

chapter 5

Strategies to Enhance Social and Communication Skills

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The task of building social and communication skills in children with autism is a formidable one. The purpose of this chapter is to present an eclectic balance of strategies for enhancing social and communication development. The discussion incorporates methods that are based on the principles of applied behavioral analysis with developmental practices that are essential to social and communication growth. The recommended strategies synthesize a broad range of clinical research and clinical practices for children with autism into a continuum of intervention options.

The emphasis on a continuum of intervention strategies reflects both the complexities of social and communication development and the significant diversity that is found among children with a diagnosis of autism. The acquisition of social skills and communication requires, by nature, social motivation and meaningful relationships. There is an obvious need, then, to create motivating, meaningful activities in natural environments to promote spontaneous social and communication skills. At the same time, a significant amount of specialized supports is needed to compensate for the social, communication, and behavioral challenges characteristic of children with autism. Thus, the level of support in the natural environment will vary according to the specific social, emotional, and behavioral needs of each individual child. Recognizing that the task of building social and communication skills in children with autism is a difficult one, this discussion of strategies is offered as a set of guidelines and is not intended to be definitive or dogmatic.

The intervention strategies outlined in this chapter focus on compensatory strategies to support social and communication development. The rationale for compensatory strategies is based upon a respect for the social and communication struggles experienced by children with autism. That is, given that autism is characterized by social and communication impairments, intervention must incorporate strategies that compensate for these central issues while at the same time supporting their development. The four compensatory strategies, or *social bridges*, discussed in this chapter are

1. Organizational supports: organizing the physical environment to compensate for the child's perception of a socially disorganized environment (e.g., choice board)

2. Social supports: modifying the social environment to compensate for the child's social-communicative impairment (i.e., modifications made by others to maintain meaningful and mutually beneficial reciprocal interactions with a child)
3. Visually cued instruction: providing visual cues and prompts to assist the child in his understanding of language and social meaning (e.g., activity schedule, play script, social story, cue cards)
4. Augmentative and alternative communication (AAC) supports: providing AAC supports to assist with the child's acquisition of spontaneous social and communication skills (e.g., cue cards, communication board, conversation book)

Representative examples of various supports are provided at the end of this chapter in Appendix A.

Particular attention is given to making child-specific treatment decisions. As autism spectrum disorders represent a heterogeneous syndrome, it is unlikely that one method or strategy will work equally with all children. It is necessary to consider a child's level of social motivation, core skill abilities, and degree of challenging behaviors, particularly ritualistic behaviors, when planning social and communication skills intervention. These issues are also explored in detail within the chapter, concluding with an examination of the emotional needs of the child.

The implicit message of this chapter is to understand the child's needs and to listen to your intuition. The importance of forming a relationship with a child in order to optimize social and communication development must be inferred; this fundamental belief should not be forgotten. With this in mind, Chapter 5 bases intervention to build social and communicative competence in children with autism on the following principles:

- Social and communication development is complex and dynamic.
- Social skills are acquired in the context of naturally occurring events.
- Communication skills are acquired in the context of naturally occurring reciprocal interactions.
- Relationships are necessary to optimize a child's social and communication development.
- Intervention should be individualized.
- Intervention strategies should be used flexibly.
- Specific strategies may or may not work with a particular child.
- Every moment is a learning opportunity for social and communicative growth.
- The child is the ultimate teacher.

This information is intended as a resource to be applied critically and flexibly, because the idea of a social and communication skills intervention guide minimizes the complexity and richness of these developmental areas. It is essential that this intervention guide not be used too rigidly with the diverse group of young children that it is intended to help.

BEST PRACTICES DEBATE

The primary goal of intervention for children with autism should be to enhance their social and communication development. Although there is an understanding of the complexity of social and communication skills intervention, there is uncertainty regarding how to approach this daunting task. A polarity of viewpoints exists among the professional community as to how to achieve this objective. Intervention approaches range from traditional adherence to principles of applied behavioral analysis—through the use of massed discrete trial training—to developmental practices in inclusive settings.

Comparative reviews of intervention programs for children with autism show that different treatment models, ranging from traditional behavioral approaches to developmental approaches in inclusive educational settings, are demonstrating similar outcomes (Dawson & Osterling, 1997). Independent of methodology, programs are reporting “success” for half of the children in these programs. Measures of success, however, are generally defined in terms of academic achievement, not social and communication development. Given that impaired social and communication development is the hallmark of autism, a true understanding of the “best” means to support social and communication development in children with autism has not been empirically studied and, therefore, is unknown. An understanding of best practices to enhance social skills and communication in children with autism, it seems, is just beginning.

The Behavioral-Developmental Debate

The two highly debated treatment approaches are the *traditional behavioral approach* (Lovaas, 1981) and the *relationship-based developmental model* (Greenspan, 1992). These two opposing methods are described in detail next and are summarized in Table 5.1.

Traditional Behavioral Approach: Discrete Trial Training

The traditional behavioral model of discrete trial training is based on learning theory principles. Intervention entails specificity of purpose, goals, and activity structure. Skill acquisition reflects the mastery of a series of discrete subskills. The model emphasizes preci-

Table 5.1. Characteristics of traditional behavioral and relationship-based developmental intervention approaches

Procedural variables	Traditional behavioral: Discrete trials	Relationship-based developmental: Floor time
Target objective	Specific response	General
Context	Structured one-to-one instruction	Variety of social groupings
Setting	Artificially designed and predetermined by the adult	Naturally occurring and motivating
Activity and materials	Selected by the adult	Selected by the child
Teachable moment	Adult-directed	Continuous; follows the child’s lead
Instructions	Series of single teaching units (i.e., trials) Adult-initiated Verbal instruction	Reciprocal interactions Child-initiated Contextual, language, and socioemotional information
Prompts	Verbal, gestural, and physical	Verbal, gestural, and contextual supports
Accepted child responses	One discrete target response	All behaviors are social-communicative
Adult response to child	Immediate Not linked to meaning of child’s behavior	Immediate; scaffolded Linked to meaning of child’s behavior
Reinforcement	Artificial Predetermined consequence	Social Continuation of the activity
Repetition	Exact	Determined by the child’s interest
Measure of success	Child’s correct target response	Quality of socioemotional interactions Interactive

Sources for traditional behavioral approach: Lovaas (1981) and Maurice, Green, & Luce (1996); source for relationship-based developmental approach: Greenspan & Wieder (1998).

sion and organization during instruction. This includes complete adult control over the arrangement of the learning environment; the use of prompting and shaping techniques; and attention to immediate, reinforcing feedback contingent on the child's production of the correct target response. The rationale for using discrete trials to teach children with autism is the belief that they are unable to learn in natural contexts due to their specific learning and behavioral characteristics (Lovaas, 1981; Maurice, Green, & Luce, 1996). This approach assumes that children with autism

- Lack social motivation
- Lack the ability to learn in natural contexts
- Learn when adults control all elements of activities
- Learn through exact repetition of discrete skills

See Table 5.1 for characteristics of the instructional model for discrete trial training (from Lovaas, 1981; Maurice et al., 1996).

Discrete trial approaches may be useful for the acquisition of academic or language skills but counterproductive for the acquisition of *spontaneous*, self-initiated social and communication skills (Koegel & Koegel, 1995b). The difficulties associated with using a traditional behavioral model to enhance social and communication skills include the artificial nature of the instructional setting, an emphasis on specific child responses to adult-directed interactions, and the lack of a clear link between instruction and the social use of a skill (Quill, 1995a). As a result, social and communicative spontaneity is compromised. Furthermore, skills acquired in an artificial context often do not generalize to natural social contexts.

Relationship-Based Developmental Model: Floor Time

The relationship-based developmental model is framed within the study of typical child development. Intervention emphasizes the development of skills through active exploration and positive social interactions. The model is based on the belief that children acquire skills through social interactions. Thus, it emphasizes naturally occurring situations as the context for instruction, child-directed activities, and the adult's role in facilitating development. The child's internal motivation and socioemotional qualities propel active engagement, and the responses of others to the child's initiations and interests lay the foundation for this developmental process. Intentionality and meaning are assigned to all of the child's behaviors. The rationale for using this developmental approach to enhance development in children with autism is based on the belief that the fundamental process of learning is the same for all children, so children with autism are able to learn in natural contexts (Greenspan, 1992; Greenspan & Wieder, 1998). The developmental approach assumes that children with autism

- Are capable of social and emotional flexibility
- Have core challenges in sensory processing
- Use behaviors to communicate and interact
- Learn through active engagement in natural contexts
- Learn through reciprocal social interactions

See Table 5.1 for specific characteristics of the intervention model (from Greenspan & Wieder, 1998), which uses a floor-time approach.

Drawbacks of the relationship-based model for children with autism relate to the open-ended quality of the instructional environment and reliance on the child's initiations to guide social-communicative interactions. Children who lack core skills such as joint attention and imitation or who have severe ritualistic and challenging behaviors may be less responsive to this model (Quill, 1995a).

Comparing the Two Models

As indicated by the previous discussion, the behavioral and developmental approaches share common beliefs about intervention goals but have quite divergent views about the process of learning communication and social skills, as well as how it translates into treatment for children with autism. For example, the initial goal of both behavioral and developmental intervention is to foster shared attention and imitation skills, which comprise the foundation for social and communication development. Nonetheless, the procedures used to accomplish these goals are significantly different. The following descriptions of traditional behavioral discrete trial procedures to build core attention and imitation skills (Maurice et al., 1996) and transactional floor-time procedures to build these same skills (Greenspan & Wieder, 1998) highlight the differences between these two approaches.

Discrete Trial Procedures

Instructions include eliciting eye contact from the child in response to his name:

Sit in a chair across from the child. State the child's name and simultaneously prompt eye contact by bringing an edible reinforcer or small tangible reinforcer to your eye level. When the child makes eye contact with you for 1 second, immediately give reinforcer to the child. Over sessions, say the child's name and delay your prompt. . . . Throughout teaching sessions, provide positive reinforcement if child looks at you spontaneously. . . . Repeat procedure but sustain eye contact for 5 seconds. (Maurice et al., 1996, p. 74)

Discrete trial procedures for gross motor imitation are as follows:

Sit in a chair facing the child and establish attending. Present the instruction "do this" while simultaneously modeling a gross motor movement. Prompt the child to perform the action and reinforce the response. Fade prompts over subsequent trials. . . . Eventually, only reinforce correct, unprompted responses. (Maurice et al., 1996, p. 75)

The child's ability to sit in a chair when directed is the prerequisite skill for teaching motor imitation. The specific gross motor movements that are targeted during this procedure include tapping the table, clapping hands, waving, putting arms up, stomping feet, and nodding head (Maurice et al., 1996).

Floor-Time Procedures

These instructions recommend joining the object of the child's attention to elicit eye contact:

If she's playing with a ball, hold the ball in your mouth so she'll have to take it from you. Make a funny noise as she grabs it, then open your mouth and gesture for her to put it back. Make another funny noise when she puts it back in. Make "ball in, ball out" a funny cooperative game. . . . If she is mashing food and putting it in her mouth, put some of the mashed food on your face. Smile and laugh and call her name, then encourage her to take the food from your face as well as from the table. (Greenspan & Wieder, 1998, p. 142)

This next floor-time procedure suggests taking cues from the child to elicit imitation:

If your child is jumping up and down, jump alongside her and sing "We are jumping up and down" to the tune of "Wheels on the Bus." If she allows you, take her hands so that she can jump higher or hold her so she can jump "to the sky". . . . If your child is making funny noises, hold an echo microphone in front of his mouth so he will hear his sounds amplified. Try imitating his sounds. (Greenspan & Wieder, 1998, p. 141)

Successful acquisition of core social and communication skills is defined by the child's ability to share attention, engage in nonverbal social interaction, imitate others in meaningful ways, initiate and respond to others, and use these skills spontaneously in social contexts. Thus, it is important to consider whether these or other methods provide opportunities for a particular child to acquire key social-communicative abilities.

Table 5.2. Characteristics of methods that balance behavioral and developmental factors

Instructional variables	Characteristics
Target objective	Specific but flexible within each activity
Context	Varies with target goal and child's abilities
Setting	Organized
Activities	Meaningful, age-appropriate, and motivating
Teachable moments	Continuous
Instruction/interaction	Alternate between adult-directed and child-directed teaching opportunities; make instruction and interactions meaningful
Prompts	Systematic use of contextual, verbal, visual, gestural
Accepted child responses	Limit the range of response options to behaviors meaningfully linked to activity and/or context
Response to child	Acknowledge and/or scaffold naturally
Reinforcement	Meaningfully linked to context
Repetition	Use naturally, not in a fixed sequence
Measure of success	Quantify and qualify success

RATIONALE FOR COMBINING BEHAVIORAL AND DEVELOPMENTAL APPROACHES

The ongoing debate regarding a traditional behavioral approach versus a relationship-based developmental approach to enhance social and communication skills in children with autism is unfortunate and largely unnecessary. Both approaches argue that their approach is the "intervention of choice," thereby limiting the complexity and diversity within the spectrum of autism disorders. Discrete trial training is only one practice within the field of applied behavior analysis and does not represent the diverse field of contemporary behaviorism. Similarly, floor time is only one practice within the field of developmental intervention and does not represent the diverse field of developmental intervention. Although both methods have merit with some children, no treatment approach should be used exclusively with all children.

There is growing recognition that these two approaches represent extreme positions and that there is a continuum of options that interfaces the best elements of each approach (see Prizant & Wetherby, 1998, for a review). Therefore, intervention strategies that combine the beneficial components of behavioral technology with developmental principles seem to be the logical way to enhance social and communicative competence in children with autism. Approaches that combine behavioral and developmental principles incorporate specificity of goals and objectives, promote the child's level of motivation and interest, use developmental activities, use instructional cues and prompts in a systematic manner, and emphasize meaningful interactions within the context of adult-structured, organized learning environments. This negates the obvious problems in applying either traditional behavioral or relationship-based developmental approaches exclusively with all children by building in greater flexibility. The procedural variables of combined approaches are summarized in Table 5.2.

This blend of behavioral and developmental principles to enhance social and communication skills is described in many popular approaches used for children with various developmental disabilities and/or children with autism. Some methods that fall within this continuum of options are

- Incidental Teaching (Hart & Risley, 1982)
- Interaction Routines (Quill, 1995a)

- Joint Action Routines (McLean & Synder-McLean, 1978)
- Natural Language Paradigm (Koegel & Koegel, 1995a)
- Picture Exchange Communication System (PECS; Frost & Bondy, 1994)
- TEACCH (Treatment and Education of Autistic and related Communications Handicapped Children; Schopler & Mesibov, 1985, 1986)
- Visually Cued Instruction (Quill, 1998)

These methods make an important contribution to the enhancement of skills and, to various degrees, draw from both behavioral and developmental learning principles. Some procedures designed to promote social-communicative interaction across all contexts and for all children are Interaction Routines, Incidental Teaching, Joint Action Routines, and the Natural Language Paradigm. Other procedures emphasize the use of specific instructional cues to support learning. For instance, TEACCH and Visually Cued Instruction emphasize the use of visual prompts to support language comprehension, social understanding, and organizational skills across all contexts. In some cases, a procedure was designed to elicit specific skills for a particular subgroup of children. For example, the PECS is an AAC system specifically designed to enhance spontaneous communication in nonverbal children. These procedures represent a positive shift toward diverse models of intervention in autism, and they can be used in combination with each other as needed for specific children.

In addition to using approaches that draw from the best of behavioral and developmental principles, the selection of intervention strategies must take into account the diversity of target goals and social contexts, as well as the characteristics of a particular child. To do this, one must consider the appropriateness of a particular approach for facilitating a particular skill. More important, it is necessary to consider each child's level of motivation, attention, and organization in each environment and to adjust the approach to his behavioral state and skills moment to moment. This approach to social and communication enhancement requires ongoing decision making. The methodological variables that need to be considered for each target objective are

- Degree of structure in the environment
- Social context (group size)
- Range of learning opportunities
- Activity and materials
- Level of control (adult-directed or child-directed)
- Prompts (contextual, verbal, gestural, visual, or physical)
- Response to the child's behaviors
- Type of reinforcement (artificial or natural)
- Measure of success (quantitative or qualitative)

In each social context, the child variables that need to be considered are

- Motivation
- Level of comfort with the sensory environment
- Social attention
- Imitation skills
- Organizational skills
- Challenging behaviors

The information presented in the remainder of this chapter assists in developing and designing unique intervention strategies for individual children. This eclectic approach, in which

Table 5.3. Where to build social and communication skills

Setting	
Every moment at school and home is a teachable moment.	
Consider the most natural setting for acquisition of target skills.	
Orchestrate opportunities for interaction whenever possible.	
Social context	
Skills are generally acquired with adults and generalized to peers.	
Social communication is more likely to occur in one-to-one interactions.	
Group expectations (not size) determine the probability of success.	
Activities	
Motivating	Fun
Meaningful	Organized
Natural	Age-appropriate

methods vary within and across children according to intervention goals and child-specific factors, seems to be the most logical solution to build socialization and communication.

TEACHING OPPORTUNITIES

Every setting, social context, and activity has the potential to include opportunities that enhance social and communication skills (see Table 5.3). Nevertheless, one must formulate a systematic plan that takes into account how various natural and structured activities will be organized to create maximum opportunities to address targeted skills. There is also a need to look at the temperament and abilities of an individual child when deciding where the objectives will be addressed.

Setting

It is essential that the setting of intervention be distinguished from the methodology. That is, the issue of *where* instruction occurs is separate from *how* instruction occurs. To date, there are no cross-sectional studies that have systematically examined the effects of different methods in a variety of settings. Therefore, decisions about where intervention will occur must take into account both the target objective and child variables.

The first key to successful intervention for social and communication skills is to recognize that every moment is a teachable moment. In addition, social or communication skills will have greater meaning and be acquired more rapidly if learned in natural settings. All settings can be structured and orchestrated to create opportunities for acquiring these skills. Furthermore, it is important to recognize that intervention must occur at school and at home. All of the skills addressed in this book require ongoing intervention and practice by everyone who interacts with the child.

Child variables to consider when selecting the best setting for acquisition of skills are linked to the child's temperament and core skill abilities, specifically the following:

- **Sensory sensitivities:** The setting must match the conditions under which a child is most calm. For example, if the child has difficulty participating because of sensory sensitivities to a noisy, active setting, he may require a quieter learning environment.
- **Anxiety:** The setting must take into account the conditions under which rituals and other expressions of anxiety are least likely to occur.
- **Challenging behaviors:** The setting must take into account the conditions under which challenging behaviors are least likely to occur.
- **Social motivation:** The setting must take into account the child's interest in peers. For example, children who watch or imitate other children need peer models in their learning environment.

- **Shared attention:** The setting must take into account the conditions under which the child is most attentive. For example, examine the child's ability to attend in adult-child interactions, peer-child interactions, and structured and unstructured settings.
- **Imitation:** The setting must take into account the conditions under which the child is most imitative. For example, examine the child's ability to imitate one or more adults and peers in structured or unstructured settings.
- **Organization:** The setting must take into account where the child demonstrates organized, purposeful skills. For example, examine how the level of structure or the number of people in the environment influences the child's ability to maintain organized, purposeful social and communication skills.

The following three vignettes show how individual temperaments and core skill abilities—not cognitive or language capacities—should be used to determine the appropriateness of a child's intervention setting.

Tommy is 3 years old. He is a passive child with no severe challenging behaviors. Tommy does, however, demonstrate an absence of core skills: There is no shared attention or response to adult directions, and there are no observation or imitation skills. He is extremely sensitive to sound. He says some words while playing alone, and his solitary play consists of perseverative and inappropriate use of toys. He generally uses simple gestures to make requests. When working with his parents and a therapist at home, Tommy is able to engage in functional play activities and is beginning to make requests with intent. He imitates some actions during familiar, frequently practiced songs and fingerplays, and he looks at books with an adult. When placed in an inclusive preschool, the trained therapist was unable to engage Tommy in the same activities that were successful at home. Episodes of crying dramatically increased in school, and Tommy frequently climbed into one of the classroom cabinets when it became noisy.

Caroline is 5 years old and nonverbal. She has frequent tantrums in response to adult directions and is more likely to respond to her siblings and neighborhood friends. She demonstrates shared attention and watches peers, but she does not imitate them. She has no sensory sensitivities or intense rituals. Caroline used to attend a self-contained classroom until her parents requested some inclusion opportunities; thus, Caroline and her tutor now attend kindergarten. In her kindergarten class, Caroline responds to the play invitations of peers, imitates peers during structured classroom projects, initiates use of her communication board when the peers show interest, and does not have tantrums. Caroline's parents report that she sleeps better and seems happier since starting kindergarten.

Philip is 5 years old and highly verbal. He is able to do second-grade academic work. He is also able to have simple conversations with adults about his interests, and he demonstrates creative solitary play linked to his favorite movies and books. Philip has severe tactile sensitivity and becomes easily upset when there are changes in his physical environment. At one point, Philip's educational program was composed of a self-contained small class in the morning and an inclusive kindergarten in the afternoon. After 4 months of intense effort, however, Philip's family decided to discontinue the inclusive program. Philip was displaying panic responses to kindergarten by crying, "Please, I don't like the kids" every day. His sleep and eating patterns became disrupted as well. The large social group appeared to be too stressful for Philip. He preferred having one kindergarten friend come to his classroom or home to play.

Social Context

Given that social misunderstandings and communication difficulties are central to autism, another question to be addressed is whether intervention should occur in one-to-one interactions or in small social groups. In addition, it is important to consider the dynamics of each social group when planning for social and communication intervention. See Table 5.3 for social context information to consider when making decisions for a particular child's intervention plan. Children with autism generally demonstrate specific social and communication skills with adults first and then generalize the skills to peer interactions. In addition, social and communication skills are also more likely to occur during one-to-one interactions. For example, if the goal is interactive play, interaction with one person is usually easier than cooperating in a group. Similarly, if the goal is communication, it is probable that interaction with one person will be more successful than sharing information in a group.

The group dynamic strongly affects successful participation as well. Participation in groups is less influenced by the size of the group than by the expectations of each member of the group. The ability to participate in a group activity is determined by three factors: social expectations, language expectations, and waiting expectations.

Social expectations are defined by the levels of clarity and predictability that exist in the group. For example, when all of the children are doing the same thing at the same time, there is clarity with regard to social expectation. In contrast, when children in the group are doing different things, even with the same toys or materials, there is less clarity about what to do.

Some group activities require comprehension of language in order to participate, while other group situations do not require an understanding of the language in order to participate. For example, even though children talk during mealtime, an understanding of language is not required in order to participate in the group. On the other hand, a group discussion that occurs during storytime necessitates an understanding of language in order to participate.

An expectation to wait varies across group activities, too. Most group situations require waiting for an unknown amount of time (e.g., waiting to take a turn during an activity). Some group situations require waiting for a specific amount of time (e.g., turn-taking while playing a structured board game). Still other group situations require no waiting at all (e.g., completing an art project next to others who are doing the same thing). Any group situation that requires a child to wait also expects the child to observe the social behaviors of others and to share space and materials. For instance, if the group consists of two children who are taking turns, then the child is expected to observe his peer 50% of the time and participate the other 50% of the time. If the group consists of four children who are each taking turns, then the child is expected to observe others 75% of the time. If the group consists of 10 children who are taking turns, then the child is expected to observe others 90% of the time. For children who are unable to observe the social behavior of others, waiting may be viewed as confusing or as useless time.

The degree to which children are able to successfully participate in a group setting is linked to these three factors. As a result, it is important to consider the requirements of different group contexts. The criteria of social predictability, language expectations, and waiting vary across different group activities. As discussed in Chapter 4, the six general types of group activities include unison, choral, structured nonverbal turn-taking, structured verbal turn-taking, unstructured play, and discussion (see Table 4.1). Identify the social group in which the child is most successful. What type of social group is it—unison, choral, predictable nonverbal turn-taking, or other? These will be the group contexts in which social and communication intervention goals should be addressed. If the child is not successful with any of the group contexts, then one-to-one instruction is required.

In addition to ascertaining the social, language, and communication expectations of a group activity, one must take into account an individual child's abilities in each group

setting to determine its usefulness as a context for learning. Variables to consider for each child are

- **Social attention:** Examine the child's ability to observe others in various group situations.
- **Imitation:** Examine the child's ability to imitate others in various group situations.
- **Language comprehension:** Examine the language expectations of the group activity in relation to the child's language comprehension abilities.
- **Communication:** Examine the communication expectations of the group activity in relation to the child's communication abilities.
- **Organization:** Examine the child's level of organized, purposeful activity in various group situations.

The following two cases show how core skill abilities determine the appropriateness of various social groups for children.

Four-year-old Joseph attends a specialized program for children with autism spectrum disorders. He is able to engage in parallel play when he has his own set of toys and materials; he does not observe his peers during these play activities. Joseph is able to participate in group activities when all of the children are doing the same thing at the same time and there is no waiting. During these unison and choral groups, he observes his peers and imitates everyone in the group. His ability to observe and imitate peers is linked to the level of social predictability in the group activity.

Samantha, 5 years old, spends half of her school day in a kindergarten classroom. She observes and imitates peers during structured art projects and at work centers when everyone is doing the same thing at the same time. She communicates with peers during mealtimes and with one friend during structured activities. Samantha can attend while her teacher reads the class a story but loses focus when the group talks about the story. She also has difficulty during group meeting times that involve discussion and random turn-taking. In addition, Samantha isolates herself during recess and free play. Her ability to interact with peers is linked to the level of social predictability and the level of language complexity in the group activity.

Activities

Given the nature of social and communication development, every activity has the potential to include opportunities to enhance social and communication skills. Regardless of the target social or communication goal, skills will have greater meaning and be acquired more rapidly if taught during naturally occurring, fun, age-appropriate activities. All activities can be structured and orchestrated to create opportunities for acquiring these skills. The M&Ms of intervention—using activities that are *motivating and meaningful*—need to be incorporated into plans for building social and communication development. Organization also is an important consideration. These three important qualities, summarized in Table 5.3, are described in detail next.

Motivating

Motivating activities are likely to elicit positive opportunities for social engagement and communication. A child's interests are a window into what makes sense to the child; that is, he engages in activities that provide stimulation and meaningful information. It is helpful to examine a child's interests and begin using these activities as opportunities to support social participation and communication.

Many children with autism show interest in the alphabet, numbers, books, computers, and maps. These activities are organized, predictable, and patterned and involve visual materials. It is probable that children who enjoy these activities are seeking organization,

predictability, patterns, and learning through the visual modality. For such children, activities providing these elements are opportunities for social engagement and communication.

Some children with autism are interested in videos. Watching videos allows them to review unchanging social scenarios and interactions repeatedly. Unlike natural social interactions, which never occur the same way twice, videos present identical reenactments over and over again. It is likely that children who show interest in videos are seeking social predictability. Video instruction may be an excellent means to assist them with social understanding and communicative competence (see later section on visual supports in this chapter).

In addition, examine a child's intense interests and obsessions and assess whether they may be opportunities for learning. Nonetheless, one must be cautious in using obsessive interests as part of an intervention plan. The following vignettes demonstrate the possible positive or negative results:

Seven-year-old Robert is fascinated by the Muppets and talks about them incessantly. His second-grade teacher channeled this intense interest in positive ways. First, she used Muppet stickers as rewards. Second, she arranged one activity a day when Robert and one classmate could create an art project or write a story about the Muppets. The most positive interactions and conversations occurred as Robert and his peers worked together on these projects. By the end of the school year, the class had generated a Muppet encyclopedia.

Eight-year-old Don is extremely interested in soda machines; he talks nonstop about the one in school. Initially, Don was given opportunities each day to fill the soda machine with one of his friends; however, he became increasingly more anxious while waiting for his next opportunity to do this. Don's inability to control this obsession resulted in a dramatic increase of his running out of the classroom to the soda machine, which then escalated into tantrums. Therefore, access to and discussion about the soda machine had to be completely eliminated. The teachers wrote a story for the class about the soda machine's being for teachers only, a "Do Not Enter" sign was placed on the room with the soda machine, and a new behavior contract with different rewards was designed for Don.

Meaningful

Meaningful activities are essential to social and communication success. The ability to sustain attention and to participate spontaneously in an activity is linked to its meaningfulness for the child. The challenge of intervention is to select age-appropriate, meaningful activities and then superimpose elements of structure and organization into them. The activity should be naturally reinforcing whenever possible. Remember also that structured, organized, predictable, and somewhat repetitious activities can be both meaningful and fun.

The following examples demonstrate how target social and communication objectives that are often addressed in artificial contexts can instead be structured during meaningful activities:

1. Objective: Imitation

A meaningful, fun way to teach imitation skills is to sit across from the child, put on a music tape, give the child a musical instrument (e.g., bells), and sing a song about actions that can be done with the instrument (e.g., "This is the way we clap, clap, clap . . . shake, shake, shake . . . go up and down, up and down") while modeling and prompting the contextually meaningful actions.

2. Objective: Labeling

A meaningful, fun way to foster labeling is to sit with a child, share a storybook, and take turns pointing to and labeling the objects in the book in a structured, predictable way. Using this technique, the adult initially goes through the entire book, pointing

to and labeling one item per page. Next, the adult and child together point to the items named by the adult. Then, a turn-taking routine is established so that the adult and child take turns naming one item on each page. For example, using a book about animals, the adult points to one animal on page 1 and says "(name of animal)." Then he points to an animal on the next page and waits for the child to label or comment. Prompts are used as needed, and labeling occurs within the context of a developmentally appropriate, meaningful social activity.

Organization

As previously discussed, social activities can be open-ended or closed-ended. Open-ended activities generally lack specific rules, allow for the creative use of toys and materials, and have no set sequence of events or final product. Closed-ended activities have a clear purpose, organization, and a final product or clear completion point. The lack of organization inherent in open-ended activities is often problematic for most children with autism. (See Chapter 4 for additional information about open-ended and closed-ended activities.)

Activities that lack organization can be confusing for most children with autism and often are not the best opportunities to facilitate social and communication skills. The children will vary in their ability to participate in open-ended activities in purposeful and flexible ways. The presence or absence of core skills—specifically, shared attention, imitation, and organization—will directly affect the child's success or difficulty with open-ended activities. Considering a child's core skill abilities can assist in determining the degree to which a particular closed-ended or open-ended activity is a viable opportunity for social interaction and communication enhancement. In general,

- An absence of core skills generally translates into a need for closed-ended activities.
- The presence of core skills generally translates into the ability to participate in open-ended activities more flexibly.

Nevertheless, all activities, open- or closed-ended, can be organized and structured to create greater predictability. This is the focus of the next section.

ORGANIZATIONAL SUPPORTS

Children with autism are confronted with a world of social confusion, communication difficulties, and sensory sensitivities. This is compounded by their inherent drive for rituals and feelings of anxiety. Imagine the stress for a young child experiencing social chaos and communicative frustrations. Intervention must therefore be approached from a sympathetic point of view, based upon an understanding, respect, and empathy for the child's struggles. In turn, intervention to support social and communication success must emphasize the use of compensatory strategies. These compensatory strategies build social bridges for the child in order to maximize opportunities for social and communication success.

The first set of intervention strategies are termed *organizational supports*. Organizational supports compensate for a child's confusion with the social environment. Table 5.4 indicates that the qualities of the physical environment contrast sharply with the inherent qualities of the social world. Unlike social events, the physical world is predictable and organized. The physical world is concrete and, as such, generally allows an individual to focus attention on details or take as long as needed to examine the physical elements. As discussed in previous chapters, the cognitive strengths and learning preferences associated with autism mirror the qualities of the physical world. (This is the logical outcome of the social impairments characteristic of autism.) Children with autism focus on physical details to make sense of their environment; therefore, providing an organized environment that compensates for their confusion is a logical way to support their understanding of and success in the social world.

Table 5.4. Contrasting physical and social environments

Physical	Social
Concrete	Abstract
Organized	Unorganized
Predictable	Unpredictable
Ordered	Flexible
Patterned	Random
Static	Changing

This section discusses three types of organizational supports:

- Concrete cues to organize the physical environment
- Predictable routines to organize activities
- Behavioral strategies to organize instruction

The criteria for organizing the physical environment, creating activities with predictable routines, and using structured teaching procedures lie in the social behavior of the child. The simple criteria listed next can help determine if a child is organized and when a child needs the support of external organizers, routines, and structure.

The organized child

- Is calm when alone
- Sustains purposeful attention to an activity
- Intermittently observes others' behaviors
- Initiates contact with others to interact
- Demonstrates communicative intent
- Makes changes when directed

The disorganized child

- Is overly active or extremely passive
- Is distractible
- Engages in ritualized behaviors
- Lacks social observation skills
- Uses unconventional means to interact with others
- Engages in ritualized interactions
- Engages in challenging behaviors

Most children with autism are organized some of the time and disorganized at other times. They demonstrate some level of internal organization in some settings and not others. Still, there are some children with autism whose challenges are so complex that they are disorganized most of the time. It is important to remember, however, that the ability to be calm, sustain attention, observe others, communicate with intent, and make changes varies within and across children. A child's level of organized behavior typically correlates with level of comfort, an understanding of the social events, and an understanding of what to do in a given situation. That is, when an experience is meaningful, a child is more likely to behave in an organized manner. In contrast, when an event is experienced as chaotic, overwhelming, or uncomfortable, a child is more likely to behave in a disorganized manner. This point is illustrated by the following examples:

Four-year-old Perry continuously runs around his preschool—which is full of exciting toys, activities, and children—during playtime. He is calm and focused and watches his peers during snack time, storytime, and art. Perry’s level of organization varies with the activity’s level of organization.

Six-year-old Adam begins each school day by straightening all of the books, papers, and materials in his classroom. He focuses on his academic work and interacts with his peers until distracted by what he refers to as “a mess.” Messes included losing one of his pencils or markers, a change in his therapy schedule, or missing an opportunity to share during circle time. All of these messes create disorganization for him and result in his inability to have calm, focused interactions with others.

Both of these children demonstrate varying degrees of organization. The use of organizational supports, activity structure, and routines should therefore vary across settings, activities, and expectations based upon the child’s level of organization at the moment. Each of the three organizational supports is described in detail next.

Organize the Physical Environment

The first strategy to support success is to establish organization within the physical environment to compensate for confusion in the social environment. Whenever the child appears disorganized, the first step is to establish more organization in the physical environment. Children with autism naturally focus on details in their physical environment in order to know exactly what to do in a particular social situation. The purpose of organizing the physical environment is to clarify expectations and decrease the child’s reliance on making decisions through social information. Every aspect of the physical environment can be organized in order to clarify social expectations. Table 5.5 lists the aspects of organizing the physical environment that assist the child in understanding where to be, what toys or materials to use, what toys or materials to share, what to do, with whom, for how long, when the activity is done, and how to make changes flexibly. These aspects of organization can be embedded in all social activities. Organizers are used in the physical environment with the following goals in mind:

- Clarify expectations.
- Increase the child’s attention to the relevant details.
- Increase the child’s purposeful activity.
- Increase the child’s independence.
- Increase the child’s ability to observe others.
- Increase the child’s social interaction.
- Enable the child to anticipate and make changes flexibly.

Table 5.5. Organizational supports

Organize	Help the child understand
Space	Where to be
Choices	What toys or materials to use
Possessions	What is mine or shared
Expectations	What to do
Social setting	With whom
Time	For how long
Self	How to stay calm and focused
Transitions	When done

The physical environment can be organized to increase solitary play, enhance social play, enhance group participation, and improve social skills in the community.

Organize Solitary Play

Efforts to increase a child's purposeful solitary play can be enhanced by organizing space, choices, social and activity expectations, and transitions. Some ideas are described next.

Organize space: where to be

- Play at a table.
- Play inside a small tent.
- Play while sitting on a beanbag.
- Play while sitting on a specific rug.
- Play in an area with boundaries marked by colored tape.
- Play outside within a fenced area.
- Play outside within an area marked by little red flags.
- Play at the playground and stay within visually marked boundaries.

Organize choices: what toys or materials to use

- Limit the number of toys in one area.
- Provide only the exact materials needed for a particular activity.
- Place toy pieces or materials that go together for a single play activity in individual activity boxes or transparent containers.
- Label toys and materials on shelves or in transparent containers.
- Provide a checklist of play activities that includes the maximum number of daily opportunities to play with each item (e.g., videos = one time, Nintendo = two times, computer = three times, books = five times). The child makes a selection and checks it off the list.

Organize activity expectations: what to do

- Provide a specific number of toy containers in the designated area.
- Provide a specific number of toys or materials for one activity (e.g., a container that contains playdough, four cookie cutters, a roller, and a display card showing the steps for making playdough cookies).
- Provide a list of the two or more activities/toy containers for play.
- Provide a list of play options.

Organize social expectations: with whom

- Place a photo of the child in the area to clarify that this is time alone, in contrast with showing the child photos of his play partners during other times of social play.
- Use a specific space to indicate that it is time to play alone.

Organize time: how long

- Use a timer to indicate length of solitary play time.
- Use a music tape to indicate length of play time (i.e., play until the music is finished).
- Define completion of the play activity by the number of toy pieces (e.g., string together 20 beads).
- Define completion of the play activity by its finished product (e.g., complete a 50-piece puzzle).

- Visually specify what to do when the materials do not clarify completion (e.g., put a sticker on each of the five pages to be completed in a coloring book).
- Visually depict time using a time board. A Velcro strip of numbers or letters in the child's name or a set of duplicate pictures that symbolize *play* is presented to the child, and items are added (or removed) one by one so the child can see the passage of time.
- Visually depict the current and next activity using "First, Then" in picture or written form, especially when the next activity is highly preferred.

Organize transitions: when done

- Include solitary play time on a daily visual schedule.
- Select a particular location where the child puts completed play projects.
- Use a familiar "transition song" with the child.
- Use a verbal countdown to prepare for transition (e.g., "10, 9, 8 . . .").
- Have the child bring the finished play project to show and tell.
- Provide the child with a visual reminder to communicate when done (e.g., an *I'm done* card at the bottom of the time board).

The following vignette demonstrates how some of these strategies can be used to increase solitary play:

Four-year-old Carla has difficulty remaining in the designated play center in preschool; she also often moves toys and materials out of that area. To assist Carla, her teacher used different colored tape to mark spatial boundaries in each play area, organized toys into small bins to define use more clearly, and provided Carla with a photo choice board that she uses to select and sequence her play choices.

Organize Social Play

Organizing the physical environment becomes essential when supporting the child's ability to engage in parallel or interactive play with others. Most of the examples given for solitary play should apply to social play contexts. Some additional ideas for organizing the physical environment for social play are described next.

Organize space: where to be

- Apply ideas discussed for organizing space during solitary play.
- Limit the number of peers in a particular area (e.g., use hooks for the children to place their name tags in an area).
- Place the child's name on his chair or provide a special mat.
- Use colored tape to indicate where to stand or wait during a game.

Organize choices: what toys or materials to use

- Select toys and activities that the child has mastered in solitary play.
- Apply ideas discussed for organizing choices to increase solitary play.
- Provide a box of objects that specify activity choices and how many children can participate in each activity (e.g., a box containing three paintbrushes for three children to select art, four small blocks for four children to select the block area, three bookmarks for three children to select the book area, two hats for two children to select the dress-up area).
- Select play activities that have an equal amount of toys or materials available for each child.
- Organize materials so that each child has his own set.

- Emphasize physical activities, structured games, or activities that allow parallel participation.
- Select activities that are organized and predictable (e.g., projects or games with clear outcomes).
- Have the child and his peers plan in advance what to use.

Organize possessions: what is mine and what is shared

- Select activities in which each child has his own set of materials.
- When activities require sharing materials, provide spatial boundaries to indicate personal possessions versus shared possessions (e.g., use trays in the block area to clarify that the blocks on the child's tray belong to him, the blocks on each peer's tray belong to that peer, and the blocks not on any tray can be shared).
- When activities require sharing materials, group children with play partners to limit the amount of sharing needed.
- Use different colored containers to divide materials among the children (e.g., the child with autism always uses the items in the blue box).

Organize activity expectations: what to do

- Select activities that the child has mastered in solitary play.
- Apply ideas discussed for organizing activity expectations during solitary play.
- Clarify whether the expectation is parallel play with his own set of materials, parallel play with shared materials, or interactive play.
- Use the previously listed physical organizers for space, choices, and possessions to facilitate sharing during social play.
- For interactive play, select activities that allow for clear turn-taking (e.g., putting together a train track with one peer).
- Use cue cards to remind all children what to do and who to watch.

Organize social expectations: with whom

- Have the children select partners before the play activity begins.
- Have the child select one or more peer partners from an array of photos.
- Limit the number of children permitted in a play area (e.g., place a limited number of chairs or mats in a particular area).

Organize time: for how long

- Apply ideas discussed for organizing time during solitary play.
- If waiting is required in the social play activity, provide the child with an object to hold while waiting or a card that reminds him to wait during the social play activity.

Organize transitions: when done

- Apply ideas discussed for organizing solitary play transitions.
- Share responsibility for cleanup with a friend.
- Have one partner with whom the child makes transitions (the child can select a different peer each day).

Some of these suggestions for enhancing solitary play are illustrated in the next vignette:

Five-year-old Barry ran aimlessly around the room during free play in his kindergarten classroom. He had a number of solitary play interests at home but was un-

able to make independent choices, sustain attention, or interact with peers during playtime in school. Barry's teacher set up two activity choice boards for him, one containing play choices and the other containing photos of his favorite classmates. At the beginning of free play, Barry selected two friends (who had the option to say yes or no) and two play activities. Initially, the activities were manipulative materials or art projects that allowed for parallel play. The space, time, and materials were organized for the children. Gradually, Barry and his friends were doing activities that required sharing and turn-taking. To organize sharing, Barry was given a blue box to hold those things that he did not want his friends to touch and was reinforced for occasionally exchanging items in his box with one of his peers' toys. To organize turn-taking, Barry was given a reminder card to wait for his turn. Clarifying space, materials, partners, and expectations dramatically organized Barry's ability to engage in social play.

Organize Group Participation

As indicated previously, the dynamic of a group situation contributes greatly to a child's ability to participate successfully. The six types of group activities (i.e., unison, choral, nonverbal turn-taking, verbal turn-taking, unstructured play, and discussion) demand different levels of social awareness. The more complex the group setting, the more important it is to provide physical organizers to enhance group participation. Most of the examples given for solitary play and social play apply to group contexts. Some additional ideas for organizing the physical environment to enhance group participation follow.

Organize space: where to be

- Apply the previous ideas for organizing space for solitary and social play.
- Have a designated location for all group activities.
- Place a card with the child's name at his location.
- Place a taped "X" on his place to stand in the group.
- Have the child select a partner to sit or stand with in the group.
- If the activity involves taking places in a line, always allow the child to be first or last.

Organize choices: what toys or materials to use

- Apply the previous ideas for organizing solitary and social play choices.
- Allow the child to hand out or collect group materials as often as possible.
- Use different color-coded folders for each subject/activity area.
- Provide color-coded index cards with lists of materials needed for each group activity.

Organize possessions: what is mine and what is shared

- Apply the previous ideas for organizing possessions during social play.
- Use color-coded folders and boxes for each subject's or activity's work and materials.

Organize activity expectations: what to do

- Apply the previous ideas for organizing activity expectations during solitary and social play.
- Make a list of the group rules (e.g., watch, wait, raise your hand, share, take turns, listen); cue the child in the group as needed.
- Organize small groups (less than five children) whenever waiting is required.
- Position the child in the group to maximize his ability to observe others.
- Target one peer for the child to watch in order to remember what to do.

- Provide a visual cue to clarify who the child is expected to watch or listen to (e.g., a colorful stick is held by the adult or peer who is talking).
- Provide a list of the group activity's sequence of events.
- Provide an outline of the sequence of events discussed in the group.

Organize social expectations: with whom

- Minimize social confusion and random turn-taking whenever possible.
- Use an object or colored cue to designate multiple small groups (e.g., work at the red rug area).
- In cooperative learning group activities, organize the sharing of ideas so that children take turns in a circle and the speaker holds something that signifies he is the speaker (e.g., a plastic microphone).

Organize time: how long

- Apply the previous ideas for organizing time during solitary and social play.
- Use more physical organizers as the group gets larger and group expectations become more complex.

Organize transitions: when done

- Apply the previous ideas for solitary and social play transitions.
- Use nonverbal cues for group transitions (e.g., turn down lights, have all of the children raise their hand).

The following example shows how organizing the physical environment can assist a child in successful group participation:

Eight-year-old Tammy participates in group activities during which everyone does the same thing at the same time, but she has difficulty understanding the rules of turn-taking and watching peers in group situations. Tammy understands the information conveyed by language but is unable to follow the social events. In her classroom, she frequently calls out questions or comments; on the playground, she wanders aimlessly. Several physical organizers are being used in the classroom to assist Sarah: 1) her teacher writes down the main discussion ideas as the group is talking, 2) the teacher has Sarah sit near her, 3) the teacher and the children hold a feather when they speak so that Tammy always knows who to watch, and 4) the teacher places a reminder card on the board that says, "Raise your hand." For outside, 1) plans for organized games are made with peers prior to recess time and 2) Tammy and a friend draw a map—which is meaningful because Tammy enjoys drawing—of the school playground equipment that she uses to organize her own recess activities.

Organize Community Experiences

Applying these principles of organizing the physical environment to community settings is quite a challenge. Community settings present the child with such difficulty because they are, by nature, the least socially predictable. The physical setting and social expectations of community situations—such as visiting relatives, going to the doctor, or going to someone's birthday party—generally lack organization and are therefore very difficult for the child. Furthermore, it is not possible to organize many aspects of the physical environment in most community situations. Although the physical surroundings may remain chaotic from the perspective of a child with autism, establishing the child's understanding of what to do in the community is the major goal. The purpose of organizing commu-

nity activities is to assist the child in understanding where to be, what toys or materials to use (and not to use), what can be shared (and not shared), what to do, with whom, for how long, how to stay calm and focused, and when the activity is done.

The following vignettes provide some insight into how to organize community settings for a child with autism. These issues are discussed in greater detail in Chapter 7 on social intervention.

Eight-year-old Toby is terrified of the doctor's office and historically has required multiple adults to hold him for an examination. A plan was generated to organize the experience for him. The emphasis was placed on the organizational elements of what to do, for how long, how to stay calm, and when the visit would be done. To assist Toby in understanding what to do, 1) a video was made about going to the doctor that Toby watches daily, 2) Toby practices what to do by visiting the school nurse's office each day, 3) he was given a special alphabet sticker book and places the letters on the board one by one to mark the passage of time, 4) a tape of his favorite music plays while he practices going to the doctor, and 5) a special high-five is used to mark the end of the event. His first visit consisted of a quick hello between Toby and his doctor, Toby using his sticker book in the waiting room, and Toby and his mother leaving after they shared the special high-five. Gradually, the procedure has evolved so that now Toby can receive his physical examination without incident.

Shane, age 8, demonstrates many social skills with peers in organized settings at home and school, but he has difficulty maintaining self-control at parties. A plan was developed that focuses on the organizational elements of where to be and with whom and how to stay calm. Shane had all of the individual skills of what to do and how to share but was unable to use these skills in social contexts that included unfamiliar children. The plan consisted of 1) Shane visiting the location of the birthday party prior to the event and making a list of where he would be for the different parts of the party, 2) reviewing a list of friends who were attending the party, 3) picking two friends to play with for the entire time, and 4) selecting a quiet location where he could use his pocket calculator for a few minutes when given a warning to calm himself. With these preparations in place, the next party was a success for Shane and his friends.

Organize Activity Routines

Once the physical setting is organized, the second strategy to support social and communication success in children with autism is to establish predictable activity routines. Establishing social routines throughout the day is an essential aspect of intervention. Routine activities consist of three simple elements:

- A consistent beginning
- A consistent sequence of events within the activity
- A consistent ending

Most social events and social interactions typically do not have a predictable sequence of events and often do not have an obvious outcome. Thus, the inherent struggle for children with autism is that their desire for routine and predictability conflicts with the dynamic and ever-changing aspects of social events and social interaction.

For a child with autism, routines are familiar activities in which he understands explicitly what to do and for how long. Familiar routines assist the child in two important ways. First, familiar activities allow the child to anticipate what is next, thereby increasing purposeful activity and decreasing confusion. Second, familiar routines decrease the child's reliance on the challenge of social flexibility. The difficulty with activity routines is that they have the potential to create rigidity in children who are already driven to rou-

tines. Therefore, it is important to use the child's own level of organized behavior across settings to determine when using predictable activity routines is necessary.

Solitary Play Routines

Children with autism who develop the core skills of shared attention and imitation are less likely to need their play organized into predictable activity routines. For those children who lack these core skills, it is often necessary to create predictable play routines for direct instruction. As indicated previously, it is important to select closed-ended play activities whenever possible, as these activities have a natural sequence of steps and a definitive outcome.

Nonetheless, activity routines can be established for most open-ended play activities. This is a critical strategy for supporting functional play in many children with autism. When creating activity routines using open-ended play materials, the objective is to create an artificial sequence of events using the play materials. Play routines can be designed in one of two ways:

1. *Multistep play acts*, which are done in a fixed sequence and for which the sequence can be repeated multiple times
2. *Repetitive play acts*, which are gradually *scaffolded*, or combined, into more elaborate play schemas and for which the different play acts can be done in various combinations

Although the ultimate goal is for the child to use the play materials in more flexible ways, he is first taught to use the play materials in a predictable way. All play routines clarify for the child what to do, how much to do, and when the activity is complete. The following examples show how multistep activity routines for open-ended play activities were created for children who did not demonstrate core skills. For multistep activity routines, a child is taught the complete sequence from the onset with gradual fading of adult prompts. The key to success is to impose routine within open activities without restricting the child's spontaneity.

Six-year-old Dennis enjoys the sandbox but continuously sifts the sand through his fingers. Efforts to teach him to use different sand toys have failed to change his play behavior. An activity routine was implemented for Dennis that consists of hiding pieces of an ABC puzzle that he enjoys, along with other puzzle pieces, in the sandbox. Dennis has been taught to search for the puzzle pieces in the sand and to complete the ABC puzzle. Once the puzzle is finished, his sand play is finished.

Eight-year-old Jack enjoys playing with playdough but obsessively lines up little pieces in a row. Jack was taught an activity routine of making playdough cookies that consists of the following sequence repeated multiple times: roll the playdough, use a cookie cutter to make a cookie, and put the cookie on the tray. Jack's play area was organized with one box containing the playdough, five cookie cutters, the roller, and a cookie tray. In addition, because Jack likes books, he has been taught the play sequence not only through physical prompting but also through the use of a homemade playdough cookies "cookbook," which contains one step of the play sequence per page. Once the book is finished, the activity is finished.

The next vignettes describe how repetitive play acts are scaffolded into elaborate play routines. With scaffolded play routines, one element of the play activity is done repetitively until it is mastered by the child. Then, a second repetitive play act is added (i.e., scaffolded) until it is mastered; finally, a third repetitive play act is added until it is mastered. The play activity gradually becomes increasingly complex. The key to scaffolding play is to design play routines that allow each element to be done repetitively. Notice how each element of the play activity in the following examples consists of multiple repetitions of

a single action. There is no limit to the expansion potential when play routines are designed in this fashion.

Eight-year-old Kurt's play with trains consists of lining them up in a row. His teacher has designed a play routine that is taught through scaffolding. As one play act is mastered by Kurt, the next play act is introduced. His play is systematically becoming more complex and gradually developing into the following eight play acts: 1) put 20 train track pieces together; 2) hook a set of 12 train cars together; 3) ride the train around the circular track multiple times with a stop sign at one point; 4) put a miniature person in each of the train cars; 5) have each person say "good-bye" as they get on the train; 6) put together the pieces of a miniature train station next to the track; 7) take the people off of the train and put them in the train station; and 8) have the people say "All done; that was fun" when they get off the train.

Five-year-old Jason likes toy animals, although his play consists of staring at them, one at a time. His teacher has designed a play routine that is taught through scaffolding. As one play act is mastered by Jason, the next play act is introduced. His play is becoming more complex and gradually developing into the following four play acts: 1) walk the animals into the back of the truck; 2) ride the truck along a colored tape road; 3) walk the animals off of the truck and into a barn; and 4) walk the animals out of the barn to eat, where each animal has a small bucket for food.

Social Play Routines

Establishing play routines becomes more essential when supporting the child's ability to engage in parallel or interactive play with others. All closed-ended play activities that a child has mastered during solitary play can be done in proximity to peers or shared with peers in an organized manner. Begin with closed-ended play activities that allow for parallel participation and provide specific toys and materials for each child. Gradually, closed-ended play activities can be set up to require turn-taking and/or waiting skills. It is useful to select games and activities that focus on what to do and to minimize the need for conversational exchanges. These include

- Art projects completed with a partner
- Building projects completed with a partner
- Sharing a computer game with a partner
- Shared reading with a partner
- Board games, such as lotto
- Outdoor games, such as throw and catch

For children who demonstrate more advanced skills, structure open-ended play into activity routines with peers. Activity routines that a child has mastered during solitary play can be shared with one or more peers, or dramatic play can be structured into activity routines such as

- Acting out a familiar storybook
- Acting out a script written by the children (e.g., a script about going to the grocery store)
- Assigning the child a specific role in a dramatic play area (e.g., the cashier at a pretend restaurant)
- Planning a finished product before beginning play (e.g., plans to use blocks to build a neighborhood with four houses)

The next two vignettes illustrate how some of these techniques can be used to create social play activity routines.

Harry, age 4, enjoys arranging his toy cars in a specific order. Anticipating that others will touch his cars, Harry becomes upset when other children want to play near him. His preschool teacher therefore has organized the car area in three ways: cars are divided into three different colored boxes, two taped areas representing roads have been made available, and all children make toy choices at the beginning of the play activity. The children have been taught to trade (i.e., exchange) toys from their boxes. As long as Harry understands that he will always have a certain number of cars, he is happy to play next to his friends.

Tasha's kindergarten teacher organizes the classroom's dramatic play area around a specific theme each month. The teacher selects or makes a storybook about the theme that contains a script that can be acted out by the children. She reads the story at circle time and later participates with the children in the dramatic play area. The teacher directs the basic sequence of the play but allows for individual child creativity. For example, using the theme about Native Americans, the activity sequence consists of the seven following events: 1) select Native American costumes; 2) select pretend food to plant in the garden area; 3) enter the tent, select instruments, and sing songs about the harvest; 4) collect the food; 5) cook a meal; 6) eat; and 7) clean up by removing the costumes and putting everything back in its place. Tasha, who watches and interacts with peers only in structured contexts, is an active part of the group during these structured dramatic playtimes.

Group Activity Routines

Group activities vary in social complexity. As indicated previously, some group activities require waiting, others require random turn-taking, and still others require flexible social observation skills. To enhance the group participation abilities of children with autism,

- Maximize the use of group activities where everyone is doing the same thing at the same time.
- Emphasize activities that occur in unison and that allow for choral responses.

Such group activities are socially predictable and, thus, the most successful group routines for children with autism. More complex group activities require the physical setting to be organized (see previous section on suggestions for organizing the physical environment). If a child still appears disorganized during group activities, review the expectations of the group and determine if the child understands the four basic group rules: 1) listen to the group directions, 2) wait when directed, 3) look at the speaker, and 4) share (i.e., take your turn). To clarify these basic group rules, consider utilizing the following suggestions for embedding routines within group activities:

- Use the same verbal group direction consistently to get everyone's attention (e.g., "Everybody, _____"), but keep in mind that children with autism often need to be taught to respond to "everybody" because they may have only learned to respond to directions that are preceded by their own name.
- Use a cue card or consistent nonverbal cue for *wait* (e.g., a pictographic symbol for *wait*).
- Use the same verbal or nonverbal routine to end a group activity (e.g., a closing song).

The next vignette describes how routines can enhance a child's ability to participate in group activities:

Michael had a tutor to help him in his first-grade classroom. Although he was doing well academically in this inclusive setting, Michael always seemed to need verbal

prompting from his tutor to follow group directions. The teacher would give a direction to the group. Then Michael's tutor would repeat the direction, starting it with Michael's name. Michael had always been in an inclusive setting with a tutor, and he always complied with his tutor's directions. It seems that Michael never learned, however, that he was required to follow group directions. Through a simple Simon Says game with a small group one day, Michael's teacher taught him to respond to directions beginning with "everybody." This standard group direction was then used in all classroom activities. After one day of silent prompting from his tutor, Michael consistently followed group directions prefaced by "everybody."

Community Routines

As discussed previously, children with autism struggle with the low degree of social predictability inherent in community situations. Although the community events and the social behaviors of others may remain chaotic from the perspective of a child with autism, child-centered routines can be embedded within community situations. Activity routines, like physical organizers, clarify where to go, what to do, with whom, for how long, how to stay calm and focused, and the activity's completion.

Activity routines allow a child to use concrete information to understand his role and expectations in the community. Routines provide structure and meaning in otherwise chaotic and confusing situations. Some examples of such routines include

- Clarify where to go by associating objects or pictures with the community activity (e.g., a special shopping bag to hold while going to the grocery store, a photo of the school bus to hold while waiting for the school bus).
- Clarify what to do by having the child carry a backpack of special toys that are only used in the community as needed (e.g., a tape player and headphones, a special book, toys that are appropriate to "fiddle").
- Clarify what to do by having the child follow a sequence of events presented in picture or written form.
- Clarify what to do by having the child first practice elements of the community routine at home or school.
- Clarify what to do by having the child view a videotape of the community activity prior to participating in it.
- Organize the community activity so that the child always has one person to stay with, watch, or find.
- Clarify the length of the community activity through the use of time organizers (see previous discussion on organizing community activities).
- Help the child remain calm by identifying calming toys or objects that the child can hold during the community event (e.g., a security blanket).

The following examples provide some insight into planning child-centered community routines, including the point that routines sometimes require later adjustments:

Paul, age 8, did not like going to the barber. His behavior was so upsetting to his parents that they had resorted to cutting his hair while he slept. His teacher and parents designed a routine around haircuts that included the following steps: 1) a homemade storybook was created about going to the barber; 2) a photo of the barber shop was included on Paul's Saturday schedule so that he and his father could visit the barber to say hello each Saturday; 3) a commercial video about going to the barber was shown to Paul frequently; 4) Paul did many art activities that included cutting; and 5) Paul's visits to the barber gradually included sitting in the chair, listening to his favorite music, and using a chart that indicated how long he needed to sit. With all of these mini-routines put into place, one by one, Paul now tolerates haircuts.

Annette is 6 years old and nonverbal. She comes from a large family and lives in a neighborhood full of children. Annette's family wants her to participate in Halloween activities, but this has been a terrible experience for both Annette and her family in the past. Annette's teacher designed a trick-or-treat routine in school for Annette. Each day, Annette and some of her peers would dress in their costumes, review a picture activity schedule of the trick-or-treat steps, and practice the routine in school by going door to door. Annette mastered all of the "what to do" steps in school. The big test came on Halloween night when Annette went trick-or-treating with her family, picture schedule in hand. Annette's parents later reported that she participated with her siblings and did "almost perfectly" until no one answered the door at one house. That social glitch was omitted from the activity routine and created confusion for Annette. Because Annette has very limited language comprehension, her Halloween schedule needs to be adjusted next year to account for this situation.

Organize Instruction

Once the physical environment is organized and routine activities are selected as opportunities for social and communication experiences, the third strategy to support social and communication success in children with autism is to apply basic behavioral sequences during instruction and interactions. The precise use of cues, prompts, and consequences is necessary for effective learning. The application of basic behavioral sequences to all social activities and social interactions is an essential part of the intervention plan.

There is a wealth of useful resources that discuss behaviorally based instructional methods in detail (the reader is encouraged to review references provided in the Resources section). This section summarizes three basic behavioral strategies: cues, prompts, and consequences. These strategies are based upon principles of applied behavior analysis that have been well documented with regard to their utility in teaching children with autism. At the same time, it is essential to remember that these instructional principles can be applied across all settings in a multitude of ways. These principles can be applied in natural interactions, in incidental teaching, or during activity-based instruction—they can be applied anywhere!

Cues

A *cue* is anything that triggers a response. Cues can be environmental or social, and they can be natural or contrived.

A *natural environmental cue* is anything in the physical environment that triggers a response. These cues are visual, auditory, tactile, or other sensory events that signal a reaction. For example, a curb at the end of a street triggers a response to stop before crossing. In order to respond to natural cues, it is necessary to scan the environment, notice what is relevant, and understand the meaning of the natural cues. Attending to relevant natural cues and understanding their meanings are problematic for many children with autism. To extend the previous example, a child who does not stop before crossing a street may not notice the curb, may not understand the purpose of the curb, or may not understand what to do at the curb.

A *contrived environmental cue* is anything that is added to the physical environment to assist a child in attending to relevant information and in understanding the meaning of the physical setting. The strategies for organizing the physical environment presented previously in this chapter are examples of contrived environmental cues. For children with autism, the physical environment is made more salient through the use of contrived cues.

A *natural social cue* is anything that a person says or does that triggers a response. The words, gestures, touches, and facial expressions that occur during natural interactions trigger responses. In order to respond to natural cues, it is necessary to attend to others, notice what is relevant, and understand the meaning of the natural social cues presented. Children with autism struggle with attending to relevant social cues and understanding

their meanings. Again, the inability to attend to multiple social cues and to understand the intent and meaning of others' behaviors lies at the heart of autism.

A *contrived social cue* is any adaptation that a person makes (in words or in actions) to increase a child's social attention and comprehension of social meaning. The concept of establishing social modifications is the focus of this chapter's next major section, entitled "Social Supports."

When using cues during instruction and interaction, it is important to make environmental and social information as clear as necessary. The child's ability or inability to focus attention on relevant natural cues at any moment determines whether more salient environmental and social cues need to be provided. It is essential to remember that children with autism often have difficulty attending to relevant cues, focus their attention on the wrong cue, and/or have difficulty attending to multiple cues simultaneously. These characteristics are exemplified by the next vignettes.

Seven-year-old Noah was walking down the hallway at school to deliver a message to the office when a group of older students started heading toward him. Noah walked right through the crowd, bumping the students with a complete disregard for their presence. The relevant social cues of the situation eluded him.

Six-year-old Donna likes watching cartoons on television. In one cartoon episode, there was a fire, and the television character said, "This is serious." Now, whenever Donna sees steam (e.g., from food cooking on the stove) or smoke in any context, that environmental cue triggers her to say, "This is serious." She attended to the wrong cues to determine the meaning of the phrase "This is serious."

Will is 4 years old and easily distracted, even in the most structured social contexts. Even when the physical setting and activity routines were organized for solitary play, Will continued to lose attention. He also lost attention when reinforcement was used. It became obvious that Will is unable to attend to multiple cues simultaneously. Only when verbal cues are eliminated from the social context and he is allowed to focus his attention on only one relevant cue (i.e., the toy) can Will maintain purposeful attention to the play activity.

Prompts

Anything that is added after the cue to help the child understand the meaning of the social context and to make the correct response is defined as a *prompt*. Like cues, prompts can be social or environmental. There are four general types of social prompts and one general environmental prompt. The five general types of prompts, starting with the one that provides the child with the most assistance, include

- *Physical prompts*: manually guiding the child to make the correct response
- *Gestural prompts*: gesturing (e.g., pointing, touching) to indicate the correct response
- *Verbal prompts*: verbally directing the child to the correct response
- *Modeling*: demonstrating the correct response
- *Environmental prompts*: visual or auditory cues in the physical environment that direct the child to the correct response

The selection of prompts depends on the child's core abilities, the child's degree of rigidity or flexibility, and the target social or communication skill. First, the selection of prompts to be used for a child depends on the presence or absence of two core skills, the ability to share attention and the ability to imitate.

- If the child demonstrates shared attention and imitation, maximize the use of modeling paired with environmental cues.
- If the child does not demonstrate shared attention and imitation, maximize the use of physical, gestural, and verbal cues paired with environmental cues.

Second, the selection of prompts must take into account the particular learning patterns of most children with autism. This learning style lends itself to acquiring skills in a manner that is identical to the way the information is presented. Nevertheless, children with autism vary in the degree to which they make rigid associations among cues, prompts, and responses. As a result,

- Do not prompt in the exact same way every time.
- To ensure success and to eliminate a pattern of routine errors, offer the child optimum support by fading prompts from the most assistive to the least assistive.
- Maximize the use of environmental prompts to fade the child's reliance on social prompts.

Third, the selection of prompts depends on the desired response. The desired response is either an action or a communication; that is, something that the child will do or say. It is far easier to prompt nonverbal responses (i.e., what to do) in social situations than to prompt spoken verbal responses (i.e., what to say). The ensuing lists provide recommendations for prompting nonverbal social skills, communication through speech, and communication through an AAC system.

When prompting a nonverbal social skill,

- Use the child's visual attention to determine when to prompt (e.g., if physically assisting a child to play who stops looking at the toys, continue holding his hand, stop the activity, say nothing, and wait for the child to focus again before continuing to prompt).
- Limit the use of verbal prompting because many children with autism develop the routinized behavior of waiting for the verbal prompt before acting.
- Provide enough prompts to ensure the child does not make a mistake (e.g., if the child is playing with playdough and begins to put it in his mouth, say nothing and prompt the child to the correct use of the material).
- Be aware of the effect that physical prompting may have on children with tactile sensitivities.
- Give the child time to process and respond to the cue.
- Replace social prompts with environmental prompts to decrease the child's reliance on others.

When prompting communication using speech,

- Maximize the use of verbal modeling.
- Limit the use of verbal prompts in the form of a question.
- Pair verbal prompts with a social prompt or an environmental prompt so that the verbal prompts can be faded.
- See the section titled "Social Supports" for greater detail.

When prompting communication using an AAC system

- Model how to use the child's system.
- Limit verbal prompts phrased as questions.
- Use physical, gestural, and/or verbal means to prompt the child's use of the AAC system.
- Pair verbal prompts with nonverbal prompts so that the verbal prompting can be faded.

Social prompts should be faded systematically to decrease the child's reliance on others and, thus, to foster independence. Prompt fading is most effective when the child is

initially given the maximum support to ensure success and then prompts are faded to those offering the least amount of assistance. Given that the ultimate goal is the child's use of spontaneous social acts and spontaneous communication, it is important to fade the use of social prompts and to maximize the use of environmental prompts.

Five-year-old Alex has been learning to play with closed-ended manipulative toys. He is able to play with the toys in a purposeful manner only when an adult is present to intermittently give verbal prompts to continue. In the absence of verbal prompts, Alex begins throwing the toys. In order to fade the adult from the situation, an audiotape was made of Alex's mother giving him verbal reminders while he played. This 15-minute audiotape, which randomly presents messages such as "You're playing nice" and "Get another one," was enough to please Alex and allow him to gradually learn to play independently without throwing toys for 15 minutes.

Nathan was taught at 7 years old to play a board game with a friend. He learned the game but still needs verbal prompts for each step of the game. If an adult does not give him a verbal prompt, he will say the prompt to her (e.g., "Nathan, spin it"). For Nathan, the prompt is part of the sequence of events that occur during the game, and he is unable to continue until the verbal prompt is given. To resolve this prompt dependency, the present adult pairs the verbal prompt with a hand-over-hand point to a color-coded list of game rules. The adult quickly fades the verbal prompt and gradually fades pointing to the list. This fade results in Nathan's using the list of game rules as a reminder and allows for independence when playing board games with his friend.

Karen, age 6, has been taught to initiate play with a peer through a sequence of verbal directions and prompts. Her teacher gives the verbal direction, "Go ask (peer's name) to play." Then she uses the verbal prompt, "Say, '(peer's name), do you want to play?'" Karen imitates the sentence while standing next to her teacher and the peer. Next, she is verbally reinforced by her teacher's saying the phrase "Nice talking." Karen only asks a peer to play under these prompted conditions, however; when she is not verbally prompted, Karen looks at her teacher and states, "Say, do you want to play, nice talking." Thus, Karen has learned the sequence of instructions and prompts without understanding the meaning of her response or seeing a clear link between her message and the outcome. The instruction has therefore been changed to a nonverbal tap to get the peer's attention during specific play situations. At the same time, Karen's teacher stands behind Karen while verbally modeling and pointing to a written cue card prompt that says, "Wanna play?" Karen then directs the message to her peer and is reinforced by the peer, who says, "Yeah" and takes Karen's hand to go play. First, the verbal model is faded, then the visual cue card is quickly faded, and gradually the adult's touch is faded until a peer in special contexts becomes the natural cue for Karen to say, "Wanna play?"

Consequences

Events, both environmental and social, that occur in direct response to a child's behavior are *consequences*. In traditional behaviorism, there is a strong reliance on using artificial consequences (in the form of verbal or tangible reinforcers) that are not linked to the meaning of a child's behavior. Examples include rewarding a child's correct actions by commenting, "Good building," or by presenting tangible rewards (e.g., food, tokens) that are not related to the child's activity. Similarly, children's communication efforts are typically rewarded by phrases such as "good talking" or "good boy (or girl)" and are not linked to the meaning of the child's communication efforts.

When using consequences to support social skills and communication skills, utilizing natural consequences as much as possible is key. Given that social and communication

behaviors are intimately linked to social motivation and interest, it is essential that motivation and meaning drive social behaviors, not artificial responses. To do this,

- Embed motivators into new social experiences rather than using them as reinforcers.
- Make social experiences fun.
- Use social experiences that are meaningful, thereby making the activity a natural reinforcer.
- Continue a fun social activity so that it becomes a natural reinforcer.
- Remember that the child's mastery of the social activity becomes a natural reinforcer.
- Acknowledge the child's communicative efforts as a natural reinforcer.
- Communicate in a way that is meaningful for the child for natural reinforcement.

When using social reinforcers, keep in mind that

- Verbal reinforcement should be naturally linked to what the child is doing.
- Nonverbal reinforcement should mirror the child's emotional state.
- Verbal responses to the child's communication should acknowledge him by repeating the message or adding new and relevant information to the child's message.
- Nonverbal responses to the child's communication should be linked to the communicative intent of the child's message.

In addition to the strategies outlined here, many other excellent resources describe organizational supports. See Dalrymple (1995); Hodgdon (1995); Janzen (1996); McClannahan and Krantz (1999); and Schopler, Mesibov, and Hearshey (1995) for more information.

SOCIAL SUPPORTS

A major challenge for children with autism is to extract meaning from what others are saying, doing, and feeling (Shah & Wing, 1986). There is an obvious lack of congruence between their abilities and the demands of naturally occurring interactions. Children with autism experience confusion with the dynamic and unpredictable quality of typical social interaction. The outcome is a fragmented understanding of social-communicative experiences and the use of ritualistic or context-specific social-communicative skills. Understanding, respect, and empathy for their struggles form the rationale for the second set of intervention strategies, social supports.

Social supports are defined as any modifications made by others to maintain meaningful and mutually beneficial reciprocal interactions with a child. Social supports serve as a means to structure and enhance understanding, engagement, and participation in social-communicative interactions. Social supports are a natural means to compensate for the social and communication impairments of children with autism. This section includes five ways to provide social supports:

- Understand the child's communicative intent.
- Establish reciprocal interaction routines.
- Balance directive and facilitative interaction styles.
- Modify interaction patterns.
- Act as an interpreter to facilitate peer interactions.

These forms of social supports, summarized in Table 5.6, are explored in detail next.

Table 5.6. Social supports

Understand the child's communicative intent.

Establish reciprocal interaction routines.

Focus on contexts that require joint focus and turn-taking.

Establish a predictable pattern of messages.

Organize messages so the child can anticipate what to say or do.

Repeat the same message at predictable times.

Limit the number and variety of interactive turns.

Scaffold:

Systematically add a new message to the routine.

Systematically add a new message when the child initiates any purposeful nonverbal or verbal behavior during the interaction.

Systematically modify familiar messages in the routine once the child understands and uses the originally established interaction.

Balance directive and facilitative interaction styles.

Balance adult-directed and child-directed interactions.

Respond to the child's level of focused, purposeful behavior at the moment.

Modify the child's partially successful initiations.

Shape the child's partially successful initiations.

Imitate and expand on the child's successful initiations.

Modify interaction patterns.

Maintain close proximity to the child.

Establish joint attention.

Simplify language complexity.

Use augmentative and alternative communication supports as needed.

Make nonverbal cues more explicit.

Give the child time to respond.

Use rhythmic language when appropriate.

Act as an interpreter to facilitate peer interactions.

Coach peers.

Shadow and prompt the child.

Understand Communicative Intent

Communicative intent is the purpose of a child's social-communicative behavior. Nonverbal behaviors (e.g., eye gaze, facial expression, gestures) as well as verbal behaviors (e.g., speech, signing) can be used to communicate intent. *Communicative function* is the actual effect that a child's verbal and nonverbal behaviors have on others and is based on an interpretation of the child's intent and meaning. There is usually a clear relationship between the communicative intent of a typically developing child and how his message is interpreted by others. For instance, based on context and the nonverbal behaviors (e.g., pointing to the door) of a typically developing child, an adult correctly interprets the child's message "Go bye-bye?" as a request to go home. Nonverbal and verbal behaviors can generally be inferred as serving a social-communicative function when messages are directed to a person or object, the message is relevant to the ongoing activity or social context, the child waits for a response, and the child reacts to the person's response.

Interpreting the intent and function of nonverbal and verbal behaviors of children with autism poses a unique challenge. Sometimes their nonverbal and verbal behaviors serve a social-communicative function; sometimes they are not interactive. Nonverbal behaviors and verbal messages often function as noninteractive, self-stimulatory rituals or a means to regulate oneself. Even when a child's behaviors are intended to be communicative, there can be a discrepancy between what the child says and what the child means.

The nonverbal and verbal behaviors of children with autism are often misinterpreted by others due to

- Differences in their use of nonverbal skills, specifically difficulty with eye gaze, joint attention, and combining multiple nonverbal and verbal behaviors in a single message
- Differences in their use of verbal skills, specifically immediate and delayed patterns of echolalia
- Differences in their social perceptions, specifically, misinterpretations of language and social meaning
- Ritualistic patterns of behavior
- Challenging behaviors that serve communicative functions

These situations are further illustrated by the following vignettes:

Three-year-old Andy's nonverbal behaviors are often misinterpreted. For instance, he indicates his desire for food or toys by looking at the item intently. When this staring is not interpreted by others as a request for the item, he begins to cry. Andy lacks the ability to use attention-getting gestures or to shift eye gaze from the object to the adult to make his request.

Eight-year-old Laura uses delayed echolalia for a variety of communicative functions, although her intent is easily misinterpreted. Until her education team learned the intended meaning of her echolalic messages, Laura was often frustrated by her inability to be understood by others. For example, Laura would say "Chocolate milk today" to ask if she could get milk at lunchtime, but her message was misinterpreted as a comment. If she did not get the desired response from adults, she persisted with her question and her frustration escalated into a tantrum. Laura would also say "You're okay" in an upset voice to ask peers to go away. When her message was misinterpreted by her peers and they did not leave, she would persist with the same message and ultimately hit them.

Robin, 7 years old, often makes interesting statements that are the result of associations she has formed between events seen on video and her own social experiences. For example, Robin says "It's beautiful" to ask for a hair ribbon or "This is a problem" to indicate when she feels sick. Without adults and peers who understand the intent of Robin's messages, her language is easily misinterpreted.

Nine-year-old Eugene talks incessantly. He repeats segments from television commercials, books, and videos that are not linked to the social situation, or he talks himself through his activities. Other times, his language is used for interaction with others: He makes requests, shares interests, and expresses feelings. Often, Eugene uses the same phrase to regulate himself and to interact with another person. For example, he might say "Time to go home" (to himself) while organizing his backpack to go home and later say "Time to go home" to an adult to indicate he is ready to leave school.

Caitlyn, 6 years old, has two challenging behaviors that others misinterpret. She has developed a ritual of making faces in the mirror that escalates into self-injurious behavior. She also stares at adults and makes faces, but whenever her behavior is misinterpreted as social—and, thus, an adult imitates her—Caitlyn begins her self-injurious behavior. Similarly, she has a ritual of reciting a section from her favorite book. Whenever an adult attempts to join Caitlyn in her recitation, she begins to scream. In both of these situations, her intent is noninteractive, so social responses create problems.

To support a child's social success, it is important to determine the communicative intent and function of his verbal and nonverbal behaviors. Judge intention and whether the child's behaviors are interactive or noninteractive by focusing on the social context and the child's nonverbal behaviors before, during, and after the communicative message. A child's verbal and nonverbal behaviors can generally be inferred as serving a social-communicative function when two or more of the following qualities are present:

- Eye gaze, body orientation, or gesture is directed to a person or object.
- Behaviors/messages are relevant to the ongoing activity.
- Behaviors/messages are relevant to the ongoing conversation.
- The child waits for a response.
- The child reacts to others' responses to his message (e.g., persisting when the message is misunderstood).

The ability of others to determine the communicative intent and function of the child's messages is largely dependent upon the child's nonverbal social-communicative skills. The presence or absence of these core nonverbal skills determines the ease with which communicative intent and function can be inferred by others. Thus, these nonverbal interaction skills are central to conveying one's intent accurately to others.

Establish Reciprocal Social Routines

Child language acquisition studies have demonstrated the importance of interactive routines between adults and children as the framework within which language and communication are acquired (Bruner, 1975; Ratner & Bruner, 1978). A *reciprocal social routine* is an interaction pattern that follows a logical sequence and has a predictable set of communicative exchanges between an adult and a child (Snyder-McLean, Solomonson, McLean, & Sack, 1984). Social routines include a predictable set of contextually meaningful messages that are shared between adult and child. The communication messages can be verbal or nonverbal. Social routines are important because they enable children to learn through adult modeling that is highly organized, predictable, and socially salient. Through consistent experiences with a social routine, a child assigns meaning to the language and communicative behaviors used within the interaction. As the child acquires an understanding of the meaning of the social routine, he can anticipate and insert one or more communicative messages. Once the child can participate in an established routine, expansion and flexibility are introduced into the social interaction. This ongoing expansion (i.e., scaffolding) systematically builds meaningful social exchanges between the adult and the child.

Basic Social Routines

There are a series of steps to be taken in the design and implementation of basic social routines for children with autism:

- Emphasize contexts that require joint focus and turn-taking.
- Emphasize contexts in which the child is motivated to communicate.
- Establish a pattern of messages (verbal or nonverbal) that predictably occur at set times during the interaction and activity.
- Organize messages so that what the adult says or does is equally appropriate for the child to say or do in the same situation.
- Organize messages so that the child can link a message with a tangible nonverbal or contextual event in order to anticipate what to say or do in that specific situation.
- Repeat the same message at predictable times.
- Limit the number and variety of interactive turns.

Scaffolding

Social routines are valuable because they provide a framework for systematically introducing new elements to the context. The most critical element in social routines is the ongoing process of expansion. The child's level of engagement is the primary criterion for determining when to expand the social routine. Children are typically engaged when they are motivated and understand the purpose and meaning of the social interaction. When a child does not understand the meaning behind the messages and events in the situation, the routine needs to be clarified and/or simplified.

Once a child masters the basic routine—as reflected by increased participation and spontaneity—familiar messages are modified and new messages are introduced. This process of *scaffolding*, which links new information to familiar information and builds on existing successes in a meaningful way, is central to supporting a child's communication development. Methods of scaffolding include

- Adding a new message to the routine once the child understands and uses the originally established interaction
- Adding a new message when the child initiates any purposeful nonverbal or verbal behavior during the interaction
- Modifying familiar messages in the routine once the child understands and uses the originally established interaction

The following profiles present various scaffolding approaches. The first, involving Eddie, demonstrates a nonverbal interactive routine. The vignette about Betsy exemplifies scaffolding a play behavior. Larry's vignette illustrates a sample verbal interactive routine. The final vignette shows how conversation was scaffolded to assist in Garret's communication development.

Eddie is 3 years old and enjoys hiding under blankets. Eddie's mother played a four-step Peekaboo game with him that involved 1) covering his head, 2) counting to five, 3) taking off the blanket, and 4) giving him a kiss. This pattern was established until Eddie initiated putting the blanket on and off on cue and shared kisses. Then his mother put the blanket on her head, counted to five, and prompted Eddie to take it off; when he did so, they kissed. Soon the game alternated back and forth from Eddie's mother putting the blanket on Eddie to him putting the blanket on her. Eddie maintained the routine with his mother. Once this social routine was established, Eddie's mother added another element to the game: kissing different facial features. They shared this exchange, with Eddie gradually giving his mother kisses on the nose, head, ear, and lips.

Five-year-old Betsy is learning to imitate play actions. She is learning to imitate a sequence of related actions, one at a time, using playdough: First, press the playdough, then use cookie cutters, then roll, and so forth. When Betsy masters one step, her teacher adds a second, and then a third. All of the actions that Betsy imitates are related in a meaningful way. Play has become a logical sequence of imitated actions that carry meaning. This process contrasts sharply with teaching children to imitate a sequence of unrelated single actions with toys out of context.

Four-year-old Larry and his mother were singing a song with puppets. When the song was finished, Larry and his mother took turns putting the puppets in the box using set phrases. His mother said, "In goes the puppet" as she put one puppet in the box, waved good-bye, and said, "Bye-bye." Next, it was Larry's turn. His mother prompted Larry through gestures to put the other puppet in the box, to say, "In goes the puppet," to wave, and to say, "Bye-bye." Larry's mother then took another turn. Next, she prompted Larry to put the puppet in the box and said, "In goes the. . . ." Larry looked at her and said, "Puppet," then imitated his mother

waving and said, "Bye-bye." After his mother took another turn, Larry spontaneously tried to put the puppet in the box; his mother waited before waving, and Larry spontaneously smiled at his mother and said, "In goes the puppet; bye-bye." Once this basic social routine was established, Larry's mother continued to add one new phrase at a time to the ever-expanding puppet game. The phrases were both linked to their actions and arranged for systematic turn-taking.

For 6-year-old Garret, shared reading time is an opportunity to engage in a conversation, composed of predictable turns, with his teacher. They each take turns describing a page of a book. Garret's teacher describes the first page, Garret describes the next page, and so forth. The complexity and variety of comments are linked to Garret's current language repertoire, and attempts are made to build new commenting functions into his repertoire. This process contrasts with teaching a child to answer a series of questions about a storybook by expecting him to give specific answers to questions asked about each page. That technique encourages passivity and cue dependency, but Garret is learning to be spontaneous and flexible through an interactive routine.

Balance Directive and Facilitative Interaction Styles

The level of social and communicative behaviors in children with autism varies significantly in response to different styles of interaction. Two primary types of adult interaction styles have been studied: directive and facilitative. The *directive style* is associated with a behavioral approach to adult-child interaction, whereas the *facilitative style* is associated with a developmental approach to adult-child interaction. The characteristics and benefits of each style are listed in Table 5.7. When using either a directive or facilitative style, keep in mind whether the target objective is to elicit a specific response from the child or to promote spontaneous social behaviors and communication.

When using a directive style, the adult controls the focus and direction of the interaction and structures the child's contribution to the ongoing interaction. The adult's verbal interaction style is dominated by the use of questions, directions, commands, and verbal prompts to elicit specific responses. Nonverbal gestures or physical prompts are also used to elicit a specific response. When a facilitative style is used, the child controls the focus and direction of the interaction and is encouraged to contribute to the interaction

Table 5.7. Comparison of directive and facilitative interaction styles

Directive interaction	
<i>Characteristics</i>	<ul style="list-style-type: none"> The adult initiates the interaction. The adult controls the interaction. The adult structures the child's response. The adult uses questions, directions, and commands. The adult prompts the target response.
<i>Outcomes</i>	<ul style="list-style-type: none"> Increase the child's organization. Increase simple turn-taking. Increase the child's responses to adult initiations.
Facilitative interaction	
<i>Characteristics</i>	<ul style="list-style-type: none"> The child initiates the interaction. The child leads the direction of the interaction. The adult uses imitation, elaborations, and expansions. The adult uses pause times and conversational lags.
<i>Outcomes</i>	<ul style="list-style-type: none"> Increase reciprocal interaction. Increase spontaneous communication. Increase ability to maintain a conversation.

in a variety of ways. The adult's interaction style is dominated by conversation related to topics introduced by the child; comments that acknowledge or elaborate upon the child's nonverbal and verbal behaviors; and long, silent pause times.

Both directive and facilitative styles have a noticeable effect on the social engagement of children with autism. Directive styles increase a child's ability to be focused and organized; they also increase the social responsiveness of a child who lacks imitation skills. Facilitative styles rely heavily on the child's ability to engage in purposeful activity; therefore, they increase social behaviors in children who have shared attention and imitation skills.

Directive and facilitative styles also influence the communication patterns of children with autism who possess verbal abilities. Directive styles enhance a child's ability to engage in simple turn-taking involving questions and answers, and they increase responses to adult initiatives. Facilitative styles foster a child's spontaneous communication and his ability to maintain more elaborate conversation exchanges. Adults support the conversation with comments and elaborations. These qualities encourage more child initiations than when adults direct the conversation through questions (i.e., use a directive style). In fact, a directive style that obliges the child to respond in a specific manner has been shown to increase echolalic responses (Curcio & Paccia, 1987; Rydell & Mirenda, 1991, 1994).

Samples of both styles are provided next. This first conversation between an adult and a child who are looking at a book of children playing exemplifies the directive style:

- Adult: Who is it? (points)
 Child: A boy.
 Adult: Look—what is he doing?
 Child: Blocks.
 Adult: Say, "He's building blocks."
 Child: He's building blocks.
 Adult: What color? (points)
 Child: Red.
 Adult: Say, "Red blocks."
 Child: Red blocks.

In this next case, an adult and a child are engaged in the same activity, but the conversation occurs in a facilitative style:

- Adult: This is a boy, and . . . (points)
 Child: This is a girl.
 Adult: He's building, and . . . (points)
 Child: A doll.
 Adult: Playing with the doll.
 Child: A bottle.
 Adult: Yes, eating; yum.
 Child: Yum-yum.
 Adult: (points)
 Child: Blocks, 1-2-3-4-5.
 Adult: Five blocks; he's building.
 Child: Building blocks, 1-2-3-4-5.

Combining the Directive and Facilitative Styles

Directive and facilitative interaction styles represent the polarity of interaction possibilities, and the most reasonable approach is a combination of both. The combined approach, called *the dance of interaction* (Quill, 1995a), entails choosing when to be directive and when to be facilitative based on the child's nonverbal and verbal behaviors. There are two factors that

help determine how to balance the use of both directive and facilitative styles with a child: 1) the child's core social-communicative abilities at the moment and 2) whether the target objective is to elicit a specific response or facilitate spontaneous communication.

Most children with autism vary in the degree to which they are able to demonstrate social observation skills and imitation skills. They vary, moment to moment, in their ability to focus attention, observe, imitate, and/or remain organized during a social interaction. Abilities at the moment are also influenced by how easily the child becomes frustrated in loosely structured activities, is confused by unanticipated social-communicative messages, and becomes uncomfortable in particular settings. Other contextual factors that influence their ability to remain focused and organized include unpredictable social contexts, confusing transitions, difficult tasks, uncomfortable sensory stimuli, and situations that cause fear or anxiety.

The presence or absence of core nonverbal social interaction skills is central to determining when an adult should be directive versus facilitative. One must determine a particular child's

- Social observation skills at the moment
- Level of joint attention at the moment
- Ability to imitate (acts or words) at the moment
- Level of organization (i.e., if he is calm)

Verbal directive approaches, particularly questions, should be used infrequently as a means to foster reciprocal social interaction. Questions close or end an interaction and place the child in the role of a passive responder. Nonverbal directive approaches, however, are useful when a child is disorganized, lacking shared attention and/or motor or verbal imitation skills at the moment. All other contexts are opportunities for using a facilitative approach during interaction. Facilitative approaches are useful when a child is focused, sharing attention and/or displaying motor or verbal imitation skills at the moment. Second, determine whether the objective of the interaction is to elicit a specific response or to facilitate spontaneous communication. The goal in many social situations is for the child to demonstrate a specific social behavior, such as playing with a toy in a particular functional way or playing a game with rules. Sometimes the goal of instructional settings is for the child to answer a specific question. When the target goal is a specific response, more directive approaches can be used. The objective for many social situations, however, is for the child to demonstrate spontaneity and creativity within a social context, and the primary goal of communication enhancement is to foster spontaneous communication. Spontaneity, which is essential to socioemotional regulation and communicative competence, is more likely to occur through the use of facilitative techniques. Nonverbal and verbal communication is considered to be *spontaneous* when

- Messages occur without any obvious contextual or social cues (e.g., discussing a future event with no cues or prompts)
- Messages occur without any specific contextual or social cues (e.g., naming an object or event without explicit cues)
- Messages occur in response to specific contextual cues (e.g., labeling a picture in a book during shared reading)
- Messages occur in the presence of a delay in conversation (e.g., changing the topic)
- Messages occur in the absence of specific instructional prompts (Koegel & Koegel, 1995a)

The Dance of Interaction

The dance of interaction requires an understanding of each child's idiosyncratic interaction style as well as a willingness to be flexible. In particular, it also necessitates that adults

- Balance adult-directed and child-directed interactions
- Respond to the child's level of focused, purposeful behavior at the moment
- Modify the child's unsuccessful initiations
- Shape the child's partially successful initiations
- Imitate and expand on the child's successful initiations

Although this style of interaction is complex and dynamic, the adult can generally make one of three choices:

- Direct the interaction of the moment.
- Follow the child's unsuccessful attempts by redirecting the interaction of the moment.
- Follow the child's successes of the moment through imitation and scaffolding.

(It is important to remember *not* to follow the child's lead when he is engaged in inappropriate behaviors, nonverbal or verbal. Always teach meaningful social and communication replacement behaviors.)

These guidelines are illustrated through profiles involving both nonverbal and verbal interactions. In this first sample interaction, a child and his preschool teacher are playing next to each other at the sandbox. The child is nonverbal, so the interaction described is completely nonverbal:

- Child: Sifts sand through his fingers.
 Adult: Physically prompts scooping.
 Child: Scoops sand into bucket.
 Adult: Fades prompt, mirrors the child's action using another shovel.
 Child: Scoops sand.
 Adult: Scoops sand and says, "In the bucket."
 This is repeated multiple times.
 Child: Drops the shovel and pats the sand.
 Adult: Pats the sand and says, "Pat, pat, pat."
 Child: Sifts sand through his fingers.
 Adult: Prompts scooping again.

This next example demonstrates the dance of interaction during conversation. A 6-year-old child and her teacher are looking at a picture book of children playing. The teacher balances direct questions with facilitative comments and silently points at items in the book to cue the child to share additional information. This child is verbal, so a conversation ensues:

- Adult: What are the children doing?
 Child: Playing.
 Adult: Playing with trains. (points)
 Child: Playing with dolls.
 Adult: Playing with puzzles. (points)
 Child: Playing with blocks.
 Adult: Building with blocks.
 Child: (loses focus)

Adult: Look.
 Child: (looks at picture)
 Adult: What color is this?
 Child: Blue.
 Adult: This is a blue block. (points)
 Child: A green block.
 Adult: This block is red. (points)
 Child: Red.

Modify Interaction Patterns

Successful interactions require ongoing, moment-to-moment adjustments. Adults continuously fine-tune their interaction patterns in order to be understood and to elicit information from children. For children with autism, it is largely the responsibility of adults (and peers given adult guidance) to adapt their styles of interaction to improve and maintain social-communicative exchanges. Bernard-Opitz (1982) found that parents and educators familiar with a child with autism were significantly more successful at maintaining interactions with the child during play than other professionals who were unfamiliar with the child. An analysis of the factors that influenced positive social-communicative interactions revealed that familiar adults continually modified their interaction patterns in response to the child's behaviors and response patterns. This modified input included syntactic simplicity, redundancy, and exaggerated nonverbal cues, as well as references to objects, activities, and events in the child's immediate environment. By modifying interaction patterns in such a way, others can increase the child's understanding and use of language and enhance participation in the social dynamic. Table 5.8 summarizes steps for modifying reciprocal interactions. These steps are more fully explored in the following section.

Maintain Close Proximity to the Child

The most effective interactions occur when one is near a child with autism. Squat or sit at the child's eye level. Children with autism can be easily startled, however, so it is helpful to approach them gently, observe their behavior for a moment in silence, and then convey a message.

Establish Joint Attention

It is significantly easier to share attention when a concrete referent is available. When a child is not attending, it is important to determine whether he is distracted or does not understand the events occurring at the moment. When a child does not understand the meaning behind the messages and events in the situation, information needs to be clari-

Table 5.8. Steps for modifying interaction patterns

Maintain close proximity to the child.
Establish joint attention.
Simplify language complexity.
Use AAC supports as needed.
Make nonverbal cues more explicit.
Give the child time to respond.
Use rhythmic language when appropriate.
Act as an interpreter for others.

fied and/or simplified. Assume that the child is doing the best he can at the moment, and help the child. Remember that shared attention to the person, object, or action is more important than a vacuous eye gaze. To establish joint attention,

- Silently point to a concrete referent.
- Take the child's finger and point to the referent (i.e., use physical prompting).
- Place a salient cue (e.g., a ribbon) on the finger used for pointing.
- Use a predictable phrase to gain the child's attention (e.g., "[Child's name], look here").
- Touch the child gently and wait.

Simplify Language Complexity

The complexity of adult language needs to reflect the comprehension abilities of the child. Simple, activity-related language reduces the child's processing load and aids comprehension. In addition, language should be paired with concrete referents to enhance comprehension. Objects, photos, pictures, or written information may assist the child in understanding information regarding past and future events. Furthermore, using familiar messages in familiar activities increases appropriate interactions.

The complexity of adults' language has been shown to affect the language and communication performance of children with autism (Charlop, 1986; Paccia & Curcio, 1982; Quill, 1995a; Rydell & Prizant, 1995). Complex language can cause patterns of echolalia and difficulties responding. Thus, information presented in grammatically simple sentences elicits better responses than complex sentence forms. In addition, questions posed in sentence-completion form draw out better responses than "wh-" and yes/no questions. For example, the fill-in-the-blank question "The cat is where?" is more likely to produce a correct response than the standard form, "Where is the cat?" Simplified language involves:

- Simple sentences rather than complex grammatical forms
- Grammatically correct phrases or sentences
- Concrete language information
- Language linked to ongoing activity
- Familiar phrases used in similar situations
- Information paired with concrete referents

Use Augmentative and Alternative Communication Supports as Needed

One's language system must mirror the language system used by a child with autism. If the child uses gestural communication, others need to make their nonverbal gestural cues the most salient aspect of the interaction. If the child uses speech, adults must pair spoken language with multiple nonverbal cues to enhance understanding and use. If the child uses sign language, others need to use total communication (i.e., signing plus speech). If the child uses a communication board or other aided communication device, one must model use of the communication system all of the time.

Make Nonverbal Cues More Explicit

The adult's role is to make all of the subtle elements of conversation more explicit. Nonverbal elements of conversation include tone of voice, facial expression, gesture, affect, and pace. Making the nonverbal components of conversation salient clarifies the verbal message and increases the likelihood that a child with autism will extract meaning. The quality of interactions can be characterized as "a slow-motion video." Some children with autism respond to dramatic personalities, appearing to understand the social dynamic best when exaggerated. Others appear to respond best to individuals who speak slowly, calmly, and in a highly predictable manner. In either case, the clarity and pace with which infor-

mation is presented are key elements for aiding comprehension. Overall, cues provided in a slow-motion video may include

- A slow pace
- A melodic tone of voice
- Dramatic facial expressions
- Exaggerated gestures
- Animation
- Sound effects
- Nonverbal cues fixed in space and time
- The use of pauses

Give the Child Time to Respond

A child with autism often struggles to integrate the context, social cues, and meaning behind verbal and nonverbal messages. Communication partners can help children make sense of the material presented by pausing after delivering a message. Pausing gives the child time to organize the information. Silent pauses within a conversation are also opportunities for the child to initiate an exchange. Furthermore, multiple repetitions of a message, especially when paraphrased, can be overwhelming and confusing for a child with autism.

Use Rhythmic Language

Interactions that involve rhythmic language and repetition help many children with autism participate in social interaction. Rhythmic language includes counting, reciting, and music and can be utilized in the following manners:

- To calm and refocus the child (e.g., singing a familiar song or repeating a familiar message each time the child appears anxious)
- To mark the length of a “nonpreferred” activity (e.g., singing the ABC song while the child is brushing his teeth)
- To mark transition time (e.g., counting to 10 to indicate the amount of time the child has to change his clothes)
- Embedded into simple social games (e.g., tickling)
- As part of traditional social games (e.g., Ring Around the Rosie)
- To increase participation in play (e.g., singing, “This is the way we build with blocks”)
- Paired with any game involving repetition (e.g., Hide-and-Seek paired with the song “Where is _____? Where is _____? Here I am!”)

Act as an Interpreter to Facilitate Peer Interactions

Studies of peer relationships have found a significant difference in the frequency and complexity of social-communicative interactions between children with autism and their peers as compared to adults (Hauck, Fein, Waterhouse, & Feinstein, 1995; Stone & Caro-Martinez, 1990). Children with autism initiate less often, and their interactions are more routinized. Low rates of peer interaction and spontaneous communication are especially apparent in unstructured, natural contexts. These studies concluded that the predictability of an adult’s interactions allows for increased communicative effectiveness in children with autism, as compared with peers, who are less likely to adapt their communication style. Therefore, intervention to enhance the development of peer relationships includes both 1) peer-mediated procedures (i.e., coaching peers) and 2) modeling procedures (i.e., shadowing the child with autism).

Coach Peers

Peer-mediated procedures have been found to increase interactions between children with autism and their peers (Goldstein & Strain, 1988; Roeyers, 1996). Peer interactions are facilitated when peers modify their patterns of initiating, persisting, and responding to their friends with autism. Peer coaching strategies focus on the peer's understanding of the child's communicative attempts, the peer's ability to initiate and respond to the child, and the peer's ability to maintain an interaction with the child. Peers are encouraged to initiate and persist in trying to establish interactions, and they are taught how to react to possible challenging behaviors. Peer coaching can be done through role-playing sessions prior to the peer-child activities or by modeling during the peer-child activities. Through peer coaching, significant increases have been found in the responses of children with autism to peers and continuation of interactions, although not in initiations by children with autism. "The first step still has to be made by the nonhandicapped child" (Roeyers, 1996, p. 317).

Through role playing, peers are taught how to get a friend's attention and maintain an interaction. Depending on the particular needs of a child with autism, the peer practices what to do, such as stand close, point to or give/take an item, take the child's hand, tap the child's arm, or show the child an item. Teaching peers what to say focuses on talking about their own actions or the actions of their friend, repeating themselves, repeating what their friend says, and requesting clarification. Peers are shown how to persist if a friend does not respond, how to wait for a response, and how to ignore certain behaviors. The range and complexity of the instruction are contingent on the targeted social and communication goals for the child with autism.

Modeling gives explicit support to peers during their interactions with children with autism. Modeling takes the form of demonstration or verbal support. Demonstration is easiest when the adult acts as a co-participant. If a peer receives little feedback from a child with autism, an adult should provide ongoing reinforcement for the peer's efforts. Charts or cue cards can be used to preview, summarize, and review techniques with the peers. The ultimate goal is to promote social-communicative interactions that are mutually enjoyable and beneficial for all of the children.

Shadow the Child with Autism

Peer interactions can also be facilitated by modeling and prompting the child with autism. When modeling for the child, it is important to make the role of the adult explicitly clear. A clear distinction must be made between the adult interacting with the child and the adult modeling for the child. For example, if the adult is face to face with the child with autism and prompts the child to direct a message to a peer, the child with autism often will repeat the message to the adult, not to the peer. In contrast, if the adult stands behind the child with autism, uses an explicit nonverbal cue that indicates "I will help you," and verbally prompts the child to direct a message to a peer, the child with autism is more likely to understand to whom to direct the message. The following two examples clarify this important distinction, with the second one describing the more efficient means to facilitate interaction between a child with autism and one of his peers.

Five-year-old Jacob is playing with trains while his teacher sits across from him. A peer arrives at the train area to play. The peer picks up one of the trains, so Jacob yells. The teacher says, "Jacob, say, 'That's mine.'" Jacob looks at his teacher and says, "That's mine." His teacher points to the peer and says, "Jacob, look." Jacob looks at the train that his peer is holding. The teacher verbally prompts, "Say, 'That's mine.'" Jacob looks back at his teacher and says, "That's mine." This exchange does not result in the peer's giving the train back to Jacob and is not an effective means to support the peer-child interaction.

Five-year-old Jacob is again playing with trains, and his teacher is sitting across from him. He yells when one of his peers comes to the train area and picks up one of the trains. His teacher stands up and walks behind Jacob. She places her hand on his shoulder and points to the peer. Jacob looks toward his peer. Next, the teacher says, "That's mine," and physically prompts Jacob to hold out his hand. Jacob holds out his hand to the peer and says, "That's mine." The peer then gives Jacob the train. By shadowing Jacob from behind and using explicit prompts, the teacher successfully facilitates the peer-child interaction.

Children with autism who have more language skills can be assisted in understanding the social-communicative behaviors of their peers and in expanding their communicative repertoires through an adult's use of modeling along with interpreting peer behavior (Twatchman, 1995). Examples include

- Pointing out a peer's social behavior (e.g., "Mary's confused because she doesn't understand the math problem")
- Prompting how to respond to peers' behavior (e.g., "John didn't hear you; you can tell him again")
- Encouraging perspective-taking (e.g., "Joe is making a face because he doesn't like that")
- Acknowledging feelings (e.g., "You are angry because Matt took the ball; tell Matt . . .")
- Pointing out feeling in peers (e.g., "Debbie is crying because her knee hurts")
- Prompting how to respond to peers' feelings (e.g., "Mike is afraid; get the stuffed bear for him and maybe he will feel better")

These social supports serve as a means to structure and enhance understanding, engagement, and participation in social-communicative interactions. Modifications made by others are a natural means to compensate for the social and communication impairments of children with autism. Nonetheless, even when the physical environment is organized and the social environment is adapted, some children with autism require additional prompts and cues to acquire social competence. The next strategy, the use of visually cued instruction, fills this need for many children.

VISUALLY CUED INSTRUCTION

The ability of a child with autism to engage in shared attention, demonstrate imitation skills, comprehend oral language, and understand the process of social-communicative interaction varies across settings and people. Often, the use of organizational supports and social supports is not enough to build social skills. Organizational supports clarify the physical environment and social supports simplify social interaction; however, the child is still expected to identify the most salient aspects of the social setting and the most salient aspects of another person's language and nonverbal information. Given the learning style of children with autism, it is common for them to misinterpret verbal and nonverbal social information. They often attend to irrelevant or less salient aspects of the social environment or misunderstand the meaning of verbal information. It is common for them to become confused and overwhelmed in social situations. They are less able to focus or understand verbal and social information during these times. Therefore, many children need additional prompts and cues.

Visually cued instruction is the use of visual cues—objects, photographs, pictographs, written language, or video—to prepare, preview, prompt, and review social expectations (Quill, 1997). Information presented in visual form clarifies social and language information, so visually cued instruction is another means of assisting children with autism in attending, organizing, and understanding social expectations more readily. *Visual cues* are

concrete, tangible referents that can support a child's ability to extract relevant language, social, and affective information. The rationale, benefits, uses, and types of visually cued instruction are summarized in Table 5.9.

Rationale for Visually Cued Instruction

Visually cued instruction compensates for a child's difficulty integrating social and language information, and it uses the child's strengths in processing visual information. Children with autism are better able to attend to, process, and remember visuospatial material than language or social material (Minshew, Goldstein, Muenz, & Payton, 1992). Children with autism can sustain attention to graphic information in the same way as typically developing peers do (Garretson, Fein, & Waterhouse, 1990), but they are unable to quickly shift attention in order to gain meaning from transient language and social cues. Sustained attention to concrete visual cues highlights relevant social and language information and, thus, can enhance a child's attention to and understanding of social and language messages. Because visually cued instruction provides children with a concrete reminder of what to do or say, it decreases their reliance on verbal and social prompts, thereby increasing independence. Visually cued instruction also augments independence because it allows a child to gain access to cues as needed and to fade them with mastery.

An increasing number of studies are validating the use of visually cued instruction as a catalyst for building social skills and fostering independence (see Quill, 1998, for a review). Visual cues are recommended in social contexts in which verbal prompts have not been effective. Boucher and Lewis (1988) studied the effect of visual cues on skill acquisition and found that the difficulty with spoken and modeled instructions was remedied

Table 5.9. Visually cued instruction

Rationale for visually cued instruction	<ul style="list-style-type: none"> Provides tangible, concrete information Highlights relevant social information Provides a concrete reminder of what to do or say Decreases reliance on verbal/social prompts Increases independence Gives the child access to cues as needed Allows the child to fade cues with mastery
Visually cued instruction is beneficial when	<ul style="list-style-type: none"> The child is identified as a visual learner The child is disorganized The child demonstrates difficulty with verbal language The child lacks joint attention The child lacks imitation Other strategies have not been successful
Use visually cued instruction to	<ul style="list-style-type: none"> Prepare (organize expectations) Preview (teach skills prior to the social activity) Prompt (provide instructional cues during a social activity) Review (teach skills through review after the social activity)
Types of visually cued instruction include	<ul style="list-style-type: none"> Schedules Cue cards Social scripts Social stories Video modeling Sociobehavioral displays Visual imagery Relaxation cues Social encyclopedias

with written instructions. Various forms of visual cues are recommended in contexts in which a child has become dependent on adult prompts and cues. Pierce and Schreibman (1994) found that acquisition, maintenance, and generalization of independent skills increased with the use of pictographic instructions. Social stories have helped many children with language and reading competencies understand social situations (Gray, 1993, 1995; Gray & Garand, 1993). Video modeling has been used as a highly motivating way to build imitation skills and communication skills (Quill & Shea, 1999), solitary play (Schwandt, Keene, & Larsson, 1998), and social skills in the community (Whalen & Schreibman, 1998). Furthermore, using visual cues to prepare, preview, prompt, and review social expectations is an option in social contexts that create anxiety or problem behaviors in some children. In these situations, the child is less likely to respond to verbal or physical prompting. Concrete, tangible visual cues—which can be used alone or combined with other prompts—provide clarification through indirect means, as opposed to more direct adult prompts. Once a child feels independent and comfortable in a particular social situation, he naturally disregards the visual cues.

When Visually Cued Instruction Is Beneficial

Visually cued instruction should be considered whenever a child appears disorganized and is not responsive to social prompts. It is also a good strategy to consider for children who lack the core skills of joint attention and imitation and are less likely to respond to social prompts. Visually cued instruction is useful for children at most levels of cognitive development. Children at a presymbolic developmental level generally require the use of object cues. A basic level of symbolic understanding is necessary for the other visual cues. For example, a child who is interested in books or computers is more likely to learn the meaning of photo or pictographic messages than a child who does not show any interest or ability to understand information in picture form. A child who is able to match or sort photos or pictures is also more likely to benefit from picture or pictographic instruction than a child who shows no understanding of graphic information. Given these basic requirements, many of the following strategies may not be appropriate for children at a presymbolic developmental level. The use of video modeling, however, is beneficial for any child who shows an interest in videos or television (Quill & Shea, 1999).

Visual cues are also helpful whenever the child is demonstrating difficulty responding to verbal language instruction. The content and complexity of the visual material presented, however, should mirror the child's level of oral language comprehension. Similarly, strategies that require the use of written language instruction should only be used with children who demonstrate interest in or understanding of written language. Children can more easily extract meaning from verbal information when it is accompanied by visual cues.

Uses of Visually Cued Instruction

Visually cued instruction can be applied in four ways: 1) to prepare a child for activities by clearly outlining expectations, 2) to preview and teach skills prior to a social activity, 3) to prompt during instruction, and 4) to review a social situation after the activity is complete.

Prepare

Visual cues can outline and organize expectations. Daily schedules, displays of activity sequences, and lists of work expectations (see subsequent section on types of visually cued instruction) clarify expectations and decrease the need for a child with autism to make social judgments or to follow social cues. In addition to this guide, many other excellent resources describe the use of visual cues to organize social situations. See Dalrymple (1995), Hodgdon (1995), Janzen (1996), McClannahan and Krantz (1999), and Schopler et al. (1995) for more information.

Preview

The majority of visual cues can be used as instructional tools for a child before he enters a social situation. Social scripts, social stories, video modeling, conversational books, social

encyclopedias, sociobehavioral displays, visual imagery, and relaxation techniques (see subsequent section on types of visually cued instruction) provide an opportunity to learn about the relevant features of a social situation and to acquire social and communication skills through preview and practice prior to the situation. Given that social contexts can often be confusing for children with autism, strategies that allow for preview are often more successful than strategies that are implemented in context.

Prompt

Some of the visual cue strategies incorporate items that can be used as visual instructional prompts during the social situation. The visual cues are presented by an adult or are available for the child to use as reminders. These nonverbal prompts are invaluable during social situations. For many children who have difficulty with generalization, contextualized prompts are often more successful than preview strategies.

Review

All visual cues provide the child with an opportunity to review the social expectations after the activity is complete. The concrete, tangible cues allow for clarity and repetition of information. This is especially important for reinforcing desired social behaviors, reviewing alternatives to inappropriate social behaviors, and teaching replacement behaviors.

When using visually cued instruction, it is generally recommended to prepare, preview, prompt, and review social expectations as much as possible.

Types of Visually Cued Instruction

Table 5.9 outlines the nine types of visually cued instruction. This section explores how these nine strategies can be used to enhance understanding of social expectations. Each of the nine techniques is illustrated by a vignette involving a 6-year-old child named Billy.

Schedules

The main function of visual schedules is to clarify the sequence of social events. Schedules specify where to go, what to do next, and for how long and are typically presented in linear order. Visual schedules can be made with photos, pictures, pictographs, or written language. Some schedules can even be made with concrete objects. Schedules clarify expectations and can increase independence in solitary and social activities. Sample schedules include

- Daily schedules (i.e., the sequence of daily activities)
- Transitional objects (i.e., a specific object linked to an activity to prepare where to go)
- Play schedules (i.e., sequence of play activities)
- Activity lists (i.e., sequence of game or activity substeps)
- Outlines of group discussions
- Time boards (i.e., a visual representation of time in sequence or puzzle form)

Sample schedule for Billy: Billy benefits from schedules in new situations. His parents find time boards a particularly useful way to clarify time for him. As Billy likes letters, his time board consists of a card that has the letters of his name on a Velcro strip. As time passes, another letter is put on the card. When his name is complete, it is time to go.

Cue Cards

The main function of cue cards is to remind the child what to do. Cue cards, which can contain one or more pieces of information, replace verbal or other social prompts. They silently refocus a child's attention, thus making them less intrusive than other forms of prompts. Cue cards are particularly useful in situations where the child is disorganized and/or anxious. (Multiple examples were provided in the previous section on organizational supports.) Some additional ways to present cue cards include the following:

- Card with a single message in pictograph or written form
- Dry-erase board
- Wristband worn by adult that contains key directions
- Lists of reminders
- Index card with social rules (e.g., share, take turns, wait)

Sample cue cards for Billy: Billy has his own tutor in his first-grade classroom who often prompts Billy using cue cards. For example, his tutor writes key words on a dry-erase board to visually cue Billy during group discussions. When given these silent reminders, Billy attends better in group activities. Another cue card used for Billy is a STOP and GO sign on the classroom door. Prior to using the cue card, Billy often ran out of the classroom to see the fish tank in the hallway. Billy was taught when he can leave the classroom (i.e., when the sign says GO) and when he cannot (i.e., when the sign says STOP). In addition, STOP and GO signs are used throughout the classroom to clarify what activities are available or unavailable for his use.

Social Scripts

The main function of social scripts is to clarify choices in social situations. Social scripts present the child with two or more options of what to do in a social situation. They simplify open-ended social situations by providing limited options. Like schedules, social scripts can be made with photos, pictures, pictographs, or written language. Unlike schedules, however, social scripts provide more flexibility, and the information depicted on social scripts should not be presented in a linear sequence. Left-to-right presentations, numerical lists, and outlines often prompt a child to do activities in the order presented. Social scripts should be presented in arbitrary ways. Sample social scripts include

- Circular board of different solitary or social play choices
- Play script; that is, a visual depiction of play options within an open-ended activity that can be presented on a circular board or as a series of individual cards held together by a key ring
- Checklist of activities that will occur in random order
- Story about an upcoming event that includes what to do options

Sample social script for Billy: Using play scripts helps Billy expand his repertoire of play skills for open-ended activities in the playdough and dress-up areas. A series of cards that present different things to do were organized on a key chain. The playdough script, for example, contains eight different cards that depict using a roller and cookie cutters, as well as making playdough balls, snakes, gingerbread men, and so forth. He reviews the choices, practices each play schema, and then has the social scripts available at playtime. Billy's peers use the scripts to cue him when he "gets stuck."

Social Stories

Social stories are short stories that clarify expectations for a particular social situation. The main function of social stories is to teach social perspective-taking. Stories include information that is descriptive and directive and explains perspective. They describe what occurs in a social situation and why, point out the relevant features of a situation (Gray, 1995). The complexity of information must mirror a child's language comprehension abilities; for children who do not read, social stories can be audiotaped and/or include illustrations.

Sample social story for Billy: For group activities, Billy has learned to raise his hand but becomes upset when he does not get a turn. Agitation and verbal outbursts are common. A short, simple storybook about emotions was made for Billy. It is pre-

viewed each day and reviewed after each time he becomes upset. Billy's teacher verbally prompts Billy in group using the same words from the story. Gradually, Billy is using the words of the story to regulate himself when he is agitated. He has learned to say, "Sometimes you get a turn; sometimes you don't. I can stay calm."

Video Modeling

The main function of video modeling is to teach specific social and communication skills. The child learns what to DO-WATCH-LISTEN-and-SAY (see frameworks in Chapter 4). Videos can be developed to highlight salient social cues and specific social and communicative behaviors. As video instruction allows a child to view natural social events in precisely the same way repeatedly, it is the easiest way for him to preview and review social events. Video instruction can be used along with other visual strategies. Video modeling has unlimited applications, but some examples are

- Teaching motor imitation (e.g., the child watches other children doing actions to music or other movement activity)
- Teaching solitary play (e.g., the child watches a peer engaged in a specific solitary play sequence)
- Teaching social play (e.g., the child watches peers taking turns during a specific activity)
- Teaching community expectations (e.g., the child watches a peer going to the dentist)
- Teaching replacements to challenging behaviors (e.g., the child watches self engaged in appropriate behavior)
- Teaching specific communication messages (e.g., the child watches others express one message in a variety of contexts)
- Teaching discourse skills (e.g., the child watches videotapes of same-age peers engaged in simple conversations)

Video modeling can be specifically used for social and communication skills intervention. To develop a video for social skills or communication skills instruction,

1. Identify the social setting.
2. Identify the target social behavior or communicative message.
3. Videotape familiar adults or peers engaged in the target behavior or using the communicative message.
4. Make the social cues, target social behavior, or communicative message the most salient aspects of the video.
5. Limit the amount of verbal information on the video.

There are some basic ideas to keep in mind when using video modeling for instruction. These are as follows:

- Show the video to the child daily (or more often if the child is interested).
- Preview the video just prior to the actual activity, when appropriate.
- Pair the video model with a second visual cue (e.g., schedule, cue card, social script).
- Use the second visual cue as an instructional prompt in the natural social situation.
- Assess skill acquisition.
- Continue practicing the target social skill through the use of video and other visual cues as needed.
- Gradually fade the frequency of video preview until the skill is mastered.

Sample video modeling for teaching Billy appropriate social behaviors: Billy does not like to visit the dentist. He begins to scream as he nears the dental office building. His reaction is so extreme that two adults need to hold him for a routine exam. He does not want anyone to touch his teeth, as he associates dentists with toothaches. A video was made about a dentist visit. The video includes Billy's sister going to the dentist for a checkup. Billy's favorite music accompanies the otherwise silent "movie." The dentist slowly checks the girl's teeth and gums with instruments. She stays calm and receives Billy's favorite treat after leaving the dentist's office. An activity schedule is paired with the video. Billy watches the video daily for 2 weeks. From then on, he carries his activity schedule and video to the dentist's office. Each visit has become easier for him.

Sample video modeling to teach Billy specific communication skills: Billy does not like it when his classmates borrow materials from his desk. He is extremely vigilant about protecting his possessions, and this distracts him from his schoolwork. When a peer does ask to borrow something, Billy usually yells. Efforts to cue him to communicate in an alternative way were not successful until his mother tried video modeling. On the video, his classmates act out multiple scenes of saying "No, they are mine" when peers want to borrow materials. The video consists of six friends and ten different settings. Billy enjoyed watching the video at home and used the message in the classroom perfectly within 2 days.

Sociobehavioral Displays

Most classrooms display a list of classroom rules that outlines social expectations to which the teacher refers when communicating expectations to the children. Sociobehavioral displays are similar. The main function of sociobehavioral displays is to clarify rules and desirable social behaviors. Putting rules in visual form ensures that adults will be clear and consistent. A display can also refocus a child's attention and provide a concise and simple prompt when the child exhibits undesirable behaviors. Displays can depict one or more rules, and they can be presented in picture, pictographic, and/or written form. They can be used alone or in combination with other nonaversive behavior management procedures. Sociobehavioral displays should

- Clearly specify the desired behavior
- State rules in positive terms
- State rules in concrete, observable terms
- State rules in clear and concise terms

Sample sociobehavioral display for Billy: Billy has difficulty sharing toys with his peers; yelling and grabbing toys often occurs during social play activities. Therefore, a pictographic and written display was created for Billy that lists two rules: use a quiet voice and play with friends. Billy reviews the rules daily and has practiced sharing with adults. This display is now in the play area, and it is used by adults and peers to prompt Billy.

Visual Imagery

The main function of visual imagery techniques is to teach self-control strategies. Visual imagery focuses on stressful events that are known to trigger problem behaviors and supports a child in learning alternative self-control strategies. Groden and LeVasseur (1995) developed an imagery procedure that uses repeated practice of desired social behaviors by presenting the event in visual form. A scene of a stressful situation is depicted as a sequence of pictures that is paired with a simple verbal script. The scene concludes with desired behaviors and positive outcomes. The scene and script are reviewed with the child

multiple times each day. Once the child demonstrates familiarity with the scene, the scene is rehearsed before, during, or after the actual stressful situation. The goal is for the child to demonstrate the desired behaviors in the natural setting by using the visual and verbal images as cues.

Sample visual imagery procedure for Billy: Billy has significant difficulties on the school bus. It was determined that the difficulties are triggered by the noise on the bus. A pictorial scene of five photographs was developed that depicts the stressful event and what to do: 1) Billy gets on the bus, 2) Billy sits on the bus, 3) children talk and laugh loudly, 4) Billy puts on his Walkman to listen to music, and 5) Billy gets off the bus and receives a hug from his mother. In situations in which others are loud, Billy practices putting on his headphones. The pictorial scene is re-viewed during quiet times of the day. It is also practiced before and after the bus ride. Gradually, Billy's challenging behaviors on the bus have been replaced by his self-control strategy: listening to music.

Relaxation Cues

A relaxation cue is any form of visual cue that prompts a child to relax. Relaxation cues are an effective means to prompt a child nonverbally when he appears stressed. These cues can also be an effective way to prompt a child nonverbally from engaging in ritualistic behaviors. The cues can be objects, pictures, pictographs, or written language that represent a relaxing location, object, activity, or procedure. A specific area of the classroom, a box of "fidget toys," a display of activity choices, or a relaxation checklist are other examples of relaxation cues. The information can also be presented in the form of a cue card or social script. Relaxation cues can visually cue the child to

- Go to a particular location to take a break
- Use a particular object to relax
- Select a particular activity to relax
- Use a particular sequence of relaxation procedures

Sample relaxation procedures for Billy: Billy often engages in noncommunicative delayed echolalia. He repeats scenes from a favorite movie. This seems to increase during stressful situations. Billy is now cued to relax in two ways. First, the rocking chairs in the book area of his classroom and in his bedroom are identified as places to relax. A rocking chair pictograph is used to cue Billy to go to the area. Gradually, Billy has learned to hand the card to the adult to request a break. Second, Billy has been taught a series of relaxation techniques (Grodén, Cautela, & Grodén, 1989) that include deep breathing and counting. This relaxation procedure is visually displayed on a portable card that can be used anywhere.

Social Encyclopedia

For children with more advanced cognitive and language abilities, social understanding can be enhanced by developing an individualized social encyclopedia. A *social encyclopedia* is a social map of the child's life, a journal of personal experiences that are organized into categories to teach social understanding. The concept of a social encyclopedia derives from Grandin (1995a), whose teachings emphasize the need to use logic (not emotion) to explain social meaning to children with autism. The feelings and behaviors of others need to be framed within the context of the child's own experience. All explanations must use perceptual, concrete, and observable criteria. This approach to social understanding compensates for the child's social misunderstanding of mental states. Therefore, although social encyclopedias can be organized in multiple ways, it is essential to organize the information into categories that help the child to see the similarities between related social

I. Experiences journal

A. Classify personal experiences into six areas
 When I feel upset by changes
 When I do something that upsets others
 When others do something that upsets me
 When I say something that upsets others
 When others say something that upsets me
 When I don't know what to say or do

B. Document solutions to problematic social situations
 The setting (the social situation)
 The problem (what happened)
 Understanding the problem (why)
 The solution (what can be done next time)

II. Feelings journal

A. Categorize own experiences by feelings
 Situation
 Actual feeling (observable description of what I say)
 Color-coded emotions

B. Categorize others' experiences by feelings
 Situation
 Actual feeling (observable description of what others do or say)
 Color-coded emotions

III. Social maps

A. Visualize the relationship between similar problems

```

    graph TD
      S[SITUATION]
      C1((1)) --> CS([SAME SOLUTION])
      C2((2)) --> CS
      C3((3)) --> CS
      C4((4)) --> CS
    
```

B. Visualize the relationship between similar social concepts (e.g., friendship, patience) through descriptions of the child's personal experience (i.e., semantic maps)

Figure 5.1. Social encyclopedias.

events. Unlike other types of visually cued instruction, the social encyclopedia supports generalization of social concepts. Figure 5.1 shows various ways of organizing a social encyclopedia. For instance, a child and two friends make a list of favorite television shows. Each writes information about the shows they like and why. The child with autism can review his friends' interests and use these interests as conversation topics. This also helps the child begin to see similarities and differences in interests.

Sample social encyclopedia for Billy: Information about Billy's experiences and feelings is recorded daily. It includes a list of his daily activities and how he felt. For example, music = happy, math = angry, fire drill = afraid, and reading = happy. His encyclopedia also includes a set of short, simple stories about each emotion with photos of himself in various situations that are associated with the emotion. Billy has a happy story, a sick story, a mad story, and an afraid story.