Multi-Sensory Environments

Theory, Research, and Application

Charles Christiansen

Sensory Stimulation

- Everyone has unique reactions to stimuli
- Over- or under- stimulated by different sensory experiences, often irrationally
- Sensory stimuli can include sounds, foods, lights, and temperature
- Natural, unconditioned reinforcement and punishment
- Most of us have mild reactions and cope independently

Theory

All children are learning to understand their senses, however, some children may struggle more than others. (Larkey, 2007)

Children can be especially unaware of their reactions and may react actively or passively to undesired stimulation and vary in their ‘neurological threshold’ or sensitivity to stimulation(Thompson and Raisor, 2009)

A correlation was found by O'Donnell, Deitz, Kartin, Nalty, & Dawson (2012) between sensory over-responsivity and behavioral maladaptation.

OTs might be concerned with this under the label of Sensory Processing Disorder, while clinicians may see it as symptoms under Obsessive Compulsive Disorder or Autism Spectrum Disorders

Theory

- Estimated between 5.3% (Ahn, Miller, Milberger & McIntosh, 2004) and 16.5% of elementary school children present Sensory Over Responsiveness behaviors (Carter, Ben-Sasson & Briggs-Gowan, 2009)
- It is especially a concern for children with communication difficulties who cannot communicate their desires (Samayan, Dhanavenden & Nachiketa, 2011)

Theory - *In Practice*

Sensory integration therapy was defined in 1973 by Occupational Therapist Jane Ayres (Ayres, 1973). A safe and stimulating environment used for motor skills, communication, and behavior.

Four main principles

- Just right challenge
- Adaptive Response
- Active Engagement
- Child Directed

1987, the Snoezelen room was developed in Holland for those with profound disabilities by Hulsegge and Verheul, which is the model for classroom sensory interventions today (Fowler, 2008).

Application- *Intervention Types*

Sensory Escape (walks, sensory room, quiet area)

Multi-Sensory Environments

Within class interventions:

- Ear sets/plugs
- Hats
- Stress balls
- Flourescent light covering
- Mobile sensory kits (with visual, tactile, or auditory tools)

Application - *Practice Today*

Can be implemented through accommodations within the classroom, by pushing in with an OT or by pulling out.

Can be either individually or in small groups

Application- *Identifying Function*

From a Behavioral Function perspective, these children may appear to be avoiding instruction or seeking stimulation

Students may substitute undesired stimulus with inappropriate escape behavior, such as by crying or refusing work.

They may seek additional stimulus through restlessness or spontaneous speech

Multi-Sensory Environment

- Can be called ‘sensory room,’ ‘OT room’
- Consists of a room with multiple sensory experiences
- Students can receive breaks scheduled as a part of their day or may be able to decide for themselves when to take the breaks (with limitations).
- Students are encouraged to move throughout the room freely and experience both high and low stimulating activities
    - Contain stimulating things like trampolines, floor rollers, vinyl tubes, and swings
    - Have calming things like theraputty, calming music, lower light levels

Research

Preis and McKenna (2014) found

- Utilizing SIT techniques in school settings increased autistic children's participation and engagement
- Lowered spontaneous utterances significantly for ¾ of the students in the study.

Research

Banda, Griffin-Shirley, Okungu, Ogot, & Meeks (2014)

- 8 studies of children with autism and sensory impairments
- 4 focused on behavioral issues (e.g getting out of seat, not completing work)
- All studies showed significant improvement after an SIT intervention.

Research

Devlin, Healy, Leader & Hughes, 2010

- Compared SIT to a reinforcement-based behavioral intervention for managing challenging behaviors.
- Used an AB_1AB_2 design on four students
- Found that the SIT was no more effective than the behavioral intervention.

Research

A meta-analysis of SIT for children with disabilities by Leong, Carter, and Stephenson (2015), found

- SIT gave a small, significant effect no greater than analogous behavioral and educational interventions.
- They also found that there was inconsistent quality of research, with studies having low sample sizes, AB designs, and lacking interrater reliability data.

Advantages/Disadvantages

-Found to be effective with students with moderate disabilities

-Can teach children to utilize their coping skills independently

-Can remove barriers to implementing other interventions

-Behaviors that this is effective for may be less likely to be shaped by reinforcement (Banda, et al, 2014)

-In a study by Barry & Celiberti (2009), they found that students with moderate to severe disabilities chose an MSE 76% of the time over choices like an outdoor playground or indoor classroom.

-By itself, doesn't teach new behavior

-Research base is still being established, especially for non-ASD students

-More useful for younger children

-Can be resource intensive (room, personnel)

-Using pull-out can be disruptive to the day

Future Research Considerations

- Currently, demand for SIT is relatively high in comparison to the lack of research foundation(Priess & McKenna, 2014).
- A potential path for future studies could be comparison between different levels of intervention (in class vs. mobile sensory kits vs. MSEs)

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