information for vocabulary comprehension and production and gesture use. The second part of the inventory, "Words and Sentences," is designed for 16- to 30-month-olds and generates information for vocabulary production and several aspects of grammatical development, including mean

length of utterance and sentence complexity. Both portions of the CDI have been used by clinicians and researchers in the assessment of children with developmental disabilities.

Another appropriate assessment tool for early identification of communication difficulties, as well as other developmental skills, is the *Ages and Stages Questionnaires* (ASQ; Squires, Potter, & Bricker, 1995). The ASQ is a parent-completed questionnaire designed to provide periodic developmental screening for infants and children with potential developmental problems. It includes 11 questionnaires that are completed by parents when their child is 4, 8, 12, 16, 20, 24, 30, 36, and 48 months old, with optional forms for 6 and 18 months. There are 30 developmental items in each questionnaire across five areas: communication, gross motor, fine motor, problem solving, and personal-social. Parents indicate whether their child performs a particular behavior and whether it occurs only occasionally. Practitioners convert parental responses to points, which translate into values that are compared to available cutoff points. The advantage of this screening tool is the value held for parental input and the flexibility it has for use in a variety of settings across disciplines.

A nonstandardized communication tool, *Evaluating Acquired Skills in Communication* (EASIC; Riley, 1991), has been used to inventory the communication skills of preschool children with ASD. The EASIC assesses five levels of relevant communication in preschool children: prelanguage, receptive (simple comprehension); expressive (emerging communication modes); receptive (complex comprehension); and expressive (semantic, syntactic, morphologic, and pragmatic skills). Children's responses are evaluated qualitatively during assessment across six performance levels: spontaneous, cued, imitated, manipulated, no response, or inappropriate response. Practitioners judge whether a skill has been accomplished, is still emerging, or has not yet developed, based on the child's ability to demonstrate that skill spontaneously, in response to a cue, or only when imitating or manipulating. The value of this tool is the opportunity to qualify children's performance beyond a correct versus incorrect response.

Project TEACCH (Watson et al., 1989) also designed a *Communication Assessment* for obtaining and analyzing a communication sample that leads to setting and prioritizing intervention goals for children with ASD and other developmental disabilities. The assessment involves taking a communication sample, during which a practitioner identifies what a child says or does, describes the context (e.g., with teacher, parents, siblings, peers), determines the function served (e.g., request, get attention, comment, express feelings), and specifies the semantic category (e.g., object, action, location). Once the communication sample is analyzed, a *Communication Assessment Summary* is completed that includes information gathered from both home and school and evaluates whether the skills observed are strong, emerging, or not yet observed.

Bishop (1998) created the *Children's Communication Checklist* (CCC) as an alternative to standardized language tests that fail to look at the qualitative aspects of a child's communication impairment, particularly in the

area of pragmatics. The checklist is composed of nine subscales that look at speech, syntax, inappropriate initiation, coherence, stereotyped conversation, use of context, rapport, social relationships, and interests. A pragmatic composite is derived from ratings on the inappropriate initiation, coherence, stereotyped conversation, use of context, and rapport subscales. Bishop found that both teachers and SLPs reliably rate pragmatic aspects of communication difficulty in children 7 to 9 years of age and that the pragmatic composite discriminates children with semantic–pragmatic disorders (those most often on the autism spectrum) from those with other types of language impairment.

Although not an exhaustive list and not specifically designed only for young children with ASD, the assessment tools mentioned here have value in supporting practitioners in their efforts to identify formally communication difficulties. They also provide a means for observing change in communication skills over time.

Summary

This chapter has discussed the language and communication impairments frequently described for children with ASD. Several strategies have been outlined for assessing communication and pragmatic language difficulties in this population, including creating profiles of communication strengths and challenges. The summary that follows refers to the questions at the beginning of the chapter and highlights key points.

What theoretical frameworks are used to explain impairment in language and communication in children with ASD?

Tager-Flusberg (1996, 1997a) has suggested that the language impairment seen in children with ASD can be explained as a disconnect between language form and use, rather than a deviance in the development of language. Tager-Flusberg and others use a “theory of mind” to further explain the specific deficits in communication described for this population. Although language form (e.g., syntax) may be delayed, it is relatively intact in children with ASD, whereas language use (e.g., pragmatics) and the aspects of language requiring perspective taking and understanding the thoughts and ideas of others are more impaired.

What early communication challenges are typical for children with ASD?

Wetherby and Prizant (1992, 1993) describe several challenging areas of early communication for children with ASD. The development of intentional communication in such children is generally characterized by behavior regulation, with weaker development of social interaction and limited emergence of joint attention. Gesture use is also limited, and pointing often is delayed or never develops. The understanding and use of facial expression, including eye gaze, is also poorly developed in young children with ASD. Often, when verbal behavior does emerge, it takes on several unconventional forms.

Children with ASD have been described as using echolalia, perseverative speech, and excessive questioning in their early language production.

What pragmatic language challenges interfere with the ability of verbal children with ASD to engage in conversation?

Several features in the use of language for social purposes create problems for verbal children with ASD. These include paralinguistic features (the prosody and intelligibility of speech), extralinguistic features (gestures and body movement), linguistic features (attention to communication partner and available linguistic forms), and conversational features (topic selection and maintenance, changing topics, turn taking, contingent responding, initiating, etc.). Children and adolescents with ASD will demonstrate variation in the range and degree of pragmatic language challenge they experience. In addition, they may develop their own, less conventional strategies for managing the several purposes language can serve. For example, children with ASD have been reported to use metaphors with private meanings, interpret what they hear literally, and create conversations around their own themes or special topics of interest. Assessment requires practitioners to be aware of the continuum of pragmatic difficulties that are likely to plague children and adolescents with ASD and to understand the contextual and personal variables that will influence the effect of these difficulties.

How can communication profiles be used to assess the strengths and challenges of children with ASD in this core deficit area?

Wetherby and her colleagues (Wetherby & Prizant, 1992, 1993; Wetherby et al., 1998; Wetherby et al., 2000) support the notion of developing a holistic and comprehensive view of young children with ASD by profiling their communication strengths and challenges. Communication profiling is an important preintervention step that can be used by practitioners to prioritize communication intervention goals. There are several considerations for creating a profile of a child's communication strengths and challenges. Situations need to be designed to foster observation of attempts to communicate. Practitioners must observe what the child does to communicate both nonverbally and verbally. Joint attention should be assessed, and a child's repertoire of gestures, sounds, and words should be defined. Unconventional verbal behavior should be carefully examined. Most important, practitioners will need to define when children's communication skills no longer meet their needs.

Profiling the communication strengths and challenges of verbal children and adolescents with ASD requires close inspection of their pragmatic language. Past research examining the pragmatic language development of children with and without language impairment suggests the need for a comprehensive analysis across a variety of environmental contexts and communication partners. Roth and Spekman (1984a, 1984b) offer a useful organizational framework for assessing pragmatic skills in children, which includes an analysis of communicative intention, presupposition, and the social organization of discourse. This framework has value in profiling the pragmatic

language skills of verbal children and adolescents with ASD. The literature also supports an examination of language use across a variety of settings, contexts, and communication partners.

What areas of communication assessment should be considered across the three dimensions of the disablement framework?

Communication assessment should address all three areas of disability—impairment, activity, and participation—as described by the World Health Organization (2001). Practitioners can use record reviews, interviews, observations in clinical or natural environments, and standardized and non-standardized tools to describe areas of impairment in communication. A more comprehensive evaluation of communication impairment, in light of its impact on the ability of children and adolescents with ASD both to engage in a variety of daily activities important for learning and living and to participate fully in their community, is critical. Personal and contextual factors should also be considered in this assessment. Assessment that considers the three dimensions of the disablement framework ensures that the interventions developed and planned for children and adolescents with ASD will be responsive to their actual needs.

Communication Assessment Interview

Child: _____ Interviewee: _____

Date: _____ Interviewer: _____

Communication Use

1. In what situations does _____ communicate with you? Please give examples.
2. If _____ wants something, what does he/she do to let you know? (behavior regulation: requesting an action or object)
3. How do you know _____ does not want something or does not want to do something? (behavior regulation: protesting)
4. If _____ wants your attention, what does he/she do? (social interaction: getting attention)
5. How does _____ greet someone? (social interaction: greeting)
6. How does _____ let you know he/she wants to continue an action, event, or interaction? (social interaction: requesting a social routine)
7. How does _____ share interesting experiences with you or others? (joint attention: commenting on information)
8. Please describe those situations, if any, in which _____ asks you or others a question to obtain information. (joint attention: seeking information)
9. Please describe those situations, if any, in which _____ offers information about something that is not present and that you or others don't know about. (joint attention: giving or offering information)
10. Please describe those situations in which _____ currently does not communicate with you or others and say why you think that is.

(continues)

Communication Form

1. Describe the gestures (e.g., pointing, showing, waving, giving, nodding) you have observed _____ using and the situations in which they have occurred.

2. Describe the facial expressions (e.g., smiling, frowning, squinting) you have observed _____ using and the situations in which they have occurred.

3. Give some examples of the sounds, words, and sentences (depending on language level of child) you have observed _____ using and describe the situations in which these have occurred.

4. Describe any other means of communication you have observed _____ using and describe the situations in which this has occurred.

5. Give an example of _____ using any of the following and describe the situations in which each has occurred:
 - a. echolalia
 - b. repetitive questions
 - c. perseverative speech

6. What other forms of communication (e.g., pictures, signs, symbols, written words), if any, does _____ use and in what situations?

7. When _____ speaks, how easy is it for you to understand what he/she has said?

Not at all	Rarely	Sometimes	Frequently	Always
------------	--------	-----------	------------	--------

8. When _____ speaks, how easy is it for someone who is less familiar with his/her speech to understand what he/she has said?

Not at all	Rarely	Sometimes	Frequently	Always
------------	--------	-----------	------------	--------

9. How would you describe the tone (pitch and loudness) of _____'s voice?

Inappropriate	Rarely Appropriate	Sometimes Appropriate	Frequently Appropriate	Always Appropriate
---------------	-----------------------	--------------------------	---------------------------	-----------------------

Please explain: _____

10. How would you describe the rhythm (rate and prosody) of _____'s voice?

Inappropriate	Rarely Appropriate	Sometimes Appropriate	Frequently Appropriate	Always Appropriate
---------------	-----------------------	--------------------------	---------------------------	-----------------------

Please explain: _____

(continues)

Communication Content

1. What are some examples of the types of words _____ understands?
2. What are some examples of the types of words (e.g., action words, object words, feeling words, descriptive words) _____ uses when communicating?
3. How would you describe _____'s understanding of words? (receptive vocabulary)
Poor Fair Adequate Very Good Excellent
Please explain: _____
4. How would you describe _____'s use of words? (expressive vocabulary)
Poor Fair Adequate Very Good Excellent
Please explain: _____
5. Give an example of _____'s understanding of any of the following:
 - a. metaphor
 - b. idiomatic expression
 - c. inference
6. Give an example of _____'s misunderstanding of any of the following:
 - a. metaphor
 - b. idiomatic expression
 - c. inference
7. Give an example of _____'s appropriate use of any of the following:
 - a. metaphor
 - b. idiomatic expression
 - c. inference
8. Give an example of _____'s inappropriate use of any of the following:
 - a. metaphor
 - b. idiomatic expression
 - c. inference
9. What specific topics, if any, does _____ show a particular interest in and talk a lot about?
10. Please explain those situations, if any, in which _____ has difficulty finding the right word(s) to explain what he/she means?

Practice Opportunities

1. Observe a verbal child with ASD at home and in school using the assessment format for examining unconventional verbal behavior (Figure 4.1). Identify any instances of echolalia, perseverative speech, or excessive questioning. Describe the context, what immediately preceded the unconventional verbal behavior, the possible function served by the behavior, and the response elicited. Determine the rigidity or flexibility in the unconventional verbal behavior observed.
2. Create a communication profile for a young child with ASD that considers the child's early intentional communication behaviors, including the functions served and the means used.
3. As a team, determine what standard tools would be most effective for assessing the semantic language of a verbal child or adolescent with ASD.
4. Develop a profile for a child or adolescent with ASD that describes both the child's strengths and challenges in the paralinguistic, extra-linguistic, linguistic, and conversational features of pragmatic language.

Suggested Readings

- Landa, R. (2000). Social language use in Asperger syndrome and high-functioning autism. In A. Klin, F. R. Volkmar, & S. S. Sparrow (Eds.), *Asperger syndrome* (pp. 125–155). New York: Guilford Press.

This chapter comprehensively describes the areas of pragmatic language use important to understanding verbal children with ASD. Landa provides a description of what is expected in the normal development of communicative intentions, presupposition, and discourse, as well as what might be observed in those same areas for children with ASD. The author recommends both formal and informal means for assessing the pragmatic skills of children with ASD and offers some guidelines for intervention.

- Peck, C. A., & Schuler, A. L. (1987). Assessment of social/communicative behavior for students with autism and severe handicaps: The importance of asking the right question. In T. Layton (Ed.), *Language and treatment of autistic and developmentally disordered children* (pp. 35–62). Springfield, IL: Charles C. Thomas.

This chapter clearly defines the limitations of traditional assessment methods when examining the social communication behavior of children with ASD. It offers several protocols for completing observations that are rich in information and contextually valid. The authors also provide an explanation of those contextual and environmental variables (e.g., adult interaction style, peer characteristics, situational characteristics) that are likely to affect the social communication of children with ASD and related disorders.

Wetherby, A. M., Prizant, B. M., & Hutchinson, T. A. (1998). Communicative, social/affective, and symbolic profiles of young children with autism and pervasive developmental disorders. *American Journal of Speech-Language Pathology*, 7, 79–91.

Based on clinically applied research, this article provides a framework in which to create communication profiles for children with ASD. The authors effectively characterize the early behaviors critical to communication success over time in children with ASD.

Resources

Early Communication Assessments

- Fenson, L., Dale, P. S., Reznick, J. S., Thal, D., Bates, E., Hartung, J. P., et. al. (1993). *MacArthur Communicative Development Inventories: User's guide and technical manual*. San Diego: Singular.
- Riley, A. M. (1991). *Evaluating Acquired Skills in Communication—Revised*. San Antonio, TX: Psychological Corp.
- Squires, J., Potter, L., & Bricker, D. (1995). *The ASQ user's guide for the Ages & Stages Questionnaires: A parent-completed, child-monitoring system*. Baltimore: Brookes.
- Wetherby, A. M., & Prizant, B. M. (1993). *Communication and Symbolic Behavior Scales manual*. Chicago: Riverside Press.

Prosody–Voice Assessments

- Shriberg, L. D., Kwiatkowski, J., & Rasmussen, C. (1990). *The Prosody–Voice Screening Profile*. Tucson, AZ: Communication Skills Builders.

Semantic Assessments

- Boehm, A. E. (1986). *Boehm Test of Basic Concepts—Preschool version*. San Antonio, TX: Psychological Corp.
- Boehm, A. E. (1986). *Boehm Test of Basic Concepts—Revised*. San Antonio, TX: Psychological Corp.
- Bracken, B. A. (1986). *Bracken Basic Concept Scale*. San Antonio, TX: Psychological Corp.
- Brownell, R. (1987). *Receptive One-Word Picture Vocabulary Test—Upper Extension*. Novato, CA: Academic Therapy Publications.
- Dunn, L., & Dunn, L. (1997). *Peabody Picture Vocabulary Test—III*. Circle Pines, MN: American Guidance Service.
- Edmonston, N., & Thane, N. L. (1988). *Test of Relational Concepts*. Austin, TX: PRO-ED.
- Gardner, M. F. (2000). *Receptive One-Word Picture Vocabulary Test—2000 Edition*. Austin, TX: PRO-ED.
- Gardner, M. F. (2000). *Expressive One-Word Picture Vocabulary Test—2000 Edition*. Austin, TX: PRO-ED.
- Huisingh, R., Barrett, M., Zachman, L., Blagden, C., & Orman, J. (1989). *The Word Test—Revised Elementary*. East Moline, IL: LinguSystems.

- Richard, G. J., & Hanner, M. A. (1985). *Language Processing Test—Revised*. East Moline, IL: LinguiSystems.
- Wiig, E. H., & Secord, W. (1992). *Test of Word Knowledge*. San Antonio, TX: Psychological Corp.
- Williams, K. T. (1997). *Expressive Vocabulary Test*. Circle Pines, MN: American Guidance Service.
- Zachman, L., Huisingh, R., Barrett, C., Orman, J., & Blagden, C. (1990). *The Word Test—Adolescent*. East Moline, IL: LinguiSystems.

Pragmatic Assessments

- Barrett, M., Zachman, L., & Huisingh, R. (1988). *Assessing semantic skills through everyday themes*. East Moline, IL: LinguiSystems.
- Bowers, L., Barret, M., Huisingh, R., Orman, J., & LoGiudice, C. (1994). *Test of Problem Solving—Revised Elementary*. East Moline, IL: LinguiSystems.
- Phelps-Teraski, D., & Phelps-Gunn, T. (1992). *Test of Pragmatic Language*. San Antonio, TX: Psychological Corp.
- Shulman, B. B. (1986). *Test of Pragmatic Skills—Revised*. Tucson, AZ: Communication Skill Builders.
- Simon, C. S. (1986). *Evaluating Communicative Competence: A Functional Pragmatic Procedure—Revised Edition*. Tucson, AZ: Communication Skill Builders.
- Wiig, E. H., & Secord, W. (1989). *Test of Language Competence—Expanded Edition*. San Antonio, TX: Psychological Corp.

Glossary

Affect. The emotion component of communication.

Analytic processing. Recognizing, analyzing, and producing individual words or parts of language.

Behavior regulation. Intentional communication acts used to regulate or control the behavior of others for the purpose of obtaining something desirable.

Delayed echolalia. Delay in the repetition of what has been said or heard.

Extralinguistic features. Gestures and body movement used to signal intentional communication.

Gestalt processing. Processing language and experience as “whole units” rather than segmenting language into meaningful rule-based components.

Immediate echolalia. Immediate repetition of what has been said or heard.

Joint attention. Intentional communication acts used to direct the attention of others for the purpose of sharing an event.

Metaphorical language. Making associations that have private meanings.

Mitigated echolalia. Can be immediate or delayed and involves variation in the repetition in the form of a modification in the words used, the prosody of the utterance, or the context in which it occurs.

Overselectivity. Rigid focus on a theme or topic of interest.

Paralinguistic features. A component of pragmatics involving the prosody and intelligibility of speech.

Perseverative speech. Imitated or self-generated utterances that are produced repeatedly without evidence of intent.

Pragmatics. The use of language in social contexts.

Prosody. Rhythm of speech involving intonation and the emphasis on particular words that signals meaning or adds emotion.

Semantics. The meaning component of language.

Social interaction. Intentional communication acts used to call attention, to greet another, or to sustain a social routine.

References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. text rev.). Washington, DC: Author.
- Baltaxe, C. M., & Simmons, J. Q. (1985). Prosodic development in normal and autistic children. In E. Schopler & G. Mesibov (Eds.), *Communication problems in autism* (pp. 95–126). New York: Plenum Press.
- Baron-Cohen, S. (1988). Social and pragmatic deficits in autism: Cognitive or affective? *Journal of Autism and Developmental Disorders*, 18(3), 379–402.
- Barron, S. (2001, November). *Consumers' views on autism*. Paper presented at the American Speech–Language–Hearing Association Convention, New Orleans, LA.
- Bates, E. (1976). *Language and context: The acquisition of pragmatics*. San Diego: Academic Press.
- Bates, E., Camaioni, L., & Volterra, V. (1975). The acquisition of performatives prior to speech. *Merrill-Palmer Quarterly*, 21, 205–226.
- Bieberich, A. A., & Morgan, S. B. (1998). Brief report: Affective expression in children with autism or Down syndrome. *Journal of Autism and Developmental Disorders*, 28(4), 333–338.
- Bishop, D. V. M. (1998). Development of the Children's Communication Checklist (CCC): A method for assessing qualitative aspects of communicative impairment in children. *Journal of Child Psychology and Psychiatry*, 39(6), 879–891.
- Bowers, L., Barrett, M., Huisingsh, R., Orman, J., & LoGiudice, C. (1994). *Test of Problem Solving—Revised Elementary Version*. East Moline, IL: LinguiSystems.
- Bowers, L., Huisingsh, R., LoGiudice, C., & Orman, J. (2004). *The Word Test 2: Elementary*. East Moline, IL: LinguiSystems.
- Bowers, L., Huisingsh, R., LoGiudice, C., & Orman, J. (2005). *The Word Test 2: Adolescent*. East Moline, IL: LinguiSystems.
- Bruner, J. S. (1981). The ontogenesis of speech acts. *Journal of Child Language*, 2, 1–19.
- Buffington, D. M., Krantz, P. J., McClannahan, L. E., & Poulson, C. L. (1998). Procedures for teaching appropriate gestural communication skills to children with autism. *Journal of Autism and Developmental Disorders*, 28, 535–545.
- Camaioni, L., Perucchini, P., Muratori, F., & Milone, A. (1997). Brief report: A longitudinal examination of the communicative gestures deficit in young children with autism. *Journal of Autism and Developmental Disorders*, 27(6), 715–725.
- Capps, L., Kehres, J., & Sigman, M. (1998). Conversational abilities among children with autism and children with developmental delays. *The International Journal of Research and Practice*, 2, 325–344.

- Church, C., Alisanski, S., & Amanullah, S. (2000). The social, behavioral, and academic experiences of children with Asperger syndrome. *Focus on Autism and Other Developmental Disabilities*, 15(1), 12–20.
- Curcio, F. (1978). Sensorimotor functioning and communication in mute autistic children. *Journal of Autism and Childhood Schizophrenia*, 3, 281–292.
- Dale, P. S. (1980). Is early pragmatic development measurable? *Journal of Child Language*, 8, 1–12.
- Dawson, G., Meltzoff, A. N., Osterling, J., Rinaldi, J., & Brown, E. (1998). Children with autism fail to orient to naturally occurring social stimuli. *Journal of Autism and Developmental Disorders*, 28(6), 479–485.
- Dore, J. (1974). A pragmatic description of early language development. *Journal of Psycholinguistic Research*, 4, 343–350.
- Dore, J. (1986). The development of conversational competence. In R. Schiefelbusch (Ed.), *Language competence: Assessment and intervention* (pp. 3–60). San Diego: College-Hill Press.
- Duchan, J. F. (1994). Intervention principles for gestalt-style learners. In J. F. Duchan, L. E. Hewitt, & R. M. Sonnenmeier (Eds.), *Pragmatics: From theory to practice* (pp. 149–163). Englewood Cliffs, NJ: Prentice Hall.
- Fay, W., & Schuler, A. L. (1980). *Emerging language in autistic children*. Baltimore: University Park Press.
- Feldman, R. S., McGee, G. G., Mann, L., & Strain, P. (1993). Nonverbal affective decoding ability in children with autism and in typical preschoolers. *Journal of Early Intervention*, 17(4), 341–350.
- Fenson, L., Dale, P. S., Reznick, J. S., Thal, D., Bates, E., Hartung, J. P., et al. (1993). *MacArthur Communicative Development Inventories: User's guide and technical manual*. San Diego: Singular.
- Fine, J., Bartolucci, G., Ginsberg, G., & Szatmari, P. (1991). The use of intonation to communicate in subjects with pervasive developmental disorders. *Journal of Child Psychology and Psychiatry*, 32, 771–882.
- Finnerty, J., & Quill, K. A. (1991). *The communication analyzer*. Lexington, MA: Educational Software Research.
- Garfin, D., & Lord, C. (1986). Communication as a social problem in autism. In E. Schopler & G. Mesibov (Eds.), *Social behavior in autism* (pp. 237–261). New York: Plenum Press.
- Grice, P. (1975). Logic and conversation. In J. Cole & P. Morgan (Eds.), *Syntax and semantics: Speech acts* (pp. 41–59). New York: Academic Press.
- Halliday, M. (1975). *Learning how to mean*. London: Edward Arnold.
- Happe, F. (1993). Communicative competence and theory of mind in autism: A test of relevance theory. *Cognition*, 48, 101–119.
- Happe, F. (1994). An advanced test of theory of mind: Understanding of story characters' thoughts and feelings by able autistic, mentally handicapped and normal children and adults. *Journal of Autism and Developmental Disorders*, 24, 129–154.
- Harris, N. S., Courchesne, E., Townsend, J., Carper, R. A., & Lord, C. (1999). Neuroanatomic contributions to slowed orienting of attention in children with autism. *Cognitive Brain Research*, 8, 61–71.
- Hobson, R. P., & Lee, A. (1998). Hello and goodbye: A study of social engagement in autism. *Journal of Autism and Developmental Disorders*, 28(2), 117–127.
- Kanner, L. (1971). Follow-up study of eleven autistic children originally reported in 1943. *Journal of Autism and Childhood Schizophrenia*, 1(2), 119–145.

- Koegel, R. (1995). Communication and language intervention. In R. L. Koegel & L. K. Koegel (Eds.), *Teaching children with autism: Strategies for initiating positive interactions and improving learning opportunities* (pp. 17–32). Baltimore: Brookes.
- Krashen, S., & Scarcella, R. (1978). On routines and patterns in language acquisition and performance. *Language Learning*, 28, 283–300.
- Landa, R. (2000). Social language use in Asperger syndrome and high-functioning autism. In A. Klin, F. R. Volkmar, & S. S. Sparrow (Eds.), *Asperger syndrome* (pp. 125–155). New York: Guilford Press.
- Landau, B., & Gleitman, L. (1985). *Language and experience: Evidence from the blind child*. Cambridge, MA: Harvard University Press.
- Lord, C. (1995). Follow-up of two-year-olds referred for possible autism. *Journal of Child Psychology and Psychiatry*, 36, 1365–1382.
- Lord, C., & Paul, R. (1997). Language and communication in autism. In D. Cohen & F. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders* (2nd ed., pp. 195–225). New York: Wiley.
- Lord, C., Rutter, M., Goode, S., Heemsbergen, J., Jordan, H., Mawhood, L., et al. (1989). Autism diagnostic observation schedule: A standardized observation of communicative and social behavior. *Journal of Autism and Developmental Disorders*, 19, 185–212.
- Lotter, V. (1978). Follow-up studies. In M. Rutter & E. Schopler (Eds.), *Autism: A reappraisal of concepts and treatment* (pp. 475–496). New York: Plenum Press.
- McEachin, J. J., Smith, T., & Lovaas, O. I. (1993). Long-term outcome for children with autism who received early intensive behavioral treatment. *American Journal on Mental Retardation*, 97, 359–372.
- McLean, J., & Snyder-McLean, L. (1978). *A transactional approach to early language training: Derivation of a model system*. Columbus, OH: Charles Merrill.
- Menyuk, P., & Quill, K. (1985). Semantic problems in autistic children. In E. Schopler & G. Mesibov (Eds.), *Communication problems in autism* (pp. 127–146). New York: Plenum Press.
- Minshew, N. J., Goldstein, G., & Siegel, D. J. (1995). Speech and language in high-functioning autistic individuals. *Neuropsychology*, 9, 255–261.
- Mundy, P., & Sigman, M. (1989). Specifying the nature of the social impairment in autism. In G. Dawson (Ed.), *Autism: Nature, diagnosis and treatment* (pp. 3–21). New York: Guilford Press.
- Mundy, P., Sigman, M., & Kasari, C. (1990). A longitudinal study of joint attention and language development in autistic children. *Journal of Autism and Developmental Disorders*, 20(1), 115–128.
- Nelson, K. (1973). Structure and strategy in learning how to talk. *Monographs of the Society for Research in Child Development*, 38(149).
- Ochs, E. (1979). Introduction: What child language can contribute to pragmatics. In E. Ochs & B. B. Schieffelin (Eds.), *Developmental pragmatics* (pp. 1–17). New York: Academic Press.
- Ochs, E., & Schieffelin, B. (1979). *Developmental pragmatics*. New York: Academic Press.
- Ozonoff, S., & Miller, J. (1996). An exploration of right hemisphere contributions to the pragmatic impairments of autism. *Brain and Language*, 52, 411–434.
- Palmer, B. C. (1991). *Figurative Language Interpretation Test*. Novato, CA: Academic Therapy Publications.
- Peck, C. A., & Schuler, A. L. (1987). Assessment of social/communicative behavior for students with autism and severe handicaps: The importance of asking the right question.

- In T. Layton (Ed.), *Language and treatment of autistic and developmentally disordered children* (pp. 35–62). Springfield, IL: Charles C Thomas.
- Peters, A. (1977). Language learning strategies: Does the whole equal the sum of the parts? *Language*, 53, 560–573.
- Peters, A. (1983). *The units of language acquisition*. New York: Cambridge University Press.
- Phelps-Terasaki, D., & Phelps-Gunn, T. (1992). *Test of Pragmatic Language*. Austin, TX: PRO-ED.
- Prizant, B. M. (1983). Language acquisition and the communicative behavior in autism: Toward an understanding of the “whole” of it. *Journal of Speech and Hearing Disorders*, 48, 296–307.
- Prizant, B. M. (1987). Theoretical and clinical implications of echolalic behavior in autism. In T. Layton (Ed.), *Language and treatment of autistic and developmentally disordered children* (pp. 65–88). Springfield, IL: Charles C Thomas.
- Prizant, B. M., & Rydell, P. J. (1993). Assessment and intervention considerations for unconventional verbal behavior. In S. F. Warren & J. Reichle (Series Eds.) & J. Reichle & D. Wacker (Vol. Eds.), *Communication and language intervention series: Vol. 3. Communicative alternatives to challenging behavior: Integrating functional assessment and intervention strategies* (pp. 263–297). Baltimore: Brookes.
- Prizant, B. M., & Schuler, A. (1987). Facilitating communication: Theoretical foundations. In D. Cohen & A. Donnellan (Eds.), *Handbook of autism and pervasive developmental disorders* (pp. 289–300). New York: Wiley.
- Prizant, B. M., Wetherby, A. M., & Rydell, P. J. (2000). Communication intervention issues for young children with autism spectrum disorders. In A. M. Wetherby & B. M. Prizant (Eds.), *Autism spectrum disorders: A transactional developmental perspective* (pp. 193–224). Baltimore: Brookes.
- Prutting, C. (1982). Pragmatics as social competence. *Journal of Speech and Hearing Disorders*, 47, 123–133.
- Prutting, C., & Kirchner, D. M. (1983). Applied pragmatics. In T. M. Gallagher & C. A. Prutting (Eds.), *Pragmatic assessment and intervention issues in language* (pp. 29–64). San Diego: College-Hill Press.
- Quill, K. A. (1995). Enhancing children's social communication interactions. In K. A. Quill (Ed.), *Teaching children with autism: Strategies to enhance communication and socialization* (pp. 163–189). New York: Delmar.
- Richard, G. J., & Hanner, M. A. (1995). *Language Processing Test-Revised*. Austin, TX: PRO-ED.
- Ricks, D., & Wing, L. (1975). Language, communication, and the use of symbols in normal and autistic children. *Journal of Autism and Childhood Schizophrenia*, 5, 191–220.
- Riley, A. M. (1991). *Evaluating Acquired Skills in Communication--Revised*. Tucson, AZ: Communication Skill Builders.
- Roth, F. P., & Spekman, N. J. (1984a). Assessing the pragmatic abilities of children: Part 1. Organizational framework and assessment parameters. *Journal of Speech and Hearing Disorders*, 49, 2–11.
- Roth, F. P., & Spekman, N. J. (1984b). Assessing the pragmatic abilities of children: Part 2. Guidelines, considerations, and specific evaluation procedures. *Journal of Speech and Hearing Disorders*, 49, 12–17.
- Rydell, P. J., & Mirenda, P. (1991). The effects of two levels of linguistic constraint on echolalia and generative language production in children with autism. *Journal of Autism and Developmental Disorders*, 21, 131–157.

- Rydell, P. J., & Prizant, B. M. (1995). Assessment and intervention strategies for children who use echolalia. In K. A. Quill (Ed.), *Teaching children with autism: Strategies to enhance communication and socialization* (pp. 105–132). New York: Delmar.
- Searle, J. (1969). *Speech acts: An essay in the philosophy of language*. Cambridge, MA: Harvard University Press.
- Shriberg, L. D., Paul, R., McSweeney, J. L., Klin, A., Cohen, D. J., & Volkmar, F. R. (2001). Speech and prosody characteristics of adolescents and adults with high functioning autism and Asperger syndrome. *Journal of Speech, Language, and Hearing Research*, 44(5), 1097–1115.
- Shulman, B. S. (1986). *Test of Pragmatic Skills—Revised*. Tucson, AZ: Communication Skill Builders.
- Simon, C. S. (1986). *Evaluating Communicative Competence: A Functional Pragmatic Procedure—Revised Edition*. Tucson, AZ: Communication Skill Builders.
- Snow, M. E., Hertzog, M. E., & Shapiro, T. (1987). Expressions of emotion in young autistic children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 647–655.
- Squires, J., Potter, L., & Bricker, D. (1995). *The ASQ user's guide for the Ages and Stages Questionnaires: A parent-completed, child-monitoring system*. Baltimore: Brookes.
- Stone, W. L., & Caro-Martinez, L. (1990). Naturalistic observations of spontaneous communication in autistic children. *Journal of Autism and Developmental Disorders*, 20, 513–522.
- Stone, W. L., Ousley, O. Y., Yoder, P. J., Hogan, K. L., & Hepburn, S. L. (1997). Nonverbal communication in two and three year old children with autism. *Journal of Autism and Developmental Disorders*, 27(6), 677–696.
- Tager-Flusberg, H. (1993). What language reveals about the understanding of mind in children with autism. In S. Baron-Cohen, H. Tager-Flusberg, & D. J. Cohen (Eds.), *Understanding other minds: Perspectives from autism* (pp. 138–157). Oxford, England: Oxford University Press.
- Tager-Flusberg, H. (1996). Brief report: Current theory and research on language and communication in autism. *Journal of Autism and Developmental Disorders*, 26(2), 169–172.
- Tager-Flusberg, H. (1997a). Perspectives on language and communication in autism. In D. J. Cohen & F. R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders* (2nd ed., pp. 894–900). New York: Wiley.
- Tager-Flusberg, H. (1997b). The role of theory of mind in language acquisition: Contributions from the study of autism. In L. Adamson & M. A. Ronski (Eds.), *Research on communication and language disorders: Contributions to theories of language development* (pp. 133–158). Baltimore: Brookes.
- Tager-Flusberg, H., Calkins, S., Nolin, T., Baumberger, T., Anderson, M., & Chadwick-Dias, A. (1990). A longitudinal study of language acquisition in autistic and Down syndrome children. *Journal of Autism and Developmental Disorders*, 20, 1–21.
- Townsend, J., & Courchesne, E. (1994). Parietal damage and narrow “spotlight” spatial attention. *Journal of Cognitive Neuroscience*, 6, 220–232.
- Townsend, J., Courchesne, E., Singer-Harris, N., Covington, J., Westerfield, M., Lyden, P., et al. (1999). Spatial attention deficits in patients with acquired or developmental cerebellar abnormality. *Journal of Neuroscience*, 19, 5632–5642.
- Twachtman, D. (1995). Methods to enhance communication in verbal children. In K. A. Quill (Ed.), *Teaching children with autism: Strategies to enhance communication and socialization* (pp. 133–162). Albany, NY: Delmar.

- Twachtman-Cullen, D. (1998). Language and communication in high-functioning autism and Asperger syndrome. In E. Schopler, G. Mesibov, & L. J. Kuncie (Eds.), *Asperger syndrome or high functioning autism?* (pp. 199–225). New York: Plenum Press.
- Twachtman-Cullen, D. (2000). More able children with autism spectrum disorders: Socio-communicative challenges and guidelines for enhancing abilities. In A. M. Wetherby & B. M. Prizant (Eds.), *Autism spectrum disorders: A transactional developmental perspective* (pp. 225–249). Baltimore: Brookes.
- Volden, J., & Lord, C. (1991). Neologisms and idiosyncratic language in autistic speakers. *Journal of Autism and Developmental Disorders*, 21, 109–130.
- Volden, J., Mulcahy, R. F., & Holdgrafer, G. (1997). Pragmatic language disorder and perspective taking in autistic speakers. *Applied Psycholinguistics*, 18, 181–198.
- Watson, L. R., Lord, C., Schaffer, B., & Schopler, E. (1989). *Teaching spontaneous communication to autistic and developmentally handicapped children*. New York: Irvington.
- Wetherby, A. M. (1986). Ontogeny of communicative functions in autism. *Journal of Autism and Developmental Disorders*, 16, 295–319.
- Wetherby, A. M., & Prizant, B. M. (1992). Profiling young children's communicative competence. In S. F. Warren & J. Reichle (Series & Vol. Eds.), *Communication and language intervention series: Vol. 1. Causes and effects in communication and language intervention* (pp. 217–253). Baltimore: Brookes.
- Wetherby, A. M., & Prizant, B. M. (1993). *Communication and Symbolic Behavior Scales manual*. Chicago: Riverside Press.
- Wetherby, A. M., & Prizant, B. M. (1996). *Autism spectrum disorders: New service delivery models for nonverbal young children*. ASHA Teleconference. Rockville, MD: American Speech-Language-Hearing Association.
- Wetherby, A. M., Prizant, B. M., & Hutchinson, T. A. (1998). Communicative, social/affective, and symbolic profiles of young children with autism and pervasive developmental disorders. *American Journal of Speech-Language Pathology*, 7, 79–91.
- Wetherby, A. M., Prizant, B. M., & Schuler, A. L. (2000). Understanding the nature of communication and language impairments. In A. M. Wetherby & B. M. Prizant (Eds.), *Autism spectrum disorders: A transactional developmental perspective* (pp. 109–141). Baltimore: Brookes.
- Wiig, E., & Secord, W. (1989). *Test of Language Competence—Expanded*. San Antonio, TX: Psychological Corp.
- Wiig, E. H., & Secord, W. (1992). *Test of Word Knowledge*. San Antonio, TX: Psychological Corp.
- Wilcox, M. J. (1988). Designing an ecologically-based communication assessment. *The Clinical Connection*, 3(1), 1–4.
- Wing, L., & Attwood, A. (1987). Syndromes of autism and atypical development. In D. J. Cohen & A. M. Donnellan (Eds.), *Handbook of autism and pervasive developmental disorders* (pp. 3–19). New York: Wiley.
- World Health Organization. (2001). *International classification of functioning, disability and health*. Geneva, Switzerland: Author.
- Yoder, P. J., Warren, S. F., Kim, K., & Gazdag, G. (1994). Facilitating prelinguistic communication skills in very young children with developmental disabilities II: Systematic replication and extension. *Journal of Speech and Hearing Research*, 37, 841–851.
- Zachman, L., Barrett, M., Huisingh, R., Orman, J., & Blagden, C. (1991). *Test of Problem Solving—Adolescent Version*. East Moline, IL: LinguiSystems.

Autism Spectrum Disorders

Issues in Assessment and Intervention

Patricia A. Prelock



8700 Shoal Creek Boulevard

Austin, Texas 78757-6897

800/897-3202 Fax 800/397-7633

www.proedinc.com

2006