Sensory Processing Disorder

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SPD: terminology

- Per AAP guidelines there is no universally accepted definition \(^4\)
- Not in the DSM 5
- Problems organizing and using sensory information from environment and from one’s self \(^1\)
- Issues interpreting, modulating, detecting or responding to these stimuli
History

• A. Jean Ayres PhD occupational therapist first described the concept of sensory integration in 1970s.

• Deficits in sensory neuronal function can lead to deficits in development, learning or emotional regulation. ⁴
Classification of SPD (Miller et al)

SENSORY PROCESSING DISORDER (SPD)

- Sensory Modulation Disorder (SMD)
  - SOR
  - SUR
  - SS

- Sensory Discrimination Disorder (SDD)

- Sensory-Based Motor Disorder (SBMD)
  - Postural Disorders
  - Dyspraxia

SOR = Sensory Over-Responsivity
SUR = Sensory Under-Responsivity
SS = Sensory Seeking / Craving
Sensory Modulation Disorder: impairment in regulating intensity of responses

**Over responsive:** high arousal, distracting, fight or flight state, impulsive, aggressive

**Sensory avoidant** - seems calm, hypervigilant, scanning for threat, fearful, anxious,

**Sensory under responsive** - decreased arousal, inattentive, flat affect, passive

**Sensory seeking** - arousal heightened, overexcited with stimuli, impulsive, takes risks
Categories

• Sensory discrimination disorder—deficit in discrimination between sensory stimuli: visual, tactile, proprioception)

• Sensory-based motor disorders
  – Dyspraxia—difficulty with planning and executing complex motor acts
  – Postural disorder—thought to be associated with poor processing of vestibular and proprioception.
Epidemiology

- More common in boys than girls
- Estimated incidence of 5-16% of children
- Often co-morbid with ADHD, autism \(^2\)
Etiology

• Unknown

• Theories: children with over-responsiveness to sensory stimuli have abnormal autonomic responses
Diagnosis:

• Per AAP guidelines: no diagnosis should be made, as SPD may be seen with many other disorders. Parents should be aware that evidence basis for sensory integration therapy is not strong.\(^4\)

• Per Zuckerman Parker handbook: consider if patient has poor self regulation of arousal, attention, affect or action. ONLY IF INTERFERES with function.
  – History: low normal development, unusual sensory avoidances or unusual enjoyment of sensory stimuli
Sensory Profile

• 125 items, 5 point Likert scale filled out by parents
• 6 areas: Visual, Auditory, Activity Level, Taste/Smell, Body Position, Movement, Touch, Emotional/Social
• “¾ of items on scale were uncommon for children without disabilities.” ⁵
Assessment

• Occupational therapist driven
  – Standardized tests
    • Sensory integration and praxis test (SIPT)
    • Sensory Processing Measure (SMP)
  – Informal observation
• Multidisciplinary team evaluation
  – Indicated for children who may have other learning, developmental, or behavioral problems
Sensory Integration and Praxis Tests (SIPT)

The Sensory Integration and Praxis Tests (SIPT) by A. Jean Ayres is the most complete and flexible assessment of sensory integration on the market. The SIPT allows you to evaluate sensory integration and praxis functions.

Purchase the SIPT. Scroll down for pricing information.

At a Glance

- **Purpose:** Offers the most complete and flexible assessment of sensory integration available
- **Ages / Grade:** 4 years to 8 years, 11 months
- **Administration Time:** 10 minutes per test; 2 hours for the entire battery
- **Format:** 17 subtests requiring children to perform visual, tactile, kinesthetic, and motor tasks
- **Norms:** Based on a national sample of more than 2,000 children

Related Products

- SIPT Electronic Stopwatch
- Sensory Processing Measure (SPM)
- DeGangi-Berk Test of Sensory Integration (TSI)
- Sensory Integration and the Child: 25th Anniversary Edition

"the 'gold standard' for evaluating sensory integration and praxis functions."

Susanne Smith Rolev, M.S., OTR
Sensory Integration Therapy

- Occupational/Physical therapists
- Highly individualized
- Goal: facilitate organization of the brain so it can learn effectively from the environment
- Based on principles to guide controlled sensory input:
  1) “Just Right Challenge”
  2) “Adaptive Response”
  3) “Active Engagement”
  4) “Child-directed”
Parent education

- Important component of therapy is parental education and home component of therapy.
- Help the parents understand their children’s unique needs and how these can be addressed in the home environment.
Efficacy of therapy

• Through the years:
  – 1982 meta-analysis: literature provided suggestive support for the effects of SI therapy
  – 1988-1994: 4 lit reviews concluded evidence was insufficient to support SI therapy efficacy
  – 1999 meta-analysis: trend in literature, with earlier studies showing greater efficacy than recent studies
  – 2004, 2007 AAP policy statements: scientific legitimacy of SI interventions have not been established for children with motor disability and ASD
2012 AAP Policy Statement

• Policy statement for children with developmental and behavioral disorders

• Recommendations:
  1) Pediatricians should not use sensory processing disorder as a diagnosis – consider other disorders
  2) Pediatricians should communicate with families about the limited data on the use of sensory-based therapies
  3) If a patient is receiving sensory-based therapies, teach families how to determine whether a therapy is effective and safe
Remaining questions

• Is sensory integration disorder truly a “disorder” of sensory pathways?
  – No studies showing SID exists outside of other developmental and behavioral disorders

• Is sensory integration therapy effective and should it be included in the comprehensive treatment of these children?
New Modalities to Diagnose?

- DTI (Diffusion Tensor Imaging) acquired in 16 males 8-11 yo, with SPD.
- 24 age matched and handedness matched, IQ Matched controls.
- “Microstructural characteristics of white matter tracts, such as axonal diameter, fiber density and myelination are crucial for determining the speed and bandwidth of information transmission in the human brain.”
- Diagnosis of SPD: based on the Sensory Profile
References


