

Strategies for Addressing Sensory Dysfunction in Children with Autism Spectrum Disorder

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Learning Objectives

- Participants will be able to :
 - Understand Sensory Integration terminology
 - Identify types of Sensory Modulation Dysfunction
 - Identify treatment strategies for Sensory Modulation Dysfunction

Ayres Sensory Integration

- Sensory integrative therapy is a holistic approach: it involves the whole body, all of the senses, and the entire brain (Ayres, 1979).
- Fosters the child's inner drive to actively explore the environment and to master challenges posed by the environment.

Sensory Modulation

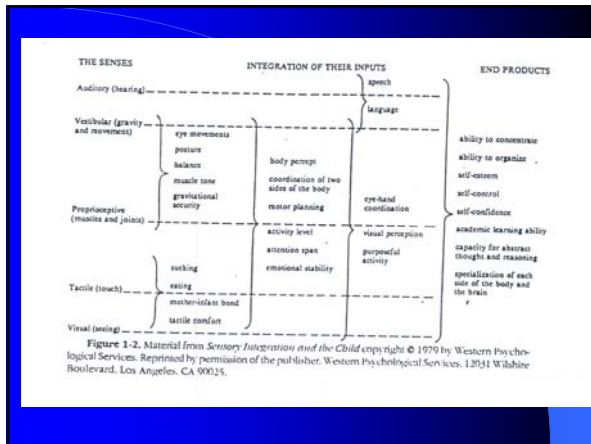
- The capacity to regulate and organize the degree, intensity and nature of responses to sensory input in a graded and adaptive manner so that persons can maintain an optimal range of performance and adapt to challenges within particular life challenges (Mcintosh, Miller, Shyu &Hagerman, 1999)

Sensory Perception

- The ability to discern the qualities of, similarities of, and differences among sensory stimuli, including differentiation of the temporal or spatial qualities of sensory input.

Praxis

- The ability to conceptualize, organize and execute non-habitual motor tasks.
 - Requires ideation, planning, modification or self monitoring to achieve an adaptive response (Ayres, 1979, 1989)



Patterns of Dysfunction in Sensory Integration

- Dysfunction in sensory integration (DSI) is the inability to modulate, discriminate, coordinate or organize sensation adaptively.
- Key Patterns include:
 - Dysfunction in Sensory Modulation
 - Dysfunction in Sensory Perception
 - Dysfunction in Praxis (dyspraxia)

Dysfunction in Sensory Modulation

- Dysfunction in sensory modulation (SMD) is a problem in the capacity to regulate and organize the degree, intensity and nature of response to sensory input in a graded and adaptive manner.
- SMD includes three types of response patterns:
 - Over responsivity
 - Under responsivity
 - Fluctuating responsivity

Over responsivity

- Refers to responses to sensation that are greater than those that persons with normal sensory modulation processes produce under the same sensory conditions.
 - Sensory defensiveness is a constellation of behaviors involving avoidance or negative responses to typically non-noxious sensation in any or all sensory domains (Wilbarger & Wilbarger, 1991).

Over Responsive Child

- The child has a “firecracker” perception of his body in his sensorimotor cortex (White, 2003).
- Exaggerated responses (fight or fright)
- Withdrawal (flight or freeze)
- Attention fluctuates from distractibility to over focusing (Williamson & Anzalone, 1997)

Under responsivity

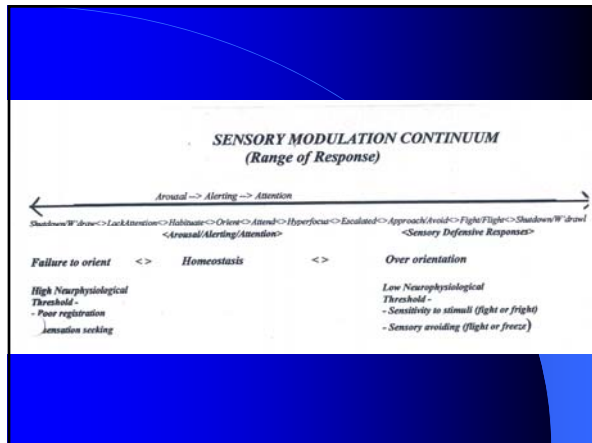
- Refers to responses to sensation that are less than those that persons with normal sensory modulation processes produce under the same sensory conditions.

Under Responsive Child

- This child has a “hazy” perception of his or her body (a “novocain” sensorimotor cortex)
- May exhibit:
 - A diminished response
 - Sensory seeking behavior

Sensory Modulation Continuum

- A child’s response to sensory input can vary during the day and can be variable to a type of stimulus.
 - A child may be sensitive to light touch and hit in response to being touched.
 - And yet he or she may constantly be touching others and objects



Assessment

- Sensory Integration and Praxis Test (Ayres, 1989)
- DeGangi-Berk Test of Sensory Integration (Berk & DeGangi, 1983)
- Sensorimotor Performance Analysis (Richter & Montgomery, 1989)

Assessment Cont.

- Test of Sensory Function in Infants (DeGangi & Greenspan, 1989)
- Sensory Profile (Dunn, 1999)
- Sensory Processing Measure (Glennon, Miller-Kuhaneck, Henry, Parham and Ecker, 2007)

Clinical Observations

- Muscle Tone
- Associated Reactions
- Co contraction
- Postural Background Movements
- Antigravity extension
- Antigravity flexion
- Gravitational Insecurity
- Hypersensitivity to Movement

Evaluation is a blend of observing and interacting with the child to understand their sensory processing (Ayres)

- What sensory stimuli does the child
 - attend to
 - Over respond to
 - Under respond to

What strategies does the child and family use

- For attention
- For calming
- For organization

What strategies does the therapist use

- For attention
- For calming
- For organization

Caregiver Interview

- Self care issues
- Play
- School
- Community/Family Activities

Interdisciplinary Assessment

- Relevant developmental information
 - Cognitive
 - Speech and Language development
 - Academic Achievement
 - Social
 - Nutrition

Treatment Strategies for Dysfunction in SI



Ayres Sensory Integrative Therapy

- Intent is to improve the efficiency with which the nervous system interprets and uses sensory information for functional use.
- Plasticity of the nervous system allows for remediation in young children.
- Promotes underlying capabilities and minimizes abnormal function.

Characteristics of SI Treatment

- Individualized
- Balance between structure and freedom
- Emphasis on inner drive of child
- Active participation
- Setting
- Activities are purposeful and require and adaptive response

General Treatment Strategies for Sensory Modulation

- Avoid conflicting multisensory input
- Prepare child prior to your touch
- Put hands in child's line of vision
- Touch with palm of hand, contour your hand and provide pressure
- Slow your speech and movements
- Talk quietly

General Treatment Strategies for Sensory Modulation

- Combine movement with touch pressure
 - Move in linear planes
 - Label movement with brief verbal cues
 - With improved postural stability vary the movement
 - If child becomes upset return to linear movement
 - Handle to increase child's awareness of their base of support

Treatment The Under Responsive Child

- The Under Responsive Child
 - Will require high intensity or increased duration of input
 - Provide activities to increase their sense of their body map
 - Play in materials that wrap around the child
 - contour your body around child's
 - follow the child's cues
 - provide safe avenues for child to fill his "sensory cup"

Treatment The Over Responsive Child

- Activities to provide a clear localized sense of their body
 - Avoid activities that wrap the child
 - Position self in child's line of vision
 - Deep pressure program may be indicated, including brushing and joint compression
 - Specific and intense sensory input to provide a sensory anchor

Home Program

- Embed strategies throughout the day
- Structure and routine are important for stressful activities ie. Bedtime, bath or meals
- Aversive response to touch is not a reflection of child's feelings toward you
- Anticipate potential sensory pitfalls and plan for it
- Respect child's response and allow child to be in control of input

Deep Pressure and Proprioceptive Activities

- Pull cushions off the couch and push them around or stack them
- Controlled rough house play
- Touch child using contoured hand
- Movement in a linear plane initially then lateral
- Household chores that provide proprioception- carry groceries in house, vacuum, or take out trash
- Brisk rub down after bath with medium coarse towel
- Weighted blanket
- Heavy blankets on bed
- Sucking thick liquids through straw or snacks with chewy textures
- Vary movement and sit down activities

School Activities

- Maintain an appropriate environment
- Jobs that provide with proprioceptive input e.g. pushing chairs, carrying tray of milk cartons
- Large bean bags in lap during circle time
- Provide verbal cues prior to task - visual and verbal
- Avoid spontaneous touch

Alert Program for Self Regulation

- Put something in your mouth
 - Chewy food or sucking thick liquid
- Move
 - Vary intensity and direction of movement
- Touch
 - Fidget or holding objects, deep or light touch
- Look
 - Change from artificial to natural light
- Listen

Connor

- Birthdate: 6/2/2001
- Age: 4 years 9 months
- Diagnosis : Omphalocele, Tracheomalacia and Dysfunction in Sensory Modulation
- Frequency of Therapy: One hour. Once a week

Sensory Profile

- General State- Over reactive
- Tactile- over reactive to messy textures
- Vestibular/Proprioceptive- over reactive to movement
- Auditory- Over reactive to loud sounds
- Visual- Over focuses on visual input
- Gustatory- Over reactive to certain textures

Regulatory Strategies

- Parents provide structure and consistency

Therapist's Regulatory Strategies

- Therapist provides deep pressure and proprioceptive input
- Visual cues
- Distracters

Attention and Regulation

- Fluctuates between short attention span and over attending.
- Bites his own hand
- Plays with his tongue, thrusting and biting

Related Therapies

- DIR Model
 - Developmental, Individual Difference, Relationship Based Approach (DIR)
 - Greenspan and Weider
 - Therapy called “Floortime”

Related Therapies

- The Alert Program
 - Promotes awareness of how we regulate our arousal states.
 - Encourages use of sensorimotor strategies to manage our levels of alertness.
 - Initially designed for children from 8-12 years of age, program has been adapted for preschoolers through adults.

Related Therapies

- Wilbarger Deep Pressure Proprioceptive Technique
 - Therapy technique used to address Sensory Defensiveness
 - Utilizes a brush to provide deep pressure input to extremities and back, followed by joint compression
 - Developed idea of creating a “Sensory Diet”

Related Therapies

- Listening Fitness Therapy - LIFT (Madaule)
 - Directed toward the impact of listening on learning, academics and vocal expression
 - Uses a portable audio processor with a cassette player, tapes, headphones and a microphone
 - Gating mechanism, modulates sound between high and low channels
 - Typically 30 hours over 10 weeks

Related Therapies

- Therapeutic Listening (Frick)
 - Uses sound in combination with sensory integrative treatment techniques
 - Uses electronically altered compact discs
 - Can be carried out at home in school or in clinic
 - Typically 30 minutes, 2 times per day, separated by 3 hours

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- www.sensorycomfort.com
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- Southpaw Enterprises
- www.southpawenterprises.com
- Theragifts Sensory Diet Toys and Products
- www.theragifts.com

SI Books and Resources

- Answers to Questions Teachers Ask About Sensory Integration (2001)
-Carol Stock Kranowitz, M.A.; Stacey Szklut, M.S., OTR/L; Lynn Balzer-Martin, Ph.D., OTR
- Asperger Syndrome and Sensory Issues
-Brenda Smith Myles, Katherine Tapscott Cook, Louann Miller, Building Bridges through Sensory Integration, 2nd Edition
-Ellen Yack, M.Ed., OTR; Shirley Sutton, OTR, Paula Aquilla, OT
New Social Story Book-Illustrated Edition
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- Sensational Kids: Hope and Help for Children with Sensory Processing Disorder (SPD) (2006).
-Lucy Jane Miller, Ph.D., OTR
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- Raising a Sensory Smart Child
-Lindsey Biel, M.A., OTR/L, and Nancy Peske

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-Chemin Schneider

Starting Sensory Integration Therapy

-Bonnie Arnwine

Teaching Social Communication to Children with Autism: A Practitioner's Guide to Parent Training, (2009)

Anna Dvortcsak & Brooke Ingersoll

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-Sharon Heller

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101 Activities for Kids in Tight Spaces (1995)

-Carol Stock Kranowitz

Understanding the Nature of Sensory Integration with Diverse Populations

-Susanne Smith Roley, M.S., OTR et al

Take Five! Staying Alert at Home and School

-Mary Sue Williams, OTR; Sherry Shellenberger, OTR