which may appear attractive from a research point of view, are likely to produce a great deal of variability in functioning or bring out the child's lowest level of possible functioning. In contrast, optimal levels and stability of performance are enhanced by the flexibility of the presentation.

Criteria for Immediate Evaluation vs. "Wait and See"

A child with functional developmental impairments involving foundation-building capacities, such as relating and using gestures to communicate and problem solve, often requires *immediate* attention, not a "wait-and-see" attitude. Because functional capacities build on each other and there is mounting evidence of age and time limits to developmental, neurobiological plasticity in a child's brain, delaying evaluation can increase functional impairments. Delaying intervention until a child is 3 or 4 years old and evidences a clear syndrome tends to increase the therapeutic challenge and may affect the ultimate prognosis. As the child falls further and further behind, there are more missed opportunities. Therefore, a determination of developmentally significant functional impairment in and of itself should serve as a criterion for initiating an appropriate evaluation and intervention. This is especially true for functional impairments that derail the child's ability to attend, relate, communicate, play, or think. Because the functional impairments are the focus of the intervention, it is possible to begin the therapeutic work even while observing the child over time to determine an appropriate diagnosis. As new observations are made, the intervention program can be revised. In assessing functional impairments, distinctions must be made between circumscribed problems that do not derail the basics of relating, communicating, and thinking and more substantial challenges that do derail them. For example, a toddler with a mild articulation problem who relates and communicates with purposeful gestures (e.g., takes Dad to the toy chest) has a circumscribed difficulty. This child is significantly different from a toddler who cannot use social gestures to show what he wants, even if he can repeat words and is being derailed in his fundamental ability to relate and communicate.

RETHINKING AUTISM, MENTAL RETARDATION, AND SEVERE ATTENTIONAL AND LEARNING PROBLEMS

Moving from standardized, one-time assessments to observing functional impairments in the context of truly helpful interventions over time will certainly change how therapists diagnose problems. It may, at times, change the ultimate diagnosis chosen for a child. These ongoing observations are especially relevant for autistic spectrum disorders, mental retardation, and many types of attentional and learning problems.

Autistic Spectrum Disorders

Some children who meet DSM-IV criteria for autistic spectrum disorders have responded very quickly to developmentally based, comprehensive intervention programs and become warmly related, interactive, and verbally communicative (Greenspan, 1992; Greenspan & Wieder, 1997, 1998). Within 1 year, for example, many of these children became engaged and interactive, overcoming their perseverative and self-stimulatory patterns. After 2 years of intervention, many used language flexibly and creatively, though still with delays. If the diagnosis of these children had been delayed for a year while

Protective, Stable, Secure Relationships

At the foundation of the intervention pyramid are the protective, stable, developmentally supportive relationships and family patterns that all children require, especially those with developmental challenges. This foundation includes physical protection and safety and an ongoing sense of security. Some families require a great deal of support, therapy, or both in order to stabilize and organize these basic family functions. For example, some families may be dealing with extreme poverty and chronic states of fearfulness, abuse, and neglect. Some families require counseling to explore family patterns and relationships, particularly in connection to the challenges of coping with a child with special needs and the effects on relationships between spouses and siblings.

Intervention programs require staff trained to assess family needs, develop alliances, problem solve, and advocate, including advocating for social and economic support. They also need to provide family counseling and family or personal therapy where indicated (Barber, Turnbull, Behr, & Kerns, 1988; Bronfenbrenner, 1986; Dunst & Trivette, 1988; Powell, Hecimovic, & Christensen, 1992; Robbins, Dunlop, & Plienis, 1991; Turnbull et al., 1986; and Shanok, Chapter 14, this volume).

Ongoing, Nurturing, Trusting Relationships

At the second level of the pyramid are the ongoing and consistent relationships that every child requires. Typically developing children require nurturing relationships to help them achieve emotional and cognitive competency. Children with special needs, who often already have compromises in their capacities to relate, are in even greater need of warm, consistent caregiving. Their caregivers, however, often face challenges in sustaining intimate relationships because it is so easy to misperceive their children's intentions. Understanding their children's behavior as attempts to cope with their difficulties or as being overwhelmed by their difficulties can often help caregivers recognize these misperceptions and develop more creative and empathetic ways of relating to their children. For example, children who are hypersensitive to touch may not be rejecting their parents' comfort and care. For such a child, parents may have to avoid light touch and use deep pressure to help the child feel more comfortable. Or, parents may need to understand that the child who jumps on a toddler who is crying may not be primarily aggressive but is so sensitive to the sounds of the cry that he panics and wants the noise stopped. Similarly, the child who has difficulty comprehending words may become confused and avoid communication. He may benefit from pictures or gestural signs to understand his environment and predict what will happen next in his interactions with caregivers. The child who is generally avoidant or self-absorbed may be underreactive to sensations, have low muscle tone, and need greater "wooing" to get beyond his self-absorption.

The importance of interactive relationships cannot be underestimated. Almost all learning occurs in relationships, whether in the classroom, with the family, or in therapeutic sessions. No one would deny that the ability to enjoy and participate in relationships is pivotal for learning to relate to others, experience intimacy and positive self-esteem, and develop healthy coping strategies. In addition, most cognitive or intellectual capacities learned in the first 4 or 5 years of life are also based on emotions and relationships (Greenspan, 1997a). For example, infants

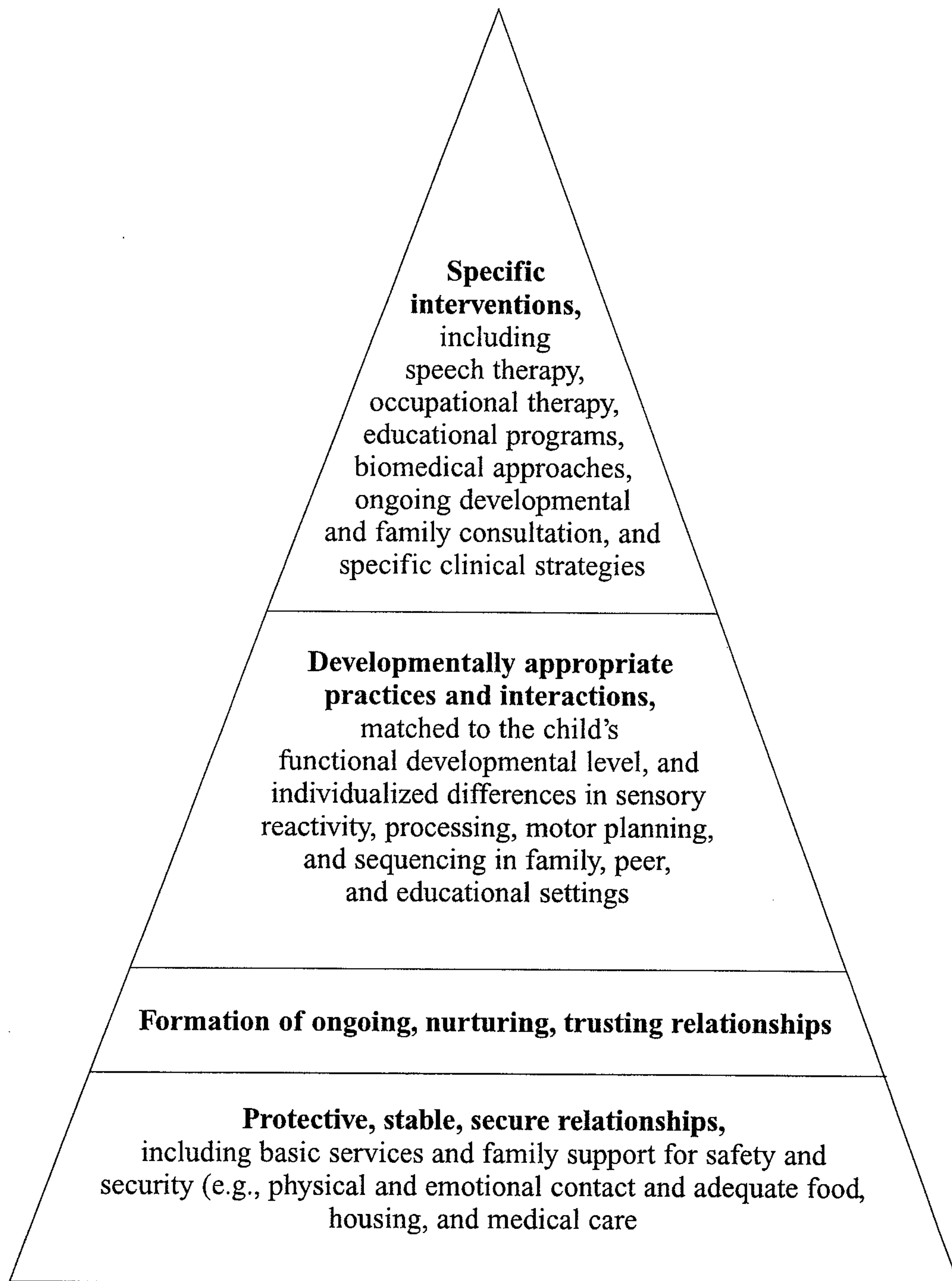

Figure 1. The Intervention Pyramid for Children with Special Needs

first learn initial concepts of causality in early relationships, as a smile lead to a smile back, crying leads to comfort, or reaching out leads to being picked up, rather than in activities such as banging objects on the floor, which leads to learning that this action makes a sound. Similarly, the meaning of words and gestures, the sense of time, and concepts of quantity are also learned as part of interactive, affective relationships early in life (Greenspan, 1997a). For example, for a toddler, "a lot" is more than she expects; "a little" is less than she wants. Words are connected to the emotional experiences that define them, and gestures become organized into patterns associated with emotions and expectation. For example, Dad's smile leads to a hug and tickle.

Relationships serve a number of functions for young children. Most important, they must foster warmth, intimacy, and pleasure. In addition, relationships provide the context in which children experience security, physical safety, protection from illness and injury, and fulfillment of their basic needs. The regulatory aspects of relationships (for example, protection of the child from over- or understimulation) help the child maintain pleasure in intimacy and a secure, alert, attentive state that permits new learning and development to occur.

Relationships provide the basis for communication. Initially, the infant's communication system is nonverbal. It involves affect cueing (smiles, assertive glances, frowns), contingent behavioral interactions (pointing, taking and giving back, negotiating), and the like. From the earliest reciprocal smiles to a child taking her mother's hand, walking to the refrigerator, and pointing to a favorite food, there emerges a complex system of affective, gestural, and behavioral interactions that continues throughout the life of the individual. Even though this nonverbal system eventually works in conjunction with symbolic-verbal modes of communication, it remains more fundamental: for example, adults tend to trust a person's nonverbal nod or look of approval more than words of praise. The system of reciprocal affective gesturing enables the child to negotiate with his caregivers (environment) in small, graduated increments. Therefore, self-regulation improves and becomes context-dependent, and learning can become subtle and highly differentiated.

Relationships are, therefore, the context for learning which behaviors are appropriate and which are inappropriate (Greenspan, 1974, 1975). As children's behavioral repertoires become more complex in the second year of life, discriminative and reinforcing properties of relationships define which behaviors increase and which behaviors decrease. Repertoires are built up through the give-and-take between children and caregivers (i.e., discriminative learning). In addition to behaviors, relationships help organize a child's wishes, emerging self-perceptions, and a sense of self. The emotional tone and subtle affective interactions of relationships are, therefore, just as important as more easily observable behaviors.

Relationships enable a child to learn to symbolize experience. The first objects with which the child has a highly emotional experience are not playthings, but rather the human "objects" with which he interacts. In his interactions, the child goes from "acting out" his desires or wishes to picturing them in his mind and labeling them with a word. He goes from desiring Mom and grabbing her to saying "Mom" and looking at her lovingly. This transformation heralds symbolic awareness.

The ability to picture an object when it is displaced in both time and space is a much-used marker for the child's achievement of *object permanence* and the emergence of symbolic capacities. Pretend or imaginative

Semistructured, problem-solving activities also need to be geared to each child's unique profile. When put into a problem-solving context with emotional intent, the following types of activities may also be included:

- *Imitating new words and using concepts* that help the child solve a problem he wants to solve, for example, "open," "up there," or "go."
- *Motor-based challenges,* such as gross-motor movement, balance, movement in space, running, jumping, spinning, perceptual-motor activities (involving looking and doing and crossing the midline).
- *Spatial problem solving,* such as treasure hunt games in which the child is given clues about how to find her favorite toy, first in the box in front of her and, eventually, in the box upstairs near another box behind the blue chair.
- *Motor-imitation exercises,* such as copying the caregiver by touching eyes, ears, nose and, eventually, vocal (sound) imitations leading to word development.
- *Spatial and quantity concepts,* such as "here," there," "big," "little," and, eventually, including "more" or "less," and association of numbers, time, or distance (e.g., finding Mommy in different parts of the house, negotiating one versus three cookies, or showing with hands the difference between a little and a lot).
- *Facilitation of conceptual understanding* by using cards where the word is under the picture and is used to help the child get the juice or a favorite toy, or as a cue for pretending what the word or sentence conveys.
- *Visualization exercises,* as the child becomes older, to help the child picture words, sentences, or quantities ($2 + 2 = 4$) to facilitate a deeper understanding of concepts. These concepts may also be acted out.

Specific therapies often work in a semistructured manner on these types of important capacities. (See the Table of Contents for related chapters.) Team meetings should suggest the goals of this part of the home program.

Peer Interaction

Peer play is especially important once the child has mastered preverbal problem-solving skills and is moving into the early stages of using ideas in a functional and spontaneous manner. The now-engaged, intentional, partially verbal, and imaginative child needs to practice his emerging skills not only with adults but also with other children who are at a similar or higher developmental age (i.e., the other children need to be interactive, somewhat verbal, and imaginative). However, the playmates need not be the same age as the child. For example, if the child is $4^1/_2$ years old, but has a functional, emotional developmental capacity of 3 years, he might prefer the company (and vice versa) of 3-year-old playmates.

At this point, individual, one-on-one play dates should occur four or more times per week for one hour or more. Initially, an adult may have to facilitate the interactions to help deter the children from drifting into parallel play. The adult may create a game to help the children work jointly, such as having both children hide together while the adult tries to find them. While following the children's lead, the caregiver is also free to create games that facilitate interactions among the children. The goal is to help the children "rub shoulders" with each other and to communicate with gestures and words.

The need for peer play occurs at about the same time that a child needs to be integrated, often with an aide, into a regular preschool program or into an ongoing inclusion or integrated program.

Setting Limits, Facilitating "Compliance"

Developmentally appropriate practices used to foster new functional capacities can help parents, clinicians, and educators with one of their most difficult challenges—how to integrate the process of setting limits and compliance with other clinical and educational goals. Following rules and maintaining safety are understandable goals. Not infrequently, however, the need for compliance and control takes the form of strapping a child into a chair, physically forcing him to walk to the bathroom, or using other types of restraint.

The key to teaching a child to follow rules is to provide developmentally appropriate practices and interactions that meet the child at his functional developmental level in the context of his individual differences. For example, for a child who is impulsive and is not yet capable of logical, verbal thinking and conversation, developmentally appropriate interactions mean a one-on-one aide working with the child on the basics of relating and purposeful interaction. The back-and-forth signaling, which will include limits, however, will be of the type one would implement with a 1- to 2-year-old child. Through this type of one-on-one interaction, the child gradually learns how to be a purposeful, preverbal communicator. Gradually, responding to limits becomes a part of this purposeful communication. Expecting a child who can not yet negotiate basic needs with a series of back-and-forth signals to follow group-oriented rules will often result in frustration, anger, impulsive behavior, and, more importantly, slower progress. Developmentally appropriate practices are more likely to tap into potential plasticity from within the individual child's own brain than will externally-imposed structured techniques (i.e., too complex or restrictive) that bypass neural networks already in place.

As a child makes progress and is purposefully interactive, both encouragement and sensitive limits can help him work with groups of children and follow expectations. Dangerous, as opposed to noncompliant, behavior needs to be dealt with immediately with firm but gentle limits. These limits should be based on the child's functional developmental capacities, not on actual age or expectations for the other children in a group. Just as Congress has appropriately mandated that a child be educated in the least restrictive environment, therapists should teach the child the *least restrictive, developmentally appropriate* tactics to control his behavior and be sensitive to the needs of others.

Specific Therapies and Educational Strategies

At the apex of the pyramid are the specific therapeutic and educational techniques that build on and also facilitate the child's basic capacities for attention, engagement, intentional two-way communication, and the creative use of symbols. In this way, new capacities are tied to the child's sense of purpose and self (i.e., his affects). Integrating therapeutic strategies into the child's naturally occurring interests and activities can be very helpful in simultaneously fostering her capacities to initiate, engage, communicate, problem solve, and think, as well as learn new functional skills. While new skills are on the ascendancy, perhaps in relation to maturational shifts, is an optimal time to intensify a particular therapy that supports that skill, such as physical therapy to facilitate walking.

A variety of strategies have been advocated. Some attempt to offer a comprehensive approach whereas others focus on specific issues. However, an approach cannot be truly comprehensive unless it works with all the levels of the pyramid. Both focused and partially

2. *Semistructured, problem-solving interactions,* during which specific learning objectives are worked on through the creation of dynamic challenges that the child wants to solve.
3. *Motor, sensory, perceptual-motor, and visual-spatial physical activities* to strengthen important processing foundations.

This chapter describes each of the three types of developmentally appropriate interactions in more detail. First, however, a description of the "generic" interactive processes that should be a part of all three types of developmentally appropriate practices is necessary. In essence, in every interaction with a child, the parents, caregivers, and educators should promote attention, engagement, a continuous flow of two-way communication with gestures and, when possible, ideas. At the same time, adults must tailor these interactions to the child's functional developmental level (e.g., fostering engagement or the elaboration of ideas) and individual processing differences (e.g., emphasizing visual-spatial or auditory processing, or being especially soothing with a sensitive child or animated with an underreactive child). These developmentally appropriate interactions, which meet the child at his functional developmental level in the context of his processing differences, are referred to as "floor time."

GENERIC PROCESSES COMMON TO ALL DEVELOPMENTALLY APPROPRIATE INTERACTIONS

Until a child is well into her school years, parents and caregivers will frequently interact with her when she is down on the floor, where she feels most comfortable and is surrounded by her toys and playthings. When interacting eye-to-eye with a child, the adult generates a sense of equality that encourages the child to engage, take initiative, and act more assertively. Parents and caregivers also operate in a child's realm when they playfully make funny faces while changing a diaper, chatting at the dinner table together, visiting the supermarket, or going for a walk outside. Thus, the generic processes can occur anywhere and at any time the child and her caregiver are interacting in a way that mobilizes the child's interests, initiatives, gestures, and ideas. The foci of the generic processes follow. (In this discussion, the term "partner" means the therapist, parent, caregiver, or any other person engaged in floor time activities with the child.)

- *Engage and let the child set the emotional tone.* Partners can be very animated, using hand gestures and various facial expressions, as they encourage the child to choose any activity for them to do together. With a child operating at early developmental levels, partners can join in on whatever the child is doing at that moment, such as clapping, making noises, or wandering around the room. Attempting to capture the child's rhythm, intensity, and interests creates an important foundation for the initial sense of engagement and the interactions that will build on it.
- *Open and close circles of communication.* As partners follow a child's lead and build on his interests and overtures, they should inspire him to build on what has been done or said in turn. For example, if a child moves his toy car and the partner moves another car parallel to it or says "Where are we going?" or "Can my dolly have a ride in your car?," the partner is opening a communication circle. If the child gestures or verbalizes in response, building on his behavior by saying "We go to house!" or simply bangs his car into the partner's car while giving a knowing look, he is closing that circle of communication. Even when a child responds with a

simple "No" or "Shh!" or by turning away, he is closing the circle of communication. The goal is to facilitate a continuous flow of circles in both unstructured and semi-structured interaction. Sometimes these circles will involve only the simplest back-and-forth gestures, such as looking, smiling, or pointing.

One way to extend constructive interactions with a child is to help a child reach a goal. For example, a child might be looking longingly, and pointing, at a toy fire engine placed beyond his reach. The partner can retrieve the toy, turn to the child, gesture, and ask "Want it?" When the child responds with a big smile and reaches for the toy, the partner has helped the child reach a goal as well as extended the interaction.

- *Use playful obstruction to expand circles of communication.* Sometimes, it may be necessary to expand play or conversation with a child by interacting in a playfully obstructive manner. For example, if a child avoids her partner during floor time, the partner might try positioning herself between the child and whatever is absorbing all the child's attention. Alternatively, the partner can assume the role of a moving, talking fence that the child needs to climb over or under to reach her favorite toy or simply to continue wandering around the room.
- *Increase the emotional range.* In creating developmentally appropriate interactions, it is helpful to look for opportunities to extend the child's gestural interactions or add a new twist or plot line that builds on a child's interests. In this way, over time, a child will become engaged in all the marvelously varied themes of life: closeness and dependency; assertiveness, initiative, and curiosity; aggression, anger, and limit setting; and pleasure and excitement. These experiences will help the child develop a full range of emotions.

Many times, a child will avoid or neglect certain types of interactions, despite a person's best efforts to foster a supportive floor time environment. When this occurs, it is appropriate to gently challenge the child in those emotional areas that she seems inclined to bypass. For example, a child may be wonderfully easygoing, but a little passive in asserting herself and claiming her own toys during playgroup. A partner could encourage the child to be more assertive by doing something as simple as moving her favorite stuffed animal away from her group of animals. In so doing, the partner should appear impish, rather than malicious, and move the toy away very slowly and deliberately, in a smiling, nonthreatening manner. The child may very well assert herself and come after her prized toy!

If a child's interactions involve pretend play and use of words, but the interactions focus disproportionately on themes of anger and aggression, the partner should not interfere with the dramatic flow by stopping the action or by asking a verbal child questions such as "Why is (the character) so mad?" or "Why doesn't (the character) behave nicely?" Instead, it would be appropriate for the partner to join in the action, slow it down if it's getting too active, and elaborate on the emotion through his (the partner's) own actions. For example, if the child is banging the doll, the partner might begin banging a doll, but gradually turn the action toward slow, interactive banging. If the child is verbal, the partner might comment, "Gee, he really wants to bop those bad guys. He's going to destroy them in a hundred different ways. I bet he must have a good reason for that!" By

acknowledging both the depth of anger that the child is portraying, and the fact that he must have good reason for it, the partner is empathetically engaged with him rather than promoting his own agenda. It is this kind of empathy that eventually helps a child learn to be empathic and kind.

The imaginative and verbal expression of feelings usually helps a child learn to understand and regulate them. A child tends to act out strong feelings (such as anger) that aren't acknowledged, either directly through aggression, or indirectly through an opposite response, such as being overly inhibited or fearful. Acknowledgment of a child's feelings does not imply that a person approves of a child acting them out in reality. In fact, recognizing a child's "pretend" agenda will help the child use ideas rather than actions. It will also strengthen a partner's ability to discuss and set relevant limits on aggressive behavior if it should emerge at school or at home during nonpretend times.

By broadening a child's emotional themes, floor time interactions supplement discipline. When a child is misbehaving, pretend drama can sometimes help reveal what the child is feeling. Surprisingly, acknowledgment of a child's negative, angry feelings may eventually help him introduce positive themes into his dramas. Most children have a balance of feelings. If the partner conveys an empathetic message that it is acceptable for the child to explore aggressive themes during play, the child will begin to explore dependency, love, and concern, too. However, if a child senses that his ideas are not understood, his frustration may cause him to polarize his feelings and opt for aggressive themes. Preverbal children can often explore aggressive intentions through their actions, for example, by banging a car. When a partner joins in empathetically (e.g., by also banging a car) and then slows the action down and explores other options, it is possible to convey understanding, regulation, coping, and alternatives to the child.

- *Expand the range of processing capacities.* While a child is engaged with sounds, sights, touches, and movements, partners can make a conscious effort to appeal to her different processing and motor-planning capacities. In this way, the child's "mental team"—that is, all her emerging capacities—learn to simultaneously work together under the direction of an emotionally meaningful goal. For example, during a floor time session in which the child is moving a toy trolley, a partner can introduce some visual and spatial elements into the noisy play by having a house suddenly cover the trolley. This action may inspire the child to search for the disappearing trolley, thus adding a visual-spatial processing activity to her motor activity and stimulating her emotional interest in finding the toy. In a similar manner, spatial play during floor time—such as building block towers and forts—can also promote a child's ability to broaden the range of her processing and motor capacities.

THE THREE TYPES OF DEVELOPMENTALLY APPROPRIATE INTERACTIONS AND PRACTICES

The generic processes just described are basic to all three types of developmentally appropriate interactions and practices that are part of a comprehensive home and school program. Detailed discussions of all three types follow.