

# Asperger Syndrome and the Development of Social Competence

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The hallmark of Asperger syndrome is a failure to develop social competence despite relatively normal language and cognitive development. Extensive research in this area points to a deficit in a key area of social development—experience-sharing relationships—as the primary factor in limiting the social development of individuals with Asperger syndrome. Experience sharing appears to develop in a manner different from attachment and instrumental interaction. The authors review the critical components of experience sharing, relate them to the specific social deficits found in children and adolescents with Asperger syndrome, then propose factors in developing a relationship intervention program that would incorporate these essential components.

Since Hans Asperger's initial study (1944), the disorder of Asperger syndrome (AS) has been synonymous with individuals who are challenged to attain even minimal social success, although they possess relatively unimpaired language and intelligence. Asperger's criteria, from more than 50 years ago, are used in the *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition—Text Revision (DSM-IV-TR)*; American Psychiatric Association, 2000) to identify a pattern of autistic social development in the presence of language and general cognitive functioning in the normal range.

*Social competence* refers to the skills and strategies that allow individuals to have meaningful friendships; forge close, emotion-based relationships; productively collaborate with groups, teams, and work partners; manage public social settings; and participate in family functioning. Social competence has been repeatedly demonstrated to be a critical

variable in predicting success in future life (Denham et al., 2001). The present article begins with a summary of research investigating the impact of social dysfunction on the lives of people with AS in adulthood, and then proceeds to a more recent literature following children into adolescence.

## Social Competence of Adults with AS

The inability to develop social competence is the leading factor in the failure of most adults with autism to attain even a minimal level of quality in their lives (Howlin & Goode, 2000). AS as distinguished from autism is a relatively new diagnostic entity. Researchers have had difficulty determining whether the two exceptionalities are separate or fall along the autism spectrum (Ozonoff, Rogers, & Pennington, 1991) and thus have rarely separated children with AS from

those with high-functioning autism (HFA)—a population of individuals in the autism spectrum who have developed language and function with average to above-average intelligence. This is especially the case with longer term outcome studies, which by their nature would follow individuals who had not been diagnosed with AS in original assessments. Therefore, with several notable exceptions, this review will focus on outcomes for merged AS and HFA groups. This review is also limited to studies published over the past 15 years, on the assumption that the individuals studied were more likely to have been accurately diagnosed and to have received at least some appropriate intervention services at a younger age.

Studies on adults with AS have found that this population of individuals is likely to be unemployed or underemployed, unable to live independently, and without significant social relationships. For example, Venter, Lord, and Schopler (1993) found that of the 18 young men with HFA they studied, 1 was married, 4 were living independently, and 6 were employed at least part-time in relatively low-level jobs. Szatmari, Bartolucci, and Bremner (1989) found a similar pattern in 16 young adults diagnosed with AS and HFA: Only 1 was married, and only 3 had any dating experience. More recently, a study conducted under the auspices of the National Autistic Society of

Great Britain (Bernard, Harvey, Potter, & Prior, 2001) reported on the adult outcomes of individuals with AS. The authors found that 37% of adults with AS reported no participation at all in social activities, while 50% reported going out no more than one or two times per month. Only 12% were engaged in full-time employment. Social difficulties in the workplace were reported as the leading cause of job failure.

### Social Competence of Adolescents with AS

Recent reports of adolescents with AS and HFA are important because most participants have been diagnosed during the past 10 years, and one can assume that a significant portion of those followed may have had at least some access to modern behavioral, educational, and medical services. Thus, they represent a critical indicator of current progress in intervention. We found three recent studies investigating the social functioning of adolescents with HFA and AS. The first, conducted by Sigman and Ruskin (1999), was a longitudinal investigation of teenagers with HFA who were followed since preschool. Those authors' results clearly documented the enduring lack of progress in social competence of this group. Similarly, Bauminger and Kasari, (2000) found that adolescents with HFA lacked an understanding of the emotional aspects surrounding both loneliness and friendship, not related to either their intelligence or their language development. The researchers concluded, "Autistic friendships may be of poor quality so that the children in question do not gain the feelings of security or companionship which are required to reduce feelings of loneliness" (p. 453). Green, Gilchrist, Burton, and Cox (2000) were the only researchers of the triad to focus specifically on individuals diagnosed with AS. In their study, adolescents with AS were compared with a matched group with severe conduct disorders. The teenagers with AS were significantly more socially impaired than their peers with con-

duct disorders. In addition, similarly high levels of anxiety and obsessional disorders, depression, suicidal ideation, rage, and defiance were found in both groups.

These results serve to reinforce the concern that many children with AS move into adolescence and young adulthood without social competence. For example, Sigman and Ruskin (1999) concluded that most individuals with HFA will be as severely affected in adolescence as in early childhood by the core symptoms of the disorder. Despite significant progress made in other areas, the prognosis for social competence for those with AS still appears bleak.

These discouraging, albeit preliminary, findings make it critical that we clearly identify the reasons that people with AS, despite varied and intensive intervention efforts, fail to attain social competence. What in the disorder prevents them from success? More important, what can we do to help people with the disorder to attain a degree of success in their social relationships? To address these questions, we briefly explore the essential elements of social competence.

### Elements of Social Competence

Social competence comprises three separate areas of social development that must function in an integrated fashion to produce eventual success: (a) secure attachment, (b) instrumental social learning, and (c) experience-sharing relationships. A significant deficit in any one of the three elements seems to result in eventual social failure (Bruner, 1983; Emde, 1989; Fogel, 1993; Gottman, 1984).

#### Secure Attachment

Since the work of Bowlby (1969) and Ainsworth, Blehar, Waters, and Wall (1978), attachment has been extensively studied as one of the cornerstones of healthy child development. *Attachment* refers to the specific affiliative tie of the

infant to his or her parent(s) that generally begins after 6 months of age. At this early stage of development, the primary caretakers function in the "ego" role for the child.

Children form ties to their caregivers that vary in terms of the security of the bond (Bretherton, 1992). Those who form secure attachments are able to use the attachment figure as a safe haven in times of distress and as a supporter of exploration and play in times of low distress. As children move into preschool age, they are able to generalize their attachment to other adults and also to internalize the parental attachment so that they can feel reassured even when the parent is not physically present. The following are examples of attachment behaviors:

- A baby falls and quickly reaches out to mother to be comforted.
- A stranger walks into the room and the young child runs over to the safety of a parent.
- A preschooler accidentally calls his teacher "mommy" while she is comforting him.
- A young child is waiting for her mother, who is late, to pick her up from school. The child comforts herself by saying, "It's okay. Mommy will be here. She always comes and gets me."

#### Instrumental Social Learning

Instrumental social actions are those that are taken to achieve a specific objective in a social setting (Prizant & Schuler, 1987). When we engage in instrumental behavior, social contact is a means to an end. Other social participants function as instruments to help attain some goal external to the social relationship. Instrumental social behaviors are tied to external reinforcements. That is, people participate in instrumental interactions knowing in advance the result they wish to achieve and why they are expending the effort. Individuals interact with others to obtain specific objects, information, or new skills. Most behavior taught



in social skills training falls within the instrumental category. So does requesting, obtaining assistance, and performing many daily social activities related to meeting our needs (e.g., waiting in supermarket checkout lines, taking turns to share a mutually desired toy, behaving appropriately in the classroom in order to obtain a reward). Instrumental skills first appear during the last part of the first year of life, when babies begin to understand cause-and-effect relationships and begin to intentionally use rudimentary communication to have their needs met and reach specific instrumental goals (Sroufe, 1989).

Instrumental competence is developed by learning behavioral and communication actions in response to specific actions by social partners, or to the student's own specific goals. These actions are formalized and learned in a straightforward, sequential manner as communicative scripts. To attain competence, the child learns the relationship between specific scripted actions and desired consequences. In other words, he or she associates specific communicative actions with specific results. For example, the child who makes a polite request of her mother is more likely to get a successful response than if she mumbled. Moreover, children must associate these actions and consequences with specific settings and times in which they occur (e.g., requesting a favored snack is more likely to be successful during a designated snack time than late at night). Finally, they must learn repertoires of behavior for various situations that will increase the probability of favorable, desired outcomes and minimize negative consequences. The following are illustrations of instrumental interactions:

- pointing to obtain an out-of-reach toy,
- inviting another child to play checkers so that you can win,
- following classroom behavior rules to obtain a reward,
- standing in line at the checkout counter of the supermarket to get your food, and

- asking for instruction in math so you can get a better grade.

### **Experience-Sharing Relationships**

The third element of social competence, experience-sharing, involves the desire and skills to be a good reciprocal playmate, value others' points of view, develop friendships, and conduct other emotion-based transactions (Emde, 1989; Fogel, 1993; Ross, Cheyne, & Lollis, 1988). Experience-sharing occurs without concern for specific external rewards. Unlike attachment and instrumental behavior, experience-sharing is an end to itself. Instrumental interactions are governed by setting-specific scripts that all participants are expected to follow. In contrast, experience-sharing relies on participants' constantly referencing the emotional states and actions of their communicative partners and basing their own actions on ongoing evaluations of those variables (Fogel, 1993). The following are some illustrations of experience-sharing relationships:

- After losing the big football game, the entire high school team huddles together to console one another.
- You and a buddy ride bikes side-by-side, just for the fun of it, going no place in particular.
- When you and your pal meet, you always tell a silly joke that makes you both laugh, for no apparent reason.
- You meet a new classmate and get excited when you find out you share many of the same beliefs and opinions.
- You work hard as part of a group to produce a new product, and when it is completed, you celebrate together and feel a special strength and camaraderie.
- You fall in love and want to know the innermost feelings and thoughts of your lover, so you can feel closer to each other.

Friendship can be viewed as a prototypical experience-sharing relationship

(Asher, Parker, & Walker, 1996; Gottman, 1984). According to Asher et al., "Shared experiences are the crucible for friendship formation and play a large role in cementing friendships" (p. 390).

In the AS literature, the development of reciprocal friendships is considered a primary marker of successful intervention (Klin, Volkmar, & Sparrow, 2000). To date, we know very little about the degree to which people with AS are able to make and sustain reciprocal friendships. However, the elements necessary for friendship development in typically developing children have been extensively studied over the past 20 years (Asher et al., 1996; Gottman, 1984; Howes, 1996; Rubin, 1980). In the following section, the skills needed for successful friendship formation and maintenance are overviewed.

**Enthusiasm and Shared Enjoyment.** Although numerous sophisticated skills and strategies are required for successful friendships, the single most important factor reported by typically developing children when asked about the qualities they seek in a friend is that the child is "fun to be around" (Asher et al., 1996; Gottman, 1984). The child who goes out of his or her way to communicate joy and pleasure during shared activities will typically be highly valued. People of all ages enjoy being around those who are upbeat and enthusiastic. Reports of "I just feel happier when I'm with her," or "Her laughter is contagious," are common indicators of friendship selection. In a similar vein, successful friends initiate approaches and extend invitations to their peers. They invite peers to interact in a manner that communicates a commitment toward ensuring enjoyment and fun for those being invited (Howes & Matheson, 1992).

**Social and Emotional Coordination.** By age 4, typically developing children have learned to carefully communicate and self-regulate their behavior to coordinate play with peers in the absence of highly structured rules (Didow & Eckerman, 2001; Eckerman & Didow, 1996).

This is when children develop their first true reciprocal friendships (Howes, 1996). A child's ability to socially coordinate his or her free play with peers and his or her theory of mind (understanding the perspective of others) is highly predictive of eventual friendship success (Slomkowski & Dunn, 1996). Noted friendship researcher Howes made the point that the earliest friendships would be difficult to even imagine without evidence of coordinated play.

During this same period, a new element is added to social coordination between peers. Children learn to use joint attention to coordinate perceptions with a peer and to share new experiences. Joint attention becomes a bridge leading to the eventual discovery of coordinating ideas and other internal states. By the age of 4, children spend considerable time finding commonalities with selected peers in a number of domains. Friendships of late-elementary-age children are often defined by shared interests. By adolescence, common beliefs and attitudes are a significant factor in friendship selection (Erwin, 1998).

The desire for coordination with others extends to the domain of emotions. A child who enthusiastically engages in activities that make him or her laugh without observing the reactions of his or her peers will typically be avoided. On the other hand, the child who bases his or her actions on the emotional reactions of social partners will be highly valued. Emotional coordination also involves showing interest in understanding and relating to the emotional experiences of social partners. Friends must be willing and able to communicate caring and to provide help to one another when in need, even if giving assistance requires that they delay or discontinue a pleasurable activity (Asher et al., 1996).

A final, critical aspect of emotional coordination is exemplified in the concept of "we-go" (Emde, 1989). Even young children share a feeling of being allied in a common unit—a type of group ego, or "we-go"—that together is stronger than the sum of its parts. Older children perceive their friends as crucial allies who will drop what they are doing and come

to their aid in times of need. They operate like the Three Musketeers, with their motto of "One for all and all for one" (Gottman, 1984).

**Ongoing Relationship Maintenance and Repair.** Friendships, like other experience-sharing relationships, do not take place in a highly rule-bound, predictable arena. They operate in loosely structured social frameworks that introduce large amounts of variety and novelty, but also carry great potential for confusion, misunderstanding, and conflict (Fogel, 1993). Based on observations and communications, good friends constantly regulate their interactions and attempt to repair misunderstandings, conflicts, and social and emotional discord (Denham et al., 2001; Fogel, 1993; Ross et al., 1988). We want friends who function as equal partners in maintaining and repairing a relationship. If one of the partners has to do the bulk of adjusting, clarifying, adapting and repairing, the other partner will quickly find the relationship unsatisfying and seek out partners who take on more of the responsibility of the relationship so that they can equally participate in the creative, enjoyable aspects of their encounters.

### Appreciating Differences

Maintaining accord and feelings of relatedness are one side of the friendship coin. The other side is represented by the fact that no matter what their commonalities, social partners will have ongoing differences with one another. Good friends value the creative contributions of social partners, even when they are quite different from their own (Asher et al., 1996). They desire partners who provide the excitement of finding new ways to play a game and variations of activities and new ideas, as long as they are presented with sensitivity to the other's reactions. Even when sharing a common experience, good friends appreciate that their partner's perceptions and perspectives are just as "correct" as their own, even if different. They are excited by the new ideas and methods that friends bring

into their joint effort and enthusiastically communicate that excitement. By the age of 4, friends are routinely engaged in "co-creative" play activities, whereby each partner's contributions are integrated into elaborate joint creations (Fogel, 1993; Howes & Matheson, 1992; Rubin, 1980). Similar co-creations begin to emerge through joint attention and shared pretend play. Good friends communicate that they very much want to get to know their communicative partners and are willing to accept them, flaws and all.

### Social Competence in AS

In recent years, a body of literature has emerged relating to the social functioning of individuals with autism. In the following section, research relating to the three critical domains of social behavior will be reviewed: attachment, instrumental interaction, and experience-sharing relationships. We must again emphasize that aside from the few studies cited earlier, there has been little investigation into the social development of individuals with AS as distinguished from the wider spectrum of individuals with HFA. The following findings are therefore derived from this larger population.

#### Attachment

Several studies have reported that children with HFA seem to develop secure attachment. They are able to differentiate between their mothers and strangers and react differently to each. In addition, they display evidence of attachment behaviors, especially upon separation and reunion (Capps, Sigman, & Mundy, 1994).

#### Instrumental Skills

In a similar vein, research supports the idea that people with HFA develop the ability for instrumental interaction. Children with HFA make the same amount of requests of adults as do their typical counterparts (Travis & Sigman, 1998) and make as many initiations to adults as



do matched controls (Hauck, Fein, Waterhouse, & Feinstein, 1995). They use gestures designed for instrumental goals as much as other children (Capps et al., 1994) and communicate to regulate adult behavior to achieve an environmental end (Wetherby & Prutting, 1984). Children with HFA use a similar amount of eye contact and similar gestures with a social partner to request aid in obtaining an object or event (McEvoy, Rogers, & Pennington, 1993; Mundy & Crowson, 1997).

### **A Life Without Experience-Sharing**

The consensus is emerging that autism and AS are biological disorders that interfere with the development of affective engagement and relatedness with others (Hobson, 1993; Mundy & Crowson, 1997; Mundy, Sigman & Kasari, 1993; Trevarthen, Aitken, Papoudi, & Roberts, 1996). Mundy et al. referred to a lack of spontaneous seeking to share their enjoyment and interests with others as a cardinal feature of all autism spectrum conditions. According to Hobson (1993), children with autism "do not fully understand what it means for people to share and coordinate their experiences" (p. 5). Trevarthen et al. described people with autism as impaired in both their emotional and their collaborative responses. Of course, people with autism may also have insecure attachment and fail to develop instrumental social competence (Robertson, Tanguay, L'Ecuyer, Sims, & Waltrip, 1999). However, research does not support that children with autism spectrum disorders have either instrumental or attachment difficulties. A person can have a secure attachment and possess instrumental competence and still be classified in the autism spectrum. This seems to be the case in individuals with AS. In fact, it is the belief of the first author that one hallmark of AS is a deficit in pure experience-sharing. Individuals with AS are likely to develop some degree of instrumental competence and relatively secure attachment in the absence of experience-sharing.

The failure to develop experience-sharing is evident at 12 months of age (Osterling & Dawson, 1994). By the end of their second year, toddlers with AS may have already moved into deviant pathways of social and emotional development from which they never recover (Robertson et al., 1999; VanMeter, Fein, Morris, Waterhouse, & Allen, 1997). The young child with AS may begin a journey down a road of social development different from the typical child's. This is a road that does not include the typical child's countless thousands of hours experimenting and practicing with relationships. They become adolescents and adults who increasingly diverge from others in their interests, drives, and social thinking. In effect, they develop their own unique brand of "social science" that excludes the study and mastery of reciprocal, experience-sharing relationships.

The child with AS may continue to actively pursue social interactions throughout life. However, by never entering the arena of experience-sharing, he or she misses out on the most challenging, exciting, and rewarding aspect of the social world. Without the motivation to engage in experience-sharing, the youngster with AS does not conduct the extensive personal research and self-discovery by which typical children become such experts at relationship building and maintenance.

Another serious consequence of this early social deviance is the "splitting off" of personal from social experience. By the close of the first year, typical children explore their environment, making nonsocial discoveries. They find that now they can have their own unique perceptions and experiences to share as equal partners (Bruner, 1983). This newfound mastery greatly enhances the excitement of social encounters and leads to a surge in joint attention with social partners. The infrequency with which children with AS initiate joint attention is a clear marker of their failure to integrate their object world with their social world, to the detriment of both (Mundy et al., 1993). This divergence appears to be highly stable through development. For

example, in one study, failure to initiate joint attention and emotion-sharing were the main factors still clearly distinguishing children with HFA from others by the onset of middle school years (Travis & Sigman, 1998).

Given the prior review, we would anticipate research findings pointing to deficits in the critical experience-sharing skills necessary for friendship development. As expected, the studies summarized below point to the core experience-sharing deficit that deprives the child with AS of the skills necessary for reciprocal friendship.

**Sharing Enjoyment and Enthusiasm.** Young children with autism are perceived by their mothers as significantly less emotionally engaged and less expressive than typical peers (Wimpory, Hobson, Williams, & Nash, 2000). Lord, Storoschuk, Rutter, and Pickles (1993) found that the behaviors that best discriminated young children with autism from their typical counterparts at 2 years old all involved the sharing of positive emotions—greeting, seeking to share enjoyment of an event, and responding to others' indications of pleasure. Young school-age children with autism extend significantly fewer social invitations than typically developing peers, but when they do initiate interactions with peers, the function of the initiation is mostly about giving information (instrumental interaction). In contrast, initiations of matched controls are related to inviting others to play and seeking personal information (experience-sharing; Hauck et al., 1995).

**Social and Emotional Coordination.** In regard to social coordination, children with autism do much less monitoring and observing of peer behavior in a classroom (Hauck et al., 1995). They rarely shift eye gaze between objects and partners, and they do not point to or show objects to partners merely for the purpose of experience-sharing. Although children with autism are able to use gestures to request objects (instrumental gestures) or to engage in social action routines, they do not use gestures to share interest in objects or their prop-

erties (experience-sharing; Mundy & Crowson, 1997).

A number of studies point to a severe deficit in emotional coordination. Toddlers with autism show poor coordination of emotional response with their social partners. They are less likely than typical children to combine smiles with eye contact, and less likely to smile in response to smiles from their mothers (Charman et al., 1997). Preschoolers with autism display happy, sad, angry, and neutral facial expressions at a frequency similar to age-matched peers', but they are more likely to make these displays during contextually incongruent situations. Children with autism are less engaged with and affected by other people's expressions of feeling (Hobson, 1993; McGee, Feldman, & Chernin, 1991). Furthermore, unlike matched controls, they do not use feelings to differentiate people from one another (Hobson, 1993; Ozonoff et al., 1991). In studying adolescents, Bauminger and Kasari (2000) found that when teenagers with autism did make friendships, they were without the feelings of alliance or companionship that characterized typical friendships.

**Maintenance and Repair.** People in the autism spectrum seem to lack the concept of ongoing maintenance and repair in relationships. A deficit in repair is a significant area of difficulty in that when an exchange falters, children with autism seem to lack strategies for bringing the conversation back on track. Children with autism are rarely able to modify their messages to fit the needs of the listener, even when they are able to work out what the listener's understanding might be (Geller, 1998). Adolescents and adults with AS seem oblivious to the lack of coordination in conversations and do not monitor their communication to ensure that it is correctly understood. They do not attempt to repair communication; they do not work to ensure that they accurately receive other's communication; and they make no attempt to aid the listener when she or he communicates confusion, or to regulate their conversation to ensure that topics of interest

match their social partner's ideas (Landa, 2000).

**Appreciating Differences.** In recent years, studies have reported on the theory-of-mind deficit in persons with autism (Baron-Cohen, 1989, 1997; Wellman, 1993). A number of these studies document the failure of people with autism to take the perspective of others when it is different from their own.

In a related area, analysis of the conversational speech of people with HFA reveals pragmatic errors reflecting a poor understanding of the listener's knowledge state. In addition, speakers with autism seem unable to extend the speaker's previous comment—they seem not to know where it is “going” (Serra, Minderra, van Geert, & Jackson, 1995; Wellman, 1993). Children with autism have also been found to demonstrate less responsiveness to others' distress (Bacon, Fein, Morris, Waterhouse, & Allen, 1998); the absence of empathy and concern for other people's distress has been noted as a hallmark of autism (Sigman & Ruskin, 1999; Travis & Sigman, 1998).

### Implications for Relationship Intervention Programs

If the main problem in developing social competence in people with AS results from their failure to understand the meaning and methods of participating in experience-sharing relationships, we are left with a new set of questions. How do we develop the motivation for the youngster to work at becoming more skilled at experience-sharing? What are the skills needed for success in experience-sharing relationships? What is the manner in which these skills should be taught? How do we make the skills meaningful? What are the elements of a successful relationship-development intervention program?

### The Problem of Motivation

Mesibov and Lord (1997) have pointed to the failure of most social skills interventions to ensure that the skills being

taught have emotional meaning for the youngster. Without teaching within the context of meaning, they believe, there is little chance for skills to “stick” and generalize outside of the training setting. As an illustration of their point, Hwang and Hughes (2000) found that social interaction training that targeted skill interventions resulted in some immediate gains in social and affective behaviors, nonverbal and verbal communication, eye contact, joint attention, and imitative play for children with autism. However, these gains were rarely maintained over time or generalized to other settings. Another poignant example of the futility of trying to teach experience-sharing skills out of their developmental context comes from two studies attempting to teach theory-of-mind skills to children and teens with autism spectrum disorders (Hadwin, Baron-Cohen, Howlin, & Hill, 1997). In both studies the researchers were able to successfully teach a number of theory-of-mind skills using a targeted training group. Unfortunately, both studies clearly demonstrated that those taught the skills failed to use them in daily life or even in a follow-up laboratory conversational setting.

If we are going to engage in a long-term effort to teach children with AS to share experiences with enthusiasm and enjoyment, we must provide them with samples of the real pleasures inherent in experience-sharing encounters. However, we face certain obstacles when working with children and youth with AS to develop motivation for social competence. As the child with AS gets older, he or she misses out on more and more rewards from experience-sharing and obtains more and more from other means. A sense of competence and mastery is one of the most important motivations to any child and especially to a child who is already experiencing difficulties with mastery (Kasari, Sigman, Baumgartner, & Stipek, 1993). The following are some examples of experience-sharing motivations:

- Sharing expressions of excitement and joy with a social partner amplifies the positive feelings.



- Variations and novel actions introduced by social partners enhance the pleasure of activities.
- Combining and integrating perceptions and perspectives with social partners increases shared excitement and joy.
- Combining our imaginations and ideas allows us to create something much better than we could alone.
- Finding areas of coordination and commonality with others produces a feeling of well-being.

By age 2, typical children have spent thousands of hours observing and practicing relationship skills and, as a result, become highly competent and creative partners. Developing the motivation to do the hard work of becoming competent is a long-term process for typical children. It certainly will be no easier for children with AS. It is especially unlikely to occur in the natural social environment with peers who are significantly more advanced and competent.

### Social Referencing

The critical skills needed for success in experience-sharing are quite different from their instrumental counterparts. Because the value of experience-sharing encounters is derived in part from the unpredictability and novelty of the encounters, skills cannot be taught in any kind of scripted, sequenced manner. Rather, what we say and do is based on the just-prior actions of our social partners and our predictions of what they are likely to be doing or saying next (Fogel, 1993).

Social referencing (the seeking of emotional reactions of significant others in order to determine your own course of action) is a core skill in developing experience-sharing (Fogel, 1993; Hobson, 1993). When a child engages in social referencing, the ongoing actions and communication of the social partner become primary reference points in determining his or her subsequent actions. Hobson pointed out that by age 1, children have already learned to seek out their parents' interpretation of an am-

biguous situation. As typical children develop, they recognize the importance of understanding numerous areas of their relationships with their partners, such as their partner's perceptions, ideas, plans, dreams, and inner (as opposed to outer) feelings. Hand in hand with this increasing motivation to reference, the child develops more sophisticated observation and communication skills to achieve a greater ability to evaluate the reactions and potential future responses of social partners.

### Co-Regulation

A second skill area is termed *co-regulation* (Fogel, 1993). According to Fogel, co-regulation can be defined as the process whereby participants continually alter their actions in relation to ongoing and anticipated actions of their partners. Rather than relying on scripts, participants in a co-regulated encounter engage in continual referencing and adjustment based on continually changing information in their social field. Co-regulation occurs, along with social referencing, with the intent to decrease confusion and negative feelings, increase coordination, or add to the excitement and interest of social partners. It allows social partners to maintain their interaction in a heightened state of excitement and mutual satisfaction without lapsing into chaos or overly rigid encounters. In typical development, children do little or no regulation during the first 6 months. However, in the following months, parents gradually teach, and require the child, to take ever greater responsibility for maintaining the coordination of their mutual encounters. By the age of 2, toddlers have become equal partners in co-regulating simple interactions with their caregivers (Slade, 1987). The following are some examples of the interplay of social referencing and co-regulation:

- While playing my favorite game, I notice my friend is yawning and looks distracted. I ask him, "Are you getting bored?" and then suggest he choose a new game.
- While out jogging with my wife, I notice that she looks winded and

fatigued. I say, "Why don't I slow down?" and then decrease my pace until she is more comfortable.

- While playing catch with my little brother, I notice he is having trouble catching the ball. I ask, "Am I throwing too hard?" I move closer and throw gentler until I see that he is catching most of my throws.

### How Does Experience-Sharing Develop?

Reviewing the literature on the typical development of experience-sharing relationships, we can summarize six key factors that are repeatedly emphasized as essential: (a) teaching skills in a developmental, step-wise progression, where rudimentary skills form the foundation for their more sophisticated counterparts; (b) initially providing instruction from more competent adults, who act as both "guides" and "participants"; (c) developing simple, ritualized frameworks that allow for a degree of predictability without limiting the potential introduction of novelty and variation; (d) initially working in a simple, nondistracting environment; (e) spotlighting and amplifying the important actions and communication of adult "coaches" so that they are easier to read by the novice learner; and (f) moving gradually from adult guides to evenly matched peers and from simpler to more complex settings.

### Developmental Progression

Experience-sharing skills are learned in a developmental hierarchy, with more complex skills built upon their preceding simpler variants. Each skill serves as scaffolding for the next (Bruner, 1983). Interaction sequences become a dominant feature of the second 3 months of life. The infant actively participates in social interaction. Coordination at this stage is maintained by the caregiver, who makes adjustments to fit the infant's actions. At this stage, the infant has little ability to carry out the rapid social referencing and regulation needed to be a partner.

Sroufe (1989) contrasted the same interaction carried out by more equal part-

ners when the child approaches the end of the first year of life:

The infant now initiates the games orchestrated by the caregiver in the earlier period and in other ways plays a more active and creative role in maintaining and continuing coordinated exchanges. Now the infant can follow and embellish the caregiver's lead, as, for example, when in response to the caregiver's smile, the infant smiles and reaches to the caregiver's face. (p. 76)

In a similar manner, simple forms of social referencing must be in place before we try to develop more complex forms. The 9-month-old infant references his mother's facial expressions to know if it is safe to proceed. The 12-month-old child references the actions of an adult to maintain coordination in a game of hide and seek. The 24-month-old girl references her partner's attention to make sure that it is coordinated with her own in order to share perceptions. The 5-year-old boy references the feelings and ideas of his peers to feel a commonality.

### **Guided Participation by More Experienced Adults**

Children's earliest experience-sharing takes place with a primary caregiver, usually the mother, and the rest of the immediate family. Caregivers function both as initial guides and enthusiastic participants for the neophyte relationship scientist (Rogoff, 1990). Parents, functioning as the primary social partner, can carefully observe and rapidly adapt their actions to increase the variation and novelty of encounters—while carefully moderating the child's excitement so he or she is not overloaded (Sroufe, 1996). In a similar manner, caregivers can vary the degree to which they take on the work of regulating the relationship encounter. They instruct the child on how to observe and coordinate their actions; gradually, the child becomes a co-regulating equal partner. Bruner (1983) described the process whereby caregivers initially help infants "fill in the blanks" of coordinated interactions in order to experience the excitement and joy of experience-sharing.

### **Mutually Understandable Frameworks**

Fogel (1993) used the term *consensual frameworks* to describe the structure of activities during experience-sharing (p. 34). In Fogel's view, parents set up consensual frameworks, or simple structures with enough flexibility to permit novelty and variation but sufficient structure so as not to confuse the child. Frameworks are recognized by their repetition and their coherence over time, along with their capacity for the addition of novelty and variation. The universal framework of peek-a-boo is a case in point. Peek-a-boo is recognized in every culture by its repeating theme of hiding and revealing. The game has predictability because the basic events occur in the same way each time: Hiding is typically followed by revealing. Even a simple game like peek-a-boo allows for creativity by both participants, because it can be altered and elaborated on by the participants. According to Fogel,

Partners change roles either by being the one who hides or the audience. A person can cover their own face with an object or they can cover the partner's face. The timing of the hiding and revealing can be changed subtly from turn to turn. Sometimes one lingers behind the hiding object and at other times jumps out immediately. Changes are made in where one appears; from over the top of the object, from the side, or from underneath. (p. 41)

### **Simple, Nondistracting Environments**

Experience-sharing skills must first be learned in a distraction-free, simple environment and then practiced in gradually more complex settings. Wellman (1993) pointed out that typical infants have a built-in advantage for attending to relationship information. The human newborn has an innate preference for human faces and voices, as well as the early ability to discriminate emotions and imitate caretaker actions. Ironically, infants' inherent limitations as well as their abilities set the stage for them to be the perfect relationship novices: Infants' limited perceptual field, poor eye-hand coordina-

tion, and inability to locomote means that parents will face very limited competition for their infants' attention. For the first 3 or 4 months, adult caregivers are the only show in town!

A study conducted by Eckerman, Whatley, and Kutz (1975) highlighted the potential interference of competing objects even in the social interaction of the typical 10- to 12-month-old child. In their study, pairs of 10- to 12-month-old infants were observed in a playroom both with and without toys in the room. The toys led to more object-centered contacts; when toys were not available, the infants more often touched one another, smiled at and gestured to each other, and duplicated each other's actions.

**Amplified, Spotlights Communication and Actions.** We are all aware of the odd manner in which adults interact with babies and toddlers. Without conscious awareness, adults amplify their emotional expressions, pace their words to be better understood, and "spotlight," or emphasize, certain words and actions that they want to make sure do not escape the attention of the young child. Adults also communicate in a redundant and somewhat ritualized way that allows the child to more easily pick out the salient aspects of what they are trying to convey.

**Evenly Matched Peer Partners.** As children learn to reference caregivers and participate as partners, caregivers gradually increase their requirement for the child to function as an equal communicative partner. Once regulatory actions can be conducted rapidly, the child is ready to transition to encounters with equally matched peers. In typical development, the equal pairings that begin to emerge in toddlerhood allow children to practice coordinated exchanges as equals and to transition from shared rituals to more creative, spontaneous coordinated interaction.

When the child is ready, the primary social partners for experience-sharing are peers who are more or less evenly matched. Involvement with more competent, well-intentioned peers may in-



crease initial motivation and interaction attempts. However, intervention using more competent peers, no matter how well intentioned they are, has disadvantages when it comes to developing relationship competence. Interacting with more capable peers prevents the less skilled child from feeling competent, as well as depriving her or him of the experience of being an equal partner. More capable peers may make communication too easy by interpreting the child's wishes based upon unclear communication (Rubin, 1980).

More capable peers will not gradually increase their demands for co-regulation. They will continue to carry the weight of the relationship, leaving children with AS dependent on their regulatory actions and unable to sustain relationships on their own. Parents and more capable peers will not be interested in the slow-paced, simple, repetitive forms of practice and the hundreds of hours of simple coordinated actions required by the child with AS. They will be bored and move the interaction to more complex levels that render the child incompetent. In typical development, toddler peers often share an interest in certain activities, such as jumping off a step 20 times in succession, that would probably try the patience of even the most devoted parent.

Once children have learned to function as more equal social partners with adults and can successfully navigate reciprocal interactions with matched peers, other types of social partnerships emerge. For example, exposure to older siblings and children provides important coaching and periods for observation. Groups provide the means for children to learn how to maintain varied relationships within a larger, more complex social context. Being a coach to a less experienced person offers the potential to heighten the child's sense of mastery.

## Conclusions

Clinical intervention for youngsters diagnosed with AS represents a unique opportunity to demonstrate whether we can improve the social competence of

persons with AS. Research has conclusively pinpointed the central deficit of individuals with AS as being in the realm of understanding experience-sharing forms of social interaction. Yet, intervention programs are still almost universally geared toward teaching scripted instrumental "survival" social skills, which are important in their own right but cannot address the cardinal deficits of the disorder.

We have attempted to present a preliminary description of several factors that must be addressed by any intervention program seeking to develop experience-sharing relationship competence. Such intervention must be approached quite differently from other social behavior interventions. Numerous experiential samples of the joy and excitement obtained from successful experience-sharing encounters must be built into the intervention. Goals and objectives must shift from survival-oriented social behaviors to carefully developed and sophisticated abilities to socially reference and rapidly adapt, co-regulate, and coordinate actions, perceptions, feelings, and ideas with social partners. Intervention begins with adults functioning in the dual roles of guides and participants, carefully developing the child's desire and ability to function as an equal partner in experience-sharing interactions.

Only when partnership with adults is mastered does the child progress to learning to function as a partner to a peer who is functioning at a similar experience-sharing stage of development. Work begins in a setting that holds minimal distractions and uses simple frameworks that provide enough predictability to be learned without stifling the potential for novelty and ongoing variation (Gutstein, 2001; Gutstein & Sheely, 2002).

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