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

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, e.g., 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 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"

- 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

- 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

References

References


Websites

- Alert Program - www.alertprogram.com
- Kid Power - www.kidpower.org/sid.html
- The KID Foundation’s SPD Network - www.spdnetwork.org
- Pocket Full of Therapy - www.spdnetwork.org
- PDP Products & Professional Development Programs - www.pdpjj.com

SI Books and Resources

- SenseAbility, Understanding Sensory Integration (1993).
- Sensory Integration and the Child (1999).
- Sensory Comfort.
- Sensory Resources
- Southpaw Enterprises - www.southpawenterprises.com
- Theragifts Sensory Diet Toys and Products - www.theragifts.com
- The Out of Synp Child Has Fun: Activities for Kids With Sensory Integration Dysfunction (2003).
- Parenting a Child with Sensory Processing Disorder
- Raising a Sensory Smart Child
- Sensory Integration and the Child (1999).
SI Books and Resources

Sensory Secrets: How to Jump-Start Learning in Children (2001)
-Chemin Schneider
Starting Sensory Integration Therapy
-Bonnie Arnow
-Anna Dvortcsak & Brooke Ingersoll
Tools for Teachers (1996)
-Diana Henry, M.S., OTR
Too Loud, Too Bright, Too Fast, Too Tight: What to do if You are Sensory Defensive in an Overstimulating World
-Sharon Heller

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