GUEST EDITORIAL

Sensory integration: an effective approach to therapy and education

Lorna Jean King, OTR
Fellow of the Occupational Therapy Association
Director Emeritus, The Center for Neurodevelopmental Studies

Editor's note: Since its inception in 1967, the Autism Research Institute has made the evaluation of all forms of therapy a major priority. In recent years an increasing number of parents and professionals have become interested in sensory integration as a means of treating autistic children and adults. Treatment evaluation questionnaires sent to ARI by parents give sensory integration a very high percentage of approval: 69%. (Behavior modification, the most highly rated type of therapy of the 47 treatment approaches listed on our evaluation form, rated 83%.) To better acquaint our readers with this safe and helpful treatment, we have invited Lorna King, a leading authority on sensory integration therapy with autistic persons, to write our guest editorial.

Over 20 years ago Edward Ornitz of UCLA identified autism as a disorder of sensory integration. This description has since been incorporated into many official and unofficial definitions. But what exactly is sensory integration? It is the process in the brain which organizes sensory experiences — touch, movement, body awareness, sight, sound, and the pull of gravity — into unified information which the individual uses in learning about and reacting to the world around him. It is the **inability** to construct useful information from sensory experience that seems to characterize many autistic persons.

Sensory integration intervention is based on a neurophysiological view of autism. The late A. Jean Ayres, Ph.D., of the University of Southern California, developed the theory and practice of sensory integration after many years of intensive study of the neurophysiology of development and learning. Her book, *Sensory Integration and the Child*, is an excellent introduction to the theory as it applies to autism as well as learning disorders.

Research with humans and animals has shown that the organizing of simple inputs into complex information (perceptions) depends on large amounts of sensory stimulation. The largest quantities of input are provided by the balance and gravity response system in the inner ear; the receptors in muscles, tendons, and joints; and the skin receptors or tactile system. The visual and auditory receptors are quantitatively small, though very important.

Behaviors are clues

It is significant that many of the abnormal behaviors seen in autistic individuals relate to the major sources of input. Such behaviors as rocking, spinning, pacing, and jumping are thought to represent the autistic person's attempts to get more organizing and calming background sensations. On the other hand, hitting out at people who approach, covering the ears, or tantruming in response to certain noises indicates an extreme but selective sensitivity to stimulation. Hyper-sensitivity to many kinds of sensory stimuli has long been noted as a characteristic of the autism syndrome. It seems strange that the same individual may avidly seek some kinds of stimulation and yet be extremely frightened by harmless noises or unfamiliar textures in food or clothing. These baffling behaviors appear quite reasonable, however, in the context of disordered sensory processing.

Because the selection of appropriate sensory-motor activities depends on individual differences and changing circumstances, sensory integration therapy cannot be validated by trying to isolate one small factor from another. Sensory stimulation is NOT the same as sensory integration. Mason and Iwata, in a study recently published in the *Journal of Applied Behavior Analysis* (see ARRI 5/1), subjected children to simultaneous flashing blue lights and rock or jazz music. It is small wonder that self-abusive behavior increased during what was likely a very disorganizing and stressful experience for the child. To call this a test of the efficacy of sensory integration in reducing self-stimulating or self-abusive behaviors, is to totally misrepresent the meaning and methods of sensory integrative therapy.

Sensory integrative **therapy** demands that the child's history, behavior, and physical status be studied carefully for clues as to which aspects of the sensory-motor processing system need remediation. The child is gently introduced to pleasurable therapeutic activities. Knowledgeable therapists and teachers will, if possible, avoid situations which are obviously stressful to the autistic individual, since stress and anxiety further disorganize the nervous system.

The sensations most frequently sought by autistic individuals are those that have a calming and organizing effect. These are not strange or mysterious stimuli, but exaggerations and extensions of sensory experiences common to most humans. The ancient history of cradles and rocking chairs is testimony to the calming effect of input to the balance/gravity response system in the brain. So the autistic child rocks (not bothering with the rocking chair) or spins, or jumps, or hangs upside down on the furniture.

Chewing or sucking is another universally calming sensation, seen in its "normal" extreme when baseball pitchers chew a wad of gum or tobacco as an antidote to stress. In the autistic individual this strategy may take the form of sucking or chewing on clothing or even biting the hand or wrist.

By far the most effective calming and organizing sensation is pressure-touch, as in a hug, a massage, or in swaddling a fretful baby. The most convincing account of the role of pressure-touch in calming and organizing the autistic nervous system is provided by Temple Grandin in her book, *Emergence: Labeled Autistic*.

Sensory integration seeks to facilitate development of the nervous system and eliminate abnormal behaviors by providing necessary input through constructive activities that have an educational as well as a therapeutic purpose. Twenty years of solid research demonstrating the plasticity of the nervous system throughout the lifespan gives credibility to the optimistic idea that nervous system development and maturation are possible. Plasticity is greatest during early childhood, which is why early intervention is important. However, the possibility for change is not limited to childhood or even adolescence.

Sensory integrative therapy demands that the child's history, behavior, and physical status be studied carefully for clues as to which aspects of the sensory-motor processing system need remediation.

The first specific goal of sensory integration intervention is to help the individual attain a state of calm alertness. This is vital since the distressing discomfort caused by over-sensitivity causes most autistic persons to operate at a high level of arousal or anxiety which makes it difficult or impossible to pay attention, and attention is the prerequisite for learning.

The second goal is enhancing the organizing of sensation into information. Adequate knowledge about the body, how it moves, and its position in space is required if the individual is to master new motor tasks such as writing or signing. This "motor planning" is an important result of sensory-motor organization. Facilitation of nervous system processing is accomplished by providing a "diet" of the needed sensory motor experiences.

Fortunately the third goal of intervention, the acquiring of concepts that underlie learning, can occur simultaneously with the achievement of the first two goals. Concepts are the tools of thought and are dependent in very large measure on sensory input, particularly the feedback from movement. Such concepts as over, under, between, through,

continued on page 6