DEVELOPING INTERACTION ABILITIES
by Carol Westby, Ph.D.

Thoughts on Interaction in the Performance Competence Framework

The Performance Competence Framework for assessment has been evolving for over 10 years. During these 10 years, considerable research has added to our understanding of how children develop and the nature of disruptions to development. The Performance Competence Framework requires an integration of concepts across disciplines, yet the way individuals conceptualize the Framework will be influenced by their areas of interest or expertise. An occupational therapist will conceptualize or frame issues somewhat differently from a speech-language pathologist. As a speech-language pathologist, I frame issues of interaction around the concept of communication and the development of what has been termed naive physics and naive psychology that underlie the understanding of interactions in the world (Wellman, Hickling, & Schult, 1997). The infant and young child must be able to engage the world, physically and mentally, for the ultimate purpose of communication. To understand the interaction component of the Framework, one must consider both what the child brings to interactions and what the environment contributes to interactions.

The information that follows reflects my current conceptualization of the nature and development of interactions in children developing typically and atypically. Portions of this material have appeared in:

Bases of Interaction

Affect or feeling is the major organizing concept for the infant’s earliest interactive experiences (Bloom, 1990, 1993; Thoman, 1983). Infants experience objects and events mainly in terms of the feelings they evoke in them. They do not experience them as objects in and of themselves or for what they do or are called (Stern, 1990). Assuming that affective forms of communication precede, influence, and subsequently become integrated with linguistic communication, disruption of early social-affective relations may be a prelude to later emotional and language disorders. Because communication is dependent upon affective interactions between infants and adults, we must understand what children and adults bring to the interactive episode and the way these interactions are organized (Greenspan, 1992).

What the Child Brings to Interactions

Infants are not passive recipients of what people do to them. From birth, infants are capable of influencing their caregivers (Bell, 1968). Infants come with perceptual and motor abilities that permit them to engage in interactions. In the first year of life infants become experts in maintaining and modulating the flow of social exchange. They appreciate the causes of their emotional states. They acquire the signals to engage, avoid, or terminate a social encounter, and they can participate in a series of interactive exchanges (Stern, 1977).

Infant Engagement Tools. During the prelinguistic period children are developing not only the emotional intentionality that underlies the desire to communicate, but also the social behaviors that enable them to engage others and interact with objects in their environment. Newborns have reflexes that enable them to fixate on and follow an object. Infants are designed to prefer looking at faces over other objects (Sherrod, 1981) and to prefer speech over other sounds (Gibson & Spelke, 1983). Infants’ ability to gaze at people and objects of interest and to convey internal emotions through facial expressions provide the bases for the beginning of normally developing social interactions.
Baron-Cohen (1995) proposed three mechanisms that underlie infants' engagement abilities and a fourth mechanism that underlies children's ability to form mental representations of the mental states of others. The first mechanism, the Intentionality Detector (ID), interprets self-propelled motion stimuli in terms of volitional mental states of goals and desires. The child uses vision, touch, or audition to differentially respond to animate and inanimate objects.

The second mechanism, the Eye Direction Detector (EDD), has three functions: it detects the presence of eyes or eye-like stimuli, it determines whether the eyes are "looking at me" or are looking toward something else, and it infers that if the other organism's eyes are directed at something, then the organism sees that thing. This mechanism enables infants to recognize that they are seen by their mothers. The ID and EDD permit dyadic representations, that is, the relationship between an agent and object or the agent and oneself. They do not, however, permit the infant to recognize that both the infant and adult are attending to the same object or event. For this function, the Shared Attention Mechanism (SAM) is necessary. The SAM uses the dyadic representations to build triadic representations in which children recognize that they and someone else are both attending to the same object. This shared attention is essential if the infant is to communicate about a shared reality. The last mechanism, the theory of mind mechanism (ToMM) is a system for inferring the full range of mental states from behavior. The ToMM is a way of representing mental states (such as pretending, thinking, knowing, believing, guessing, deceiving) and tying these mental states into a coherent understanding of how mental states and actions are related.

From birth to 9 months, the infant has the ID and the basic functions of EDD that allow for dyadic representations. Around 9 months, SAM becomes active and, consequently, the child is now able to build triadic representations that make joint reference possible. SAM also links EDD with ID so as to enable eye direction to be read in terms of basic mental states. With the emergence of SAM, children are able to open and close circles of communication. A circle of communication has three components: the child shows an interest, the parent responds to that interest, and the child builds on the parent's communication. For example, the child reaches toward an object, the adult comments on the object, and the child picks it up and shows it to the adult (Greenspan, 1992). Finally, ToMM's arrival is heralded by the onset of pretend
play. This represents a qualitative change in development, because now children can begin to appreciate their own and other people's mental states, starting with pretending and progressing to "knowing" and "believing" over the next two years.

The development of these mechanisms can be witnessed in a variety of behaviors during infancy. At approximately 6 weeks, infants can visually fixate on their mothers' eyes, hold the fixation, and widen their own eyes. This fixation results in the mother feeling a greater sense of connection with the infant. With this eye fixation, social play between infant and adult begins in earnest. Infants cannot only seek out interaction, but can also terminate interaction. Infants can gaze directly into the adult's eyes, can turn their heads slightly so that they see the adult out of the corner of their eyes, or can lower their heads and turn far enough away to totally avoid visual contact. These engagement-disengagement behaviors enable infants to control the amount of stimulation they desire (Schaffer, 1984; Stern, 1977).

By the end of the third month, infants' mature motor control of gaze direction gives them complete control over what they see. With this ability they can start or stop face-to-face interaction, because these interactions are built around mutual gaze. By looking at the mother, infants can start an encounter, because the mother will look back. Children can continue the interaction by smiling, or end it by averting their eyes or turning their heads away. Mutual gaze represents the turn-taking that is later seen in verbal conversation. In these early months' babies are learning the nonverbal basis of social interaction upon which language is later built. They are able not only to fixate on an object, but also to pursue it. In the second half of the first year, infants become interested in objects as their increasing motor abilities enable them to reach, grasp, and manipulate the objects in their world. Once this occurs, the mother-infant interaction becomes a triadic affair between the mother, infant and object.

Infants less than a week old can distinguish facial expressions such as happy, sad, and surprised; and they appear to imitate those expressions (Meltzoff & Moore, 1977). Near the end of the first year they are able to engage in social referencing. They are able to perceive the link between a person's affect and the eliciting stimulus. Infants use this social referencing to make judgments about how to respond to a situation. They are particularly alert to a parent's indications of fear (Walden, 1993).
The infant's ability to convey emotional responses gives adults a topic for communication. The emotions of interest, joy, sadness, anger, surprise, disgust, and fear appear to be prewired into the system. In the first few weeks of life, the smile is reflexive, i.e., internally triggered. By 6 weeks to 3 months, however, the smile becomes a social response elicited by external events. At this point the smile may take on an instrumental function, i.e., the infant produces it in order to get a return smile from another person. The laugh is not present at birth. It first appears between 4 to 8 months in response to external stimuli. Initially, the laugh is usually triggered by tactile stimulation such as tickling. From 7 to 9 months, auditory events trigger the laugh; and from 10 to 12 months, it is most readily triggered by visual events. The cry face is present from birth, and some observers believe that the cry may be used instrumentally as early as three weeks of age. By the third month, the infant has the major emotional expressions in place. These expressions, and the sequence of behaviors associated with them, help infants regulate interaction with their mothers.

These social-emotional characteristics lead infants to interact with adults in ways that are useful for language development. All normal babies exhibit these gaze and emotional expression behaviors. They do not, however, all respond in the same way to their social and physical environments.

Temperament. Babies come with their own personalities or temperaments. Temperament is defined as behavioral style or the how of behavior. Temperament significantly determines the pattern of interactions infants experience with their environments; it determines what infants respond to and how they respond. Variations in infant temperament involve differences in general mood, in activity level, and in adaptability to changes in routine. Large differences also exist between babies in the intensity of their responses, in their tendency to approach or withdraw from new experiences, in their persistence, and in their distractibility. Infants also vary in their regularity of sleeping and eating and in their sensitivity to stimulation.

Thomas and Chess (1977) described three temperamental patterns: easy, slow-to-warm-up, and difficult. Recently, more positive terms have been substituted: flexible, fearful, and feisty. Flexible babies have a regular overall pattern. They accept new experiences easily, exhibit mild reactions to discomfort, and
make smooth adjustments to changes in routines. Fearful babies share some of the same style of flexible babies, but tend to withdraw from new experiences. They will gradually adapt to new situations, but need to be handled sensitively in the process. Such babies generally cannot be pressured into new experiences. Feisty babies are easily distressed. They express their likes, and much more often their dislikes in no uncertain terms. They react forcefully and negatively to new experiences and to even minor changes in routine, and they show little or no consistency in their schedule. It is hard for caregivers to predict their behaviors.

Infants' temperaments are a major factor in determining the nature of the interactions that infants experience with significant people in their environment. What is essential for the best development of children is that there be a "good fit" between infants and their caregivers. Flexible babies, who are so adaptable, can be reared by nearly anyone. Fearful and feisty infants take more sensitivity and insight on the part of caregivers. Goodness of fit results when the expectations and demands of the environment are in accord with the child's own capacities, motives, and behavioral style (Chess & Thomas, 1987). Poorness of fit occurs when there are dissonances between the two that may lead to incompatibility. An active, intense parent may be comfortable with an intense baby who cries vigorously with change. The parent may see the child as reflecting his/her own behavior patterns and have strategies to calm the child. A parent who expects the infant to have a regular time routine and be able to tolerate changes in caregivers may be unnerved by a feisty baby and have no idea of how to calm or interact with the child. Children with difficult temperaments can be perfectly normal children who can develop normal social behaviors, but their temperament does predispose them to developmental problems because their caregivers may not be able to establish effective communicative interactions with them. Infants who differ in temperament may experience identical stimulation much differently. Rough and tumble games may delight one child and overwhelm another. Lullabies may be ignored by one child, but provide great pleasure for another.

Mastery Motivation. Communicative competence is not merely a function of cognitive, linguistic, and social-emotional abilities, but also a function of motivation (Scarr, 1981). Mastery motivation assumes that a child not only receives stimulation from the environment, but also initiates
interactions that elicit stimulation from the physical and social environment. To engage in activities, children must feel comfortable and safe (Westby, Stevens-Dominguez, & Otter, 1996). The more children engage in mastery motivation activities, the more exposures they have that will facilitate their social and intellectual competence. There are two aspects of mastery motivation: mastery pleasure and persistence (Brockman, Morgan, & Harmon, 1988; Yarrow, 1981). Mastery pleasure is defined as instances of positive affect during task-directed behavior or immediately following a solution. Persistence is defined as the amount of time a child works at or plays with toys in a task-directed manner. Before 9 months of age, exploration and curiosity are identified as the best indicators of mastery motivation. Mastery motivation can be observed in a variety of situations, from highly structured to free play, and from several sources, including direct observation of a child's behavior and parental, caregiver, or teacher ratings. Children who exhibit higher levels of mastery motivation increase the range and frequency of their experiences with the social and physical world, and, as a consequence, provide themselves with more opportunities for communicative interactions.

What Caregivers Bring to Interactions

Children set the tone for interactions, but caregivers determine what children learn about interactions within the culture. Professionals working with families from diverse cultures need to become familiar with the strategies used in adult-child and child-child interactions.

The majority of information regarding socialization of communication comes from studies of white, middle-class families. Mainstream adults attend carefully to infants' smiles, noises, and movements as they play with them. In these interactions, infants' excitement builds and then peaks. Infants may bring their hands to their mouths, suck on their tongues, or yawn in an effort to control their excitement as the play peaks. They begin to smile less and make fewer sounds and may even begin to grimace. Then they turn away slightly. They use the period of looking away to recover from their excitement. They then turn back to the parent and the cycle begins again. When infants turn away, adults generally decrease their attention
to the infants. When the infants turn back, adults begin to interact again, smiling and vocalizing (Schaffer, 1977; 1984).

Most caregivers use a variety of behaviors to engage and maintain the interest of infants. When caregivers interact with infants they often exaggerate their facial expressions in space and time. Caregivers may use an expression of mock surprise—opening their eyes wide, raising their eyebrows—and saying something like ooooh or aaaaah to signal a readiness to interact. They may move their heads from side to side or toward the infant. The facial expressions are slow to form and are then held. Caregivers may play with the speed and rate of these behaviors, speeding up and then slowing down. As the interaction continues, they may smile to indicate that the interaction is going well, or they may use an exaggerated frown or pout when the interaction is running down or in trouble. The repertoire of facial exaggerations is limited, and a few patterns are repeated frequently. Stern (1977) suggested that these facial exaggerations facilitate infants' abilities to read facial expressions.

Many caregivers also tend to engage in baby talk (Snow & Ferguson, 1977). They simplify syntax, use short utterances, use many nonsense sounds, transform words (e.g., "pwitty wabbit" for "pretty rabbit"), raise vocal pitch, and exaggerate loudness and intensity of vocalizations—ranging from a whisper to a loud "pretend scary" voice. Sometimes the speech is speeded up, and other times it is slowed down, elongating vowels on certain words, e.g., What a gooooooood little baby. Pause times between utterances are also elongated, as though to allow time for the infant to respond. The caregiver appears to be shaping the infants turn-taking behavior to the form necessary when they become verbal. The mother also tends to repeat runs of interactions, you're a pretty baby; you're such a pretty baby, you're the prettiest baby mommy has ever seen. Many of these runs involve questions and answers, Are you hungry? Are you? Huh? I think you are. During each vocalization the mother brings her head closer to the infant. Between questions the mother moves away. Each question is accompanied by a distinct facial expression.

From the infant's birth, mainstream adults look for reasons for infants' behaviors and comment to the infants about possible intentions, e.g., You're so hungry. You don't like beets. You want mommy to pick you up. When adults view infants as intentional, they attempt to find the object or event (referent) that is
triggers the child's behavior (e.g., You're looking at your teddy bear. You want your bottle.). In so doing, adults guide children into referencing (labeling) and requesting behaviors. As children develop the verbal ability to label and request, adults provide scaffolding questions to assist the children in producing more information.

**Goal-Directedness in Interactions**

Development of communicative interactions involves the development of goal-directed behaviors and the ability to share one's goals with others. Emotions that drive communication often arise from events related to goal achievement. Emotions rise and fall with success or failure to achieve one's goals. One generally experiences joy when a goal is achieved, anger when there is an obstruction to a goal, and sadness when a goal is lost or not achieved. Wetherby and Prizant (1989) and Dunst and McWilliam (1988) present a model of goal-directed development and interactive competencies that includes both social and nonsocial aspects of development.

Attentional interactions refer to the child's capacity to attend to and discriminate between stimuli. These are behaviors that infants use to respond to and maintain stimulus inputs. Attentional behaviors can be manifested in a variety of ways, e.g., looking at an object or person, orienting toward sound, smiling in response to a familiar person, laughing in response to an interesting event, tracking an object moving across the field of vision, grasping an object placed in the child's hand. The interactions are triggered by environmental stimuli rather than initiated by the infant. The infant has no goal, or awareness of a goal. The infant uses a diffuse fuss or reaction to express emotion. When adults are aware that an infant is responsive to environmental events and is attempting to maintain these events, attentional interactive competencies enable adults to reinforce the child for gaining and maintaining control over stimuli.

Contingency interactions. Contingency interactive behavior is the infant's capacity to initiate and sustain interactions with the environment. At this stage infants begin to have awareness of a goal. They engage in repetitious behavior to maintain an event produced by their own actions. These behaviors are
called undifferentiated because the child will attempt the same behaviors, such as vocalizing, touching, or batting, regardless of the stimuli. Contingency interactive behaviors may include batting at a mobile to produce a sound, touching an adult's mouth to get the person to repeat an interesting sound, or vocalizing to get attention. Contingency behaviors elicit an environmental stimulus, unlike attentional interactions that are elicited by environmental events. In this stage infants are capable of dealing with the world. Their hand-eye coordination and their hand-to-hand coordination permit them to reach, grasp and manipulate the world of inanimate objects. Children in this stage are beginning to structure their social world. They are becoming aware that they are agents, i.e., that they can make things happen, and that they are separate physical beings from their mothers. They are beginning to sense that they have feelings, like happiness or hunger. They are starting to construct in their minds a world of people, including themselves. There are distinct people in it--the infant, mother, father, those involved in the infant's everyday life. Greenspan and Greenspan (1985) suggest that this is the falling in love stage. The infant recognizes familiar people and rewards them with smiles. These behaviors lead to three important developmental competencies: contingency awareness, predictability, and controllability. Contingency awareness refers to infants' awareness of their own capabilities, i.e., that they can produce interesting effects in the environment. Predictability refers to infants' awareness that certain behaviors can repeatedly produce the same effects in interactions with social and nonsocial environments (Lamb, 1981). Controllability refers to infants' capacity to understand that certain aspects of the environment can be affected as a function of their attempts to produce environmental consequences.

Differentiated interaction refers to the infant's ability to coordinate and regulate (e.g., modify and adjust) behavior to achieve goals. Children have a simple plan to achieve a goal. Children's interactions match or approximate social standards and expectations (e.g., raising arms to be picked up, rolling a toy car, drinking from a cup). Children are now in the illocutionary stage and have purposeful communicative intentions. They know when they want something and they may have several strategies for getting what they want. They may crawl to it and pick it up; they may pull a cloth on which it is resting and draw the object toward them; or they may pull a string attached to the object. They may fuss and look between the
desired object and an adult. They also know that another person can have the same intention. If the child's mother has a cookie, and the child wants it, she may reach toward the cookie, looking back and forth between her mother and the cookie. If that doesn't work, she may pull on her skirt and vocalize with increasing loudness. The behaviors children acquire are, in part, affected by the environmental demands placed on them. In the previous stage, the infant engaged in the same types of behaviors with all objects, e.g., hitting, mouthing. Now children use different behaviors with different objects. Soft, furry objects are patted, balls are thrown, cars are rolled. They also exhibit different interactional behaviors with different persons. They expect rough and tumble games with dad and quiet sit-down activities with mom.

Encoded interactions represent the beginning of the locutionary stage. The child coordinates a plan to achieve a goal using a variety of both motoric and verbal behaviors. Encoded interactions are preplanned rather than the result of trial and error. They use conventionalized forms of behavior, e.g. verbal language, that are based on a set of rules that govern their construction. These interactions are tied to the immediate context and will not be used in unfamiliar contexts or when people or objects are not present (e.g., the child uses the word dog only to refer to his own dog or will ask for a cookie only when he sees a cookie). With encoded behaviors children can both initiate and sustain interactions and adapt and respond to requests and demands.

In symbolic interactions children can design alternative plans to achieve goals. If one plan is not successful, the child tries another. For example, if the child's verbal request was not responded to, the child may revise the request. They may repeat it louder, add please, or, in later preschool, rephrase the request. The behaviors are termed symbolic because the child's uses words, images, or drawings as signifiers for objects, persons, and events. In contrast to encoded behaviors, which are tied to the immediate demands of the environment in which the child is currently functioning, symbolic behaviors permit the recollection of previous events or evocations of future events. Symbolic interactions are rule-governed, conventionalized behaviors that are used to describe, request, and enact persons, objects and events in the absence of reference-giving cues.
Once children have established symbolic behaviors, they can reflect on these behaviors, developing a metapragmatic awareness of a plan to achieve a goal. By age three they can reflect on the means to achieve a goal and their success or failure in achieving it. They may comment on what may work or not work, e.g., She'll give it to you if you say, pretty please, or tell him you'll trade him four Matchbox cars for one turtle.

At each level the child has the potential for engaging and modulating behavioral functions. The child uses engaging behaviors to initiate an interaction or to sustain or repeat an interactive episode. The modulating function refers to behavior a child uses to regulate or adapt to an interaction. Regulating behaviors are used to terminate input or to reinstate input. Adapting behaviors are used to respond to others' efforts to establish interactions or to get the child to respond to adult requests or comments. The nature of the interpersonal context will affect the engaging and modulating behaviors of infants (Lamb, 1981). Attachment behavior and stranger anxiety are more likely to be manifested indoors than outdoors (Blurton-Jones, 1972) and to be more intense in a laboratory setting than in a child's home (Lamb, 1981).

**Disabilities Affecting Interaction**

Ability to engage in interactive behaviors can be disrupted by factors within the environment or factors within the child.

**Factors in the Environment**

In some instances parents may be less able to read children's cues, may be less available to engage in interaction with children, or may misinterpret an infant's behavior (Field, et al., 1981). Hinde (1976) suggested that "What a person thinks about a relationship may be more important than the interactions that actually occur" (p. 4). Parents interpret an infant's behavior (which may be perfectly normal) according to their own values, intentions, repulsions, et cetera. Robson (1967) reported a case of a mother, who, when she looked at her 3-week old son's attempts to capture her gaze, declared, "He looks daggers." With such an attitude, the mother avoided making eye contact with her infant.
Some parents may simply be poor matches with their infants. They may not be able to cope effectively with the temperamental style of their infants. They march to the beats of different drummers. The parents may overstimulate or understimulate their infants. Adults who overstimulate tend to engage in overcontrolling intrusive behaviors with infants. Overstimulating adults may fail either to read or to respond to infants' efforts to control stimulation. What the baby does matters relatively little. In such interactions, infants lose opportunities to discover that they can regulate the external environment, and, as a byproduct, their internal state through emotional communication. In the face of consistent and marked overstimulation, the baby can go limp or develop a pattern of staring through the adult (Stern, 1977).

Depressed, emotionally disturbed, or intellectually limited parents may understimulate an infant. A depressed mother may go through daily caregiving activities, but not engage in a range of communicative intensity to attract and hold her infant's attention. She is likely to fail to use exaggerated expressions, vocal shifts, or repeated escalating vocal patterns to attract her infant's interest. Young or intellectually limited parents may have few ideas of how to interact with infants. Once they have gone through their repertoire, they may stop.

Children reared in abusive and/or emotionally neglectful circumstances may experience fewer instances of positive social interactions; and, even when such an interaction is available, the children may be in such a constant state of fight or flight that they cannot attend to the communication (Perry, 1997). Such children may suffer long-lasting social-behavioral-communicative deficits. Perry (1997) suggests that lack of appropriate affective experiences in early life can result in neurological differences and associated malorganization of attachment capabilities. During development, abused/neglected children spend so much time in a low-level state of fear that they are constantly focusing on nonverbal cues. Such children feel no emotional attachment to other humans, and they fail to develop appropriate social-interactive relationships and communication skills (Alessandri & Lewis, 1996).

Infants with under- or overstimulating caregivers have fewer opportunities to participate in satisfying social interactions and to discover ways they can affect their environments through communication. Infants and toddlers from welfare families hear fewer words and receive more
discouragements and fewer encouragements for talking than children from professional and working-class families (Hart & Risley, 1985). As a consequence, one might also expect to find differences in social-communicative interactions.

**Factors within the Child**

Children with cognitive, syntactic, or semantic deficits are also likely to show delays and differences in social or pragmatic aspects of communication. Children who were born prematurely, have significant medical problems, or are mentally retarded are less able to engage in the conversational dance during infancy, and, hence, are at risk for pragmatic deficits beyond what would be expected based on their cognitive abilities alone. Some conditions, such as blindness and autism, particularly affect the social-emotional or pragmatic aspects of communication development. A number of factors may result in children with these conditions being less able to be involved in communicative interactions or for the adult to be less able to read the child's involvement.

**Blindness.** Early social interactions, gesturing, and the development of referencing are all dependent upon vision. Blind children are generally delayed in acquisition of first words and may not use them for communication. They repeat words to themselves and fail to produce them to initiate interactions until well into their third year (Urwin, 1983). By 6 months of age, the sighted infant has developed a large repertoire of social interactions. Blind children, however, have no way of watching their mothers' facial expressions or of engaging in joint attention to visual events with her. And because blind babies stop looking at their mothers after the end of the reflex period, mothers do not pick them up as often. Consequently, infants miss opportunities for communicating.

Lack of vision particularly affects the development of joint attention, which is essential for establishing referencing that is necessary for communicating. The ability to reference requires:

1. Attracting attention to oneself.
2. Assessing the listener's focus of attention.
3. Directing attention to external referents (Mulford, 1983).

Blind children may have difficulty determining whether their intended listeners are attending to them, or even if the persons are present. Knowing that the person is present, however, is no guarantee that he/she is paying attention. Even if the person is present, and has been listening, the child has no way of knowing if the person's attention has shifted to something else. The child must gain the listener's attention. The blind child does not have the option of establishing mutual gaze or gesturing. They must, instead, either touch the listener or vocalize. For normal-sighted children, vocalizing to gain attention and establishing joint referencing are initially superimposed on earlier gestural strategies. Without vision, blind children develop few gestural communications. The blind child also may not be certain if the referent exists in the environment or if the listener is attending to it.

Many of the blind child's early referents are names of people rather than names of objects. Use of language for requesting purposes appears in sighted children by the end of the first year, but closer to the end of the second year in blind children. Because blind children's nonverbal behavior so often fails to provide topics for comment, parents frequently adopt a questioning mode of interaction. Although questioning may facilitate an early form of turn-taking between parent and child, because the initiative is always with the adult, the practice inhibits the child's development of awareness of his own agency, i.e., awareness of the ability to make things happen in the environment (McGurk, 1983). Despite these early deficits, blind children who have no other handicapping conditions and who have adults who are alert to the interaction of blindness and language, can develop normal communicative interaction patterns during the preschool years. Many, however, show patterns of delays and disorder in communicative interactions.

**Autism.** Autism is probably the condition most commonly thought of as affecting social/emotional communication. Early ideas about the cause of autism suggested it was due to poor parent-child interactions. Although the exact cause or causes of autism are still unknown, it is accepted that the deficiency lies within the neurological or biological functioning of the child (Anderson & Hoshino, 1987; Golden, 1987; Ornitz, 1987). Autistic children exhibit a fundamental failure in socialization. T
social disfunction observed in autistic children is never observed in normal children of any age and cannot be accounted for on the basis of mental retardation alone. Autistic children show deficits in three areas related to social engagement: sociability and social communication, attachment, and understanding and expressing emotions (Cohen, Paul, & Volkman, 1987).

Deficits in socialization may be noted early. Many of the social communicative deficits exhibited by autistic children reflect deficits in SAM and ToM M (Baron-Cohen, 1995). Many autistic children exhibit deviant patterns of gaze from early infancy. Young autistic children may avoid eye gaze, while some older children may stare fixedly and inappropriately (Rutter, 1978; Wing, 1976). Deficits in joint attention and referential pointing, which depend on SAM, readily discriminate autistic from non-autistic toddlers (Lord, 1993). Without a functioning SAM, ToM M cannot be triggered. Without ToM M, autistic children have difficulty recognizing the goals and beliefs of others; and without ToM M, much of the social world would appear unpredictable.

Many autistic children fail to show differential attachment to familiar people and may show less distress with strangers and separation from family members than normal children. Autistic children tend to show a greater interest in objects than in people, unlike normal children who show a greater interest in people than objects. Autistic children exhibit deficits in gestural forms of communication, as well as in verbal communication. Some autistic children never acquire oral language. Of those that do acquire oral language, primary deficits are in use of language, not in the form of language (Bartolucci, Pierce, & Streiner, 1980; Boucher, 1976; Trager-Flusberg, 1981). Autistic children exhibit a sparsity of intentional communicative behaviors. Even when they possess good syntactic language skills, they do not use language well for communication and interaction. They tend to be poor at initiating conversation, although they may not be unresponsive if another person initiates it (Loveland, Landry, Hughes, Hall & McEvoy, 1988). When they do bring up a topic it is often related to their own preoccupations, and their remarks or questions are usually uttered without varied inflection (Rutter & Garmezy, 1983). They are likely to interrupt and respond inappropriately in conversations (Paccia-Cooper, Curcio, & Sacharko, 1981). Some engage in persistent and perseverative questioning that does not serve the purpose of requesting information
(Hurtig, Ensrud, & Tomblin, 1980). Although some basic intention to communicate exists, autistic children have little skill in participating in communicative activities involving joint reference of shared topics, and particularly in supplying new information relevant to the listener’s purposes (Paul, 1987).

Autistic children lack a normal affective range. They do not show normal transitions from calm to aroused states. Some are too calm and undemanding, never showing any needs. Others are exceedingly irritable and inconsolable. In addition to the difficulties in showing their own feelings, they fail to understand the feelings of others. Harris (1989) suggested that deficits in understanding and expressing emotions may account for many of the communicative and pretend play deficits that are observed in autistic children. In studies by Hobson (1990), autistic children could match a drawing of a facial expression to a facial expression they had seen in a film. They could not, however, match a gesture, a vocalization or an emotional context with a facial expression. They did much worse than normal and retarded children matched for mental age. The autistic children had difficulty recognizing that different emotional signals—a gesture, a facial expression, a tone of voice, or an emotionally charged situation—can all signify the same emotional state.

But how would a deficit in reading other people’s emotional expression result in a lack of play and poor communicative interactions? Understanding of emotion depends on an understanding of other mental states, particularly desires, and beliefs (Harris, 1989). Without a ToM, autistic children have less awareness of psychological states, particularly desires. When children were asked to tell a story about a sequence of pictures, the autistic children made many fewer references to mental states of the story characters, including desires, than did normal and retarded children matched for cognitive level. Although a normal child might begin a story by saying: "The boy is putting the sweet in the box so nobody won’t find it," an autistic child would simply describe the actions with no reference to the character’s motive.

If autistic children do not understand other people’s expressions of emotion, they will find it difficult to form normal relationships with them. They will find people unpredictable and, perhaps, even frightening. They may understand physical or mechanical forces in the world, but not psychological forces. Hence, they will engage in physical interactions with the world, but not in communicative interactions with
other persons. Understanding of a person’s mental state and pretence have important similarities. Numerous studies have reported that autistic children exhibit difficulty with symbolic pretend (Harris, 1989). Pretend requires awareness of a mental world apart from a physical world. Pretend involves a willingness to entertain temporarily a false proposition. Leslie (1987) suggested that autistic children, unlike normal children, cannot temporarily disengage from reality and entertain pretend or non-truths.

When language first emerges in normal children, it is used along with gestures. For example, children point to an object and look back and forth between the object and the person whose attention they are trying to direct, while saying a word. The implication is that they realize that other people may not be following their gesture, and they look to see whether the gesture is being registered and responded to. The combination of pointing plus looking suggests that the children appreciate that other people can have visual experiences like their own, provided they look in the same direction and that their attention can be directed by gestures such as pointing. Compared with normal and retarded children, autistic children are less likely to check that the adult is paying attention to the same object or event as themselves. They point less often and show objects to adults less often, and when they hold an object or watch an interesting toy they rarely look to the adult (Mundy, Sigman, Ungerer, & Sherman, 1986; Sigman, Mundy, Sherman, & Ungerer, 1986). Thus, they establish joint attention less frequently than normal children. As discussed earlier, joint attention is an important precursor to early conversation. A child who could not engage in such joint attention, or who avoids it, would have difficulty in grasping early language functions.

Communication requires that one be able to conceive of another’s sharing an interest about an object or topic. A key symptom of autism is the child’s inability to enter into joint attention and affective contact with other people. Although the difficulties of autistic children have a cognitive basis, they also have a social/emotional basis.

**Conclusion**
All elements of the Performance Competence Framework must come together to allow physical and psychological interactions with the world. Without interactions, there can be no Membership, Personal Sense of Competence, or Quality of Life.