

SENSORY INTEGRATION: An Approach to Help with Self-Regulation and Skill Development

Sensory integration is a neurological process, which occurs in all of us. It allows us to take in sensory information, sort it, shape it and then use the information to help us interact with our environment with ease and comfort. The theory of sensory integration was developed by occupational therapist Dr. A Jean Ayres based on her research into the neurosciences and related fields. The theory is applied to observable human behaviors. Occupational therapists have become increasingly involved with individuals with autism over the past twenty years mainly because of the theory of sensory integration. The neurobiological research by Dr. Margaret Bauman as well as the detailed experiences of individuals with autism offers support of the theory of sensory integration and its application to daily living.

Our senses can be defined as both overt and hidden. The senses that are most obvious are those of sight, hearing, touch, taste and smell. The hidden senses are those of movement (vestibular) and of body position sense (proprioception). These hidden senses are primitive and very powerful regulators of our nervous system and help to build the foundation for purposeful movement.

The process of sensory integration is complex. First we register a sensory event e.g. I feel something touching me. Then we orient to the sensation. Sensation needs to be at a certain threshold in order to be perceived. Thresholds vary through the day as well as with your emotions and stress levels. Here the brain decides whether to inhibit or facilitate the sensation – this is called modulation. This helps us to determine what sensations to pay attention to and what not to. We could not possibly pay attention to all sensory input. Individuals with autism usually have some modulation difficulties. In such cases, a person is too much aware of certain sensations and not as aware of others and can have difficulty switching attention to different sensations. For example, an individual may focus on the feel of their clothing instead of the sound of a voice.

Next our nervous system interprets the information and determines whether the sensation is harmful. This interpretation is based on previous emotional and language experiences and our memories. If the sensation is perceived as harmful, the nervous system quickly acts to protect our body from harm and responds by going into a “red alert” state. This response is labeled as the fight – flight – fright reaction. Our body responds by fighting to protect itself, running away or becoming very fearful. Many individuals with autism constantly operate in this state of over-alertness, hypervigilance and increased anxiety. Just being in this state, lowers sensory registration thresholds.

Once we have perceived and interpreted the sensation, we then organize a response. Our response can be either physical, cognitive or emotional. For example, “I like that touch. It makes me feel safe. I will continue to shake his hand”. The final step in the process is the execution of the physical, cognitive or emotional response. If there is a physical response, adequate motor planning is required – an area that is a concern with most individuals with autism.

Implications of Dysfunctional Sensory Integration in Autism

Individuals who are hyper- or hypo-responsive to touch, movement, vision, hearing, taste and smell sensations can experience an increased amount of anxiety and a

decreased ability to orient, interpret and respond to sensation functionally. This will also affect the ability to self-regulate arousal states. Adequate sensory integration is also necessary for motor planning. Motor planning is our ability to plan, initiate, execute, change and stop motor sequences.

Currently, sensory integration principles are most often applied in the format of a sensory diet. Specific activities are tailored to each individual in a prescribed fashion and applied in a functional manner. Sometimes an individual may benefit from direct treatment approaches, depending on the nature of their difficulties.

A sample sensory diet may include activities containing proprioceptive input. (For the purpose of this article, only examples in this system will be used.) This input can be used as a powerful calming and alerting strategy and can easily be applied into a daily schedule. For example, in self-care routines and fine motor activities, the use of vibration, or weighted cuffs for the wrists can increase body awareness and motor accuracy; use of personal massage units, foot massagers, or shower head massagers during hygiene activities can facilitate calm; the Wilbarger pressure brushing protocol can help decrease sensory defensiveness to clothing; wearing weighted vests, hats, or walking with a heavy knapsack can help during stressful activities or when focus is required. During leisure pursuits, proprioceptive activities could include hiking over rough and steep terrain, horseback riding, clay craft or small carpentry projects. Work-related tasks; such as mixing batter by hand, kneading bread, vacuuming or pushing a lawnmower contain proprioceptive elements.

In essence, a sensory diet is much like a nutritional diet and is based on unique individual needs. Use of specific activities can help regulate nervous system alertness to lower anxiety levels, and enhance response and attention to tasks. Application of sensory integration theory is an important part of a holistic approach to help promote self-regulation and motor learning in individuals with autism, thereby increasing functional daily living skills and independence.

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