

Sensory Integration and Autism: Services Throughout the Lifespan – It's Not Just for Children

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Maybe Chimps Too!

Holly



Goals for Today

- Identifying Sensory Integration Problems Throughout the Lifespan
 - Results of Pre-natal, Early Childhood Research Study
- Accessing SI Intervention Services Throughout the Lifespan
 - Results of Massachusetts Physician Survey

Introduction to Sensory Integration

"Life is a sensory experience. During every moment of our life we experience the world through our varied sensory systems. Sensory experiences drive our behavior and contribute to the organization of our thoughts and emotions."



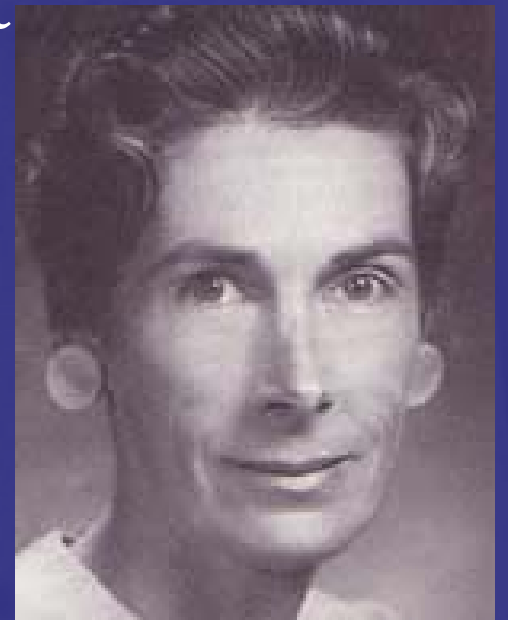
Challenges for Individuals with Autism

- Sensory Integration/Sensory Defensiveness
- Motor Coordination/ Movement Differences
- Communication/ Cognition Difficulties
- Emotional State/ Behavior Dysregulation
- Restricted Social Interactions
- Restricted Role Performance

What is Sensory Integration?

- Sensory Integration is the neurological process that organizes sensations from one's own body and from the environment and makes it possible to use the body effectively within the environment.

-A. Jean Ayres



The Role of Sensory Integration

- ◉ Sensory Processing Foundations
 - Vestibular
 - Proprioception
 - Tactile
- ◉ Sensory Modulation/ Self-Regulation
- ◉ Arousal, Emotional and Anxiety Regulation
- ◉ Praxis and Motor Coordination
- ◉ Impact on Social Interaction and Role Performance

Contributors to Sensory Processing Dysfunction

- Genetics/ environment
- Pre-natal/ Post natal problems
- Nutrition
- Environmental Toxins
- Environmental deprivations
- Societal Expectations
- Vaccines
- Trauma



Impact of Sensory Integration Problems in Autism



- Anxiety and Frustration
- Apparent Non-Compliance
- Maladaptive Behaviors
- Decreased Independent Functioning

Pre-Natal, Birth & Early Childhood Factors

- ▶ May-Benson TA, Koomar JA and Teasdale A (2009) Incidence of pre-, peri-, and post-natal birth and developmental problems of children with sensory processing disorder and children with autism spectrum disorder. *Front. Integr. Neurosci.* 3:31. doi:10.3389/neuro.07.031.2009

Pre-natal, Peri-natal, & Early Childhood Indicators of SI in Children with Autism

- 465 children with autism spectrum disorder
- 1000 children with sensory integration problems
- Parents reported on information from 5 areas
 - Maternal health during pregnancy
 - Child's birth
 - Early childhood illnesses and injuries
 - Infancy/Early Childhood
 - Developmental milestones

Maternal Health

- 45% of mothers in both groups reported 1 or more problems during pregnancy
 - Significant stresses
 - Maternal illness
 - Maternal medications
- No significant differences between the SPD and ASD groups.



Birth-Related Factors



- 42% of SPD and 38% of ASD children had one or more birth complications
- Assisted deliveries: 36% - 44%
- Forceps and Suction: 8 - 10%
- High birth-weight: 15 - 18%
- Umbilical cord insult: 5%
- Jaundice: 26 - 30%

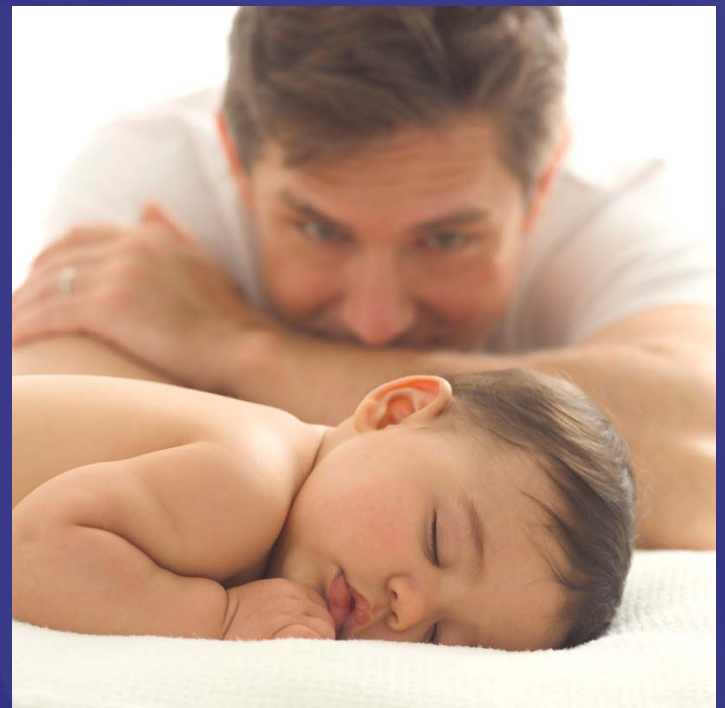
Early Childhood Illness & Injury

- Significant illnesses: 26 – 32%
- Ear Infections: 62 – 69%
- Ear Tubes: 12 – 14%
- Allergies: 24 – 38%



Early Childhood Developmental Problems

- ▶ Sleeping Problems:
32-44%
- ▶ Colic: 20-24%
- ▶ Did not go through
Terrible Two's: 45 – 50%



Developmental Milestones

- The ASD group reported more problems in every area than the SPD group, with significant differences on sitting, absent crawling phase, acquisition of language, and hesitancy on stairs .



Developmental Milestones

- Relative to other reported norms the SPD and ASD groups both reported higher numbers not crawling by 12 months or having an absent crawling phase.



Multiple Problems

- No single problem was common to all.
- The individuals in the SPD group averaged 7 problems across all areas while the ASD with SPD group averaged 8 problems across all areas.

Conclusions

- Children with SPD and ASD with SPD
 - exhibit similar profiles for pre-, peri-, and post-natal and developmental problems,
 - but frequently the percentages were higher or problems more severe for children with ASD,
 - with the exception of significantly higher incidences of fetal distress and childhood illnesses for the SPD group.

Possible Early Factors Related to SPD

- 1) maternal stress during pregnancy,
- 2) birth factors: jaundice, fetal distress, cord prolapsed, suction or forceps delivery, high birth weight,
- 3) significant childhood illnesses- especially severe viral
- 4) ear tubes,
- 5) sleeping and feeding problems and colic,
- 6) delayed or absent crawling phase and
- 7) not having a “terrible two” phase.

Manifestation of Sensory Integration Problems in Individuals with Autism Across the Lifespan

- Social-Emotional
 - Anxiety
 - Flexibility
- Social Relations
 - Intimacy
- Job Performance
 - Academic
 - Work
- Quality of Life
- Behavior/ Safety
- Task Performance
- Sleep/ Eating
- Participation in Desired Activities

Sensory Integration Problems

How are children and adults different?

- Sensory Problems
 - Defensiveness and Behavior
 - Tactile Processing
 - Vestibular Processing
 - Auditory Processing





- Motor Problems
 - Skill Development and skill degeneration
 - Quality of motor performance
 - Coordination difficulties
 - Atypical movement patterns

What is Sensory Integration Intervention?



“The use of activities, particularly those involving suspended equipment that are meaningful to the client, provide sensory input, and which invite planning and produce an adaptive response.”

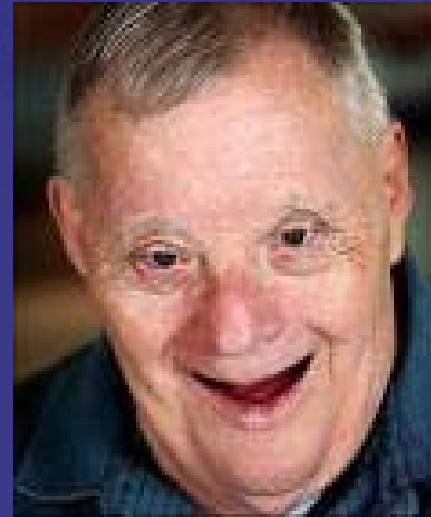
Types of Sensory Integration-Based Interventions

- Classical Sensory Integration
- Sensory Techniques
- Adjunctive Therapies
- Sensory Stimulation
- Sensory Motor Activities
- Sensory Diets



Differences in Intervention for Adolescents and Adults with Autism

- Co-morbid diagnoses
- Confounding behaviors
- Aging
- Medications
- History
- Logistics
- Settings



Accessing Services

➤ Population served

- All ages throughout the life-span

➤ Contexts

- Early Intervention
- Schools
- Adult Services Settings
- Outpatient Hospitals
- Private Clinic
- Home-Based Private Practice

➤ Reimbursement

➤ Government Funds

- EI
- Schools
- Dept. of Mental Health
- Dept. of Mental Retardation
- Criminal Justice
- Child Services

➤ Private Pay

➤ Insurance

Clinic/ Community-Based Models of Service Delivery

- Early Intervention
 - Government funds
- Home-based
 - Maybe group
 - Transdisciplinary
- Outpatient Hospital
 - Insurance
- 1:1 direct intervention
- Home-Based Private Practice
 - Private Pay
- 1:1 direct intervention
 - Maybe consultation

- Adult Services
 - Government Funds
 - Private Pay

- Private Clinic
 - Private Pay
 - Insurance
 - Government Funds
 - School Systems

- Consultation
 - 1:1 direct intervention
 - Maybe group

- 1:1 direct intervention
- Groups
- Short-term intensives
- Consultation

What else can be done ?

- Understanding and Education
- SI-based Occupational Therapy Intervention
- Cranio-Sacral/ Myofascial Release
- Sensory Diet
- Supportive Leisure Activities
- Accommodations

Massachusetts Pediatric Physician Survey on SPD

- Survey sent to 2400 pediatricians, pediatric neurologists and pediatric psychologists in the state of MA
- This is ALL pediatricians listed with the MA Board of Registration in Medicine.



Questions

- What is the knowledge level of SPD among pediatric physicians in MA?
- Do they believe SPD is a valid, unique disorder?
- Do they know how OT-SI treats SPD?
- Are they concerned about treatment efficacy?

Methods

- 11 question survey rated on 5-point Likkert scale of strongly agree to strongly disagree.
- Included an open ended response to signs and symptoms.
- To maximize response at this time, no demographic or identifying data was requested.
- Survey was mailed twice 5 weeks apart to maximize response

Results

- **122 surveys (5 %) were returned / No surveys were returned as undeliverable.**
- **Responses were recorded from the following post offices:**
 - **Boston**
 - **Springfield**
 - **Providence, RI and Central, MA**
 - **Hartford, CT**
 - **Cape Cod**
 - **Long Island, NY**
 - **32% - Unknown post office**

Results: Familiarity with SPD

- I am familiar with the term “Sensory Integration Disorder” (DSI) or “Sensory Processing Disorder” (SPD).
 - **65% are very familiar with SPD**
 - **28% are somewhat familiar with SPD**

- **I have a clear understanding of the signs and symptoms that the terms DSI and SPD typically refer to.**
 - **Only 15% have a very clear understanding of the signs of SPD**
 - **50% have a somewhat clear understanding of signs of SPD**
 - **22% admitted they do NOT have a clear understanding of the signs of SPD**

- **I have or have seen patient(s) with the signs and symptoms of DSI/SPD.**
 - **86% have seen patients with SPD**
 - **10% say they have not seen patients with SPD**

Results: Support for SPD Diagnosis

- **I believe that DSI/SPD is a valid disorder.**
 - **64% believe that SPD is a valid disorder**
 - **10% do not believe it is a valid disorder**

- **I would support the inclusion of these entities in a medically appropriate diagnostic manual, e.g. ICD or DSM.**
 - **66% would support inclusion of SPD in DSM/ICD**
 - **29% were not opposed but wanted more information**
 - **5% were strongly opposed**

Results: Knowledge of OT Intervention

- I am aware of how sensory integration based occupational therapy treatment attempts to treat these signs and symptoms.
 - **64% were aware of how OT/SI intervention works**
 - **20% were not aware of how intervention works**

- I believe sensory integration based occupational therapy treatment is effective and beneficial to treat these signs and symptoms.
 - 54% believe SI/ OT is effective
 - **37% were unsure of the effectiveness**
 - 10% did not believe intervention was effective

Results: MD Referral Patterns

- I have considered referring a child for occupational therapy for the signs and symptoms of DSI/SPD.
 - **71% have considered referring for OT**
 - **21% have not considered referring for OT**

➤ I have been asked by a parent(s) to refer a child for occupational therapy for these signs and symptoms.

➤ **68% have been asked by parents for a referral**

➤ **23% have not been asked by parents for a referral**

➤ **Other professionals have recommended occupational therapy for these signs and symptoms.**

➤ **61% have had other professionals recommend an OT referral**

➤ **21% were not sure**

➤ **18% have not had other refer**

- **I have never actively discouraged a parent from seeking an occupational therapy referral for these signs and symptoms.**
 - **84% have never discouraged a parent from seeking services**
 - **10% have actively discouraged parents from services**

Results: What characteristics do you consider most indicative of SPD?

- Physicians primarily recognize avoidance and oversensitivities to specific sensory stimuli as being characteristic of SPD, especially touch and sound.
- Interestingly, NO physicians mentioned gross motor coordination problems, postural problems or praxis problems!
- Several reported being unsure of distinction between SPD and other disorders like ADD.

Relationships Between Findings

- **MD's who have seen patients with SPD:**
 - Are familiar with the term "SPD" ($r = .58$)
 - Have a moderate understanding of the signs of SPD ($r = .45$)
 - Are very aware of how OT/SI attempts to treat this problem ($r=.57$)
 - Believe OT/SI is effective ($r = .56$)
 - Are likely to refer children for services ($r = .67$).
 - Consider it to be a valid disorder ($r = .63$)
 - Support inclusion in DSM/ ICD ($r = .53$).

➤ **MD's who had parents ask for OT referrals are:**

- **more likely to be familiar with term SPD ($r = .48$)**
- **likely to be familiar with the signs of SPD ($r=.45$) and**
- **to be aware of how OT/SI attempts to treat SPD ($r=.48$)**

Resources

- www.thespiralfoundation.org
 - Physician, Teacher & Parent Fact Sheets
- www.spdfoundation.net
 - Parent, Professional Articles & Resources
- www.otawatertown.com
 - How Do I Know checklists for all ages
- www.siglobalnetwork.org
 - Research and Resources on Sensory Integration