Addressing Sensory Processing Changes

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Sensory Processing: Frame of Reference

- Sensory integration framework originally developed and tested by Jean Ayres, OTR/L when working with children with learning and movement disorders (1970s). (1)
- This set of theories is based on patterns of how an individual registers, modulates, and interprets visual, auditory, olfactory, vestibular, tactile, and gustatory stimulation.
Sensory Processing Disorder (SPD)

- Sensory Modulation Disorder (SMD)
  - SOR
  - SUR
  - SS
- Sensory-Based Motor Disorder (SBMD)
  - Dyspraxia
  - Postural Disorders
- Sensory Discrimination Disorder (SDD)
  - Visual
  - Auditory
  - Tactile
  - Vestibular
  - Proprioception
  - Taste/Smell

SOR = sensory overresponsivity.
SUR = sensory underresponsivity.
SS = sensory seeking/craving.
Current research: Sensory processing in TBI

- Significantly reduced habituation to acoustic startle stimuli, and impaired filtering of redundant sensory information at the level of the auditory cortex. (3)
- Photosensitivity prevalence of 50% in TBI, compared to 10% in healthy controls. (4)
- Self-reported dual-sensory impairment (auditory and visual) in TBI were 34.6% (5)
- Children with TBI: Differences in auditory processing (75%), visual processing (>50%), touch processing (hyposensitivity, reduced awareness) (6)
OT Evaluation: Sensory Processing and Integration

Occupational Profile
- Semi-formal interview
- Current activities and limitations
- Triggers/Alleviators

Adolescent Adult Sensory Profile
- 60 questions
- Likert scale

Treatment
- Education
- Initial compensatory strategies
- Gradual, graded exposure
Patient education and health literacy: A key to recovery

- Consistent report of lack of information and understanding (re: sensory sensitivity) from health professionals

- The pervasive nature of the noise sensitivity meant that the participants felt very strongly that information, early in the process would have greatly facilitated their coping and recovery, and reduced the stress they felt as they struggled to understand the changes they were experiencing. (7)
With this profile, a person spends less time in the window of optimal function.
Sensory Processing for a TBI Population

The approach can be either:

- Remediation of sensory processing deficits to improve behavior, learning, praxis, or feeding issues
- Environmental modification
- “Sensory diet”: regular sensory input to ‘feed’ sensory processing needs

Compensatory strategies

- The basis for significant amount of pediatric OT intervention and emerging trends in mental health and geriatric intervention.
Threshold Tips and Tricks: Visual

- Reduce glare
  - Tinted lenses
  - Colored transparencies
  - Brimmed hats
- Minimize visual clutter
- Bluelight filters: Flux, bluelight filtering glasses, Nightshift
- Viewing windows
Threshold Tips and Tricks: Auditory

- Wear ear plugs, ear buds, noise cancelling ear phones
- Choose environments or spots that minimize stimulation
- Reinforce speech therapy recommendations for memory and auditory processing
- Music: Delta waves, binaural beats, meditation music
Threshold Tips and Tricks: Activity Level

- Reinforce education about pacing
  - Mini breaks
  - Use timers
- Use calming tactile or auditory stimulation when over threshold
  - Acupressure ring
  - Weighted blankets
- Shop at less busy times/places
- Reinforce and problem solve physical therapy recommendations about activity level
Less processing time and fewer neural resources post-treatment than the placebo group, suggesting an increase in working memory and attention. [8]

- Deep pressure
- Meditative
- Homunculus and ANS
Threshold Tips and Tricks: Taste and Smell

- Utilize liquids which are calming
  - Hot tea
  - Decaf coffee

- Use smells that are calming
  - Lavender
  - Essential oils

- At the threshold is not the time to try the spicy Indian food
  - Comfort foods
  - Similar textures: smoothies, mashed potatoes, soups
Registration Tips and Tricks: Visual

- Ensure good illumination
- Larger print if available
- Higher contrast
- Highlighting, underlining, **bold**
- Remember: to reach registration the sensory input must be slightly greater than normal.
Registration Tips and Tricks: Auditory

- Utilize music or sounds that is alerting, pleasing and “happy”
  - Lyrics, multiple instruments, upbeat
- Take notes to ensure recall later, it helps the brain pay attention
Registration Tips and Tricks: Activity Level

- Work with PT/ATC to know what activity is “ok”
- Often, static light weight lifting can help increase input to the brain, without being too difficult.
- Be mindful of obstacles: carpets, tables...as when they are below registration they are more likely to trip, crash into things, etc.
Registration Tips and Tricks: Taste and Smell

- Utilize liquids which are alerting
  - Carbonated beverages
  - Minty
  - Gum
- Smells that help “awaken”
  - Citrus, mint
  - ID what the patient likes and coach them when to use it.
- Add texture/flavor to foods
  - Granola
  - Spices/ Hot sauce
  - Mixed textures
References


