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AYRES SENSORY INTEGRATION® CERTIFICATE PROGRAM

MODULE 6

ASI INTERVENTION

30 Contact Hours (3.0 CEU's)



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Module 6

Providing Ayres Sensory Integration® with Fidelity



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M6

Providing ASI Intervention with Fidelity

Dr. Susanne Smith Roley
OTD, OTR/L, FAOTA

Acknowledgement to Dr. A. Jean Ayres for original intervention design including space and equipment and to all who have advanced research and practice using SI principles since that time.



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Module 6 (M6)

Providing ASI Intervention with Fidelity

- **Lesson 1: Updates in evidence-based ASI Intervention**
- Lesson 2: ASI Patterns, M4 Review
- Lesson 3: Goal Setting & Measuring Outcomes
- Lesson 4: Structure for Providing ASI with Fidelity
- Lesson 5: Facilitating the Adaptive Response
- Lesson 6: Process of Providing ASI with Fidelity
- Lesson 7: Consultation, Sensory Strategies & Environmental Modifications

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A. Jean Ayres Ph.D., OTR

One of the first Occupational Therapists (OT's)
to design intervention based on research



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Ayres's Work Permanently Altered Pediatric OT Practice

The ASI frame of reference has been developed
primarily for use within occupational therapy
and adapted for use in physical therapy, speech and language therapy,
education and psychology



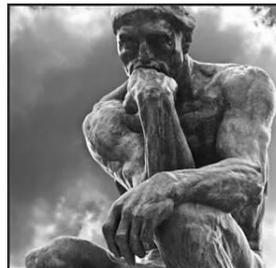
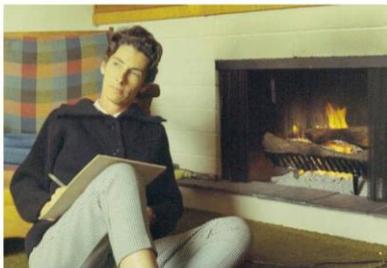
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Ayres defined
Sensory Integration Intervention
as an **Art** and a **Science**



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What is Sensory Integration?

"the organization of sensation for use"
-Ayres, 1979



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What is ASI Intervention?

Sensory-based, evidenced-based, play-based, and relationship-based intervention method that is child-centered and customized for successful engagement and participation
(Smith Roley, 2006)



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ASI meets External Criteria as an EBP

Frank Porter Graham Child Development Institute Report
(Steinbrenner et al., 2020)



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**Evidence-Based Practices for
Children, Youth, and Young
Adults with Autism**

Jessica R. Steinbrenner, Kara Hume, Samuel L. Odom,
Kristi L. Morin, Sallie W. Nowell, Brianne Tomaszewski,
Susan Szendrey, Nancy S. McIntyre,
Şerife Yücesoy-Özkan, & Melissa N. Savage

The National Clearinghouse on
Autism Evidence & Practice
NCAEPP • BRIDGING SCIENCE AND PRACTICE

National Clearinghouse on Autism Evidence
and Practice Review Team
UNC | FRANK PORTER GRAHAM
CHILD DEVELOPMENT INSTITUTE

Steinbrenner, J. R., Hume, K., Odom, S. L.,
Morin, K. L., Nowell, S. W., Tomaszewski, B.,
Szendrey, S., McIntyre, N. S., Yucesoy-Ozkan,
S., & Savage, M. N. (2020). *Evidence-based
practices for children, youth, and young
adults with Autism*. The University of North
Carolina at Chapel Hill, Frank Porter Graham
Child Development Institute, National
Clearinghouse on Autism Evidence and
Practice Review Team.

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ASI meets External Criteria as an EBP

(Steinbrenner et al., 2020)

- Sensory integration has met the standards for EBP
- SI was not included as EBP in earlier reports

Table 3.1 Evidence-based practices, definitions, and number of articles across review periods

Evidence-Based Practice	Definition	Empirical Support		
		1990-2011 (n)	2012-2017 (n)	1990-2017 (n)
Sensory Integration® (SI)	Interventions that target a person's ability to integrate sensory information (visual, auditory, tactile, proprioceptive, and vestibular) from their body and environment in order to respond using organized and adaptive behavior.	1	2	3

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ASI meets External Criteria as an EBP

(Schoen, et al., 2018)



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ASI meets External Criteria as an EBP

(Schoen, et al., 2018)

- ASI meets criteria for an evidence-based practice for children ages 5 to 21 with autism according to the Council for Exceptional Children standards
- The three studies met the criteria for inclusion (Dunbar et al., 2012; Schaaf, et al., 2014; Pfeiffer, et al., 2011)
- The RCTs by Schaaf, et al (2014) and Pfeiffer, et al (2011) met all criteria
- 2 RCT's; 69 subjects total; meet quality indicators of CEC

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RCT- Effectiveness of ASI for children with ASD

(Schaaf, et al., 2014)

- In a randomized trial of 32 children with autism, the group who received OT-SI for 10 weeks, 3 X per week
- showed statistically significant improvements in primary measure of Goal Attainment,
- as well as secondary outcome measures showing statistically significant decreases in caregiver assistance needed for self-care and social activities.
- Manualized, Replicable Intervention (Schaaf & Mailloux, 2015)
- Fidelity was tested with validated measure (Parham, et al 2011)

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RCT - Comparative Effectiveness Study: OT ASI vs Fine Motor

(Pfeifer, 2011)

- 37 children with ASD aged 6-12; randomized
- 18 tx sessions over 6 weeks
- Used ASI Fidelity Measure
- RESULTS: Children with ASD had greater gains on GAS and a significant decrease in autistic mannerisms in comparison with the fine motor intervention

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ASI meets External Criteria as an EBP

(AOTA, 2018)



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2000- present Advances in ASI Intervention EBP

Reviews:

- Case-Smith, J., & Arbesman, M. (2008). Evidence-based review of interventions for autism used in or of relevance to occupational therapy. *American Journal of Occupational Therapy*, 62, 416–429. <https://doi.org/10.5014/ajot.62.4.416>
- Case-Smith, J., Weaver, L. L., & Fristad, M. A. (2014). A systematic review of sensory processing interventions for children with autism spectrum disorders. *Autism*, 19, 133–148. <https://doi.org/10.1177/1362361313517762>
- May-Benson, T. A., & Koomar, J. A. (2010). Systematic review of the research evidence examining the effectiveness of interventions using a sensory integrative approach for children. *American Journal of Occupational Therapy*, 64, 403–414. <https://doi.org/10.5014/ajot.2010.09071>
- Schaaf, R. C., Dumont, R. L., Arbesman, M., & May-Benson, T. A. (2018). Efficacy of occupational therapy using Ayres Sensory Integration®: A systematic review. *American Journal of Occupational Therapy*, 72, 7201190010. <https://doi.org/10.5014/ajot.2018.028431>



Updates in ASI Intervention with Fidelity

Conclusion to ASI Systematic Review:

ASI is provided within professional therapy practice, customized, based on assessment, according to manualized principles, with fidelity to the intervention, according to the evidence.

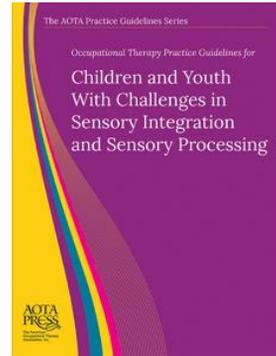
(AOTA, 2018)





Advances in ASI Intervention EBP

AOTA (2018) recommends that practitioners using an SIT approach use clinical reasoning, existing evidence, and outcomes to create a comprehensive, individualized approach for each client, rather than using isolated, specific sensory strategies.



Educational Interventions for Children and Youth with Autism: A 40-Year Perspective

Samuel L. Odom^{1,2,6} · Laura J. Hall² · Kristi L. Morin³ · Bonnie R. Kraemer² · Kara A. Hume¹ · Nancy S. McIntyre⁴ · Sallie W. Nowell¹ · Jessica R. Steinbrenner¹ · Brianne Tomaszewski¹ · Ann M. Sam¹ · Leann DaWalt⁵

Accepted: 24 March 2021
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Abstract

Commemorating the 40 th anniversary of the Diagnostic and Statistical Manual is to describe school-based and school-relevant interventions and instructional autism that have been developed and employed during that time period. The foundational research that provides an historical context. Research themes changes in the DSM provide an organization for describing the evolution of four previous decades. The commentary concludes with a discussion of dissemination and the promise of the “iSciences” for closing the research to pr

Other ineffective intervention approaches for children and youth with ASD that appear in practice also have been largely discounted. For example, auditory integration therapy is a technique that could be provided by a trained audiologist as part of a related service but has been discredited by the American Academy of Pediatrics (2010). Children/youth with autism often experience sensory issues (e.g., loud noises are disturbing, touch is aversive). In schools often “sensory” interventions are provided. There is evidence that the Sensory Integration Therapy™ developed by Jean Ayres (2005) can be effective if provided by a trained therapist (Schaaf et al., 2014). Conversely, a variety of other “sensory” interventions such as weighted vests, sensory diets, or sensory rooms have little evidence of effectiveness (Case-Smith et al., 2015), although they are often used in school. One approach to reducing the number of ineffective, sometime fraudulent, interventions is to identify and broadly disseminate information about practices that are effective.



ASI Intervention

“Active, individually-tailored, sensory-motor activities contextualized in play at the just right challenge that target adaptive responses for participation in activities and tasks”

(Schaaf & Mailloux, 2015)



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What Are the Essential Elements

For an Evidence Based Practice?

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Essential Elements in All Evidence-Based Interventions

1. Define and [understand the problem](#) and its causes
2. Clarify which [factors have greatest scope for change](#)
3. [Identify the postulates](#) on how to bring about [change](#)
4. Identify how to [deliver](#) the change mechanism
5. Conduct [studies](#)
6. Collect [sufficient evidence of effectiveness](#)

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Essential Elements in Evidence-Based Interventions

1. Define and [understand the problem](#) and its causes
 - Ayres's Sensory Integration [theory](#) (Ayres, 1972; Bundy & Lane, 2002; Smith Roley et al, 2001)
2. Clarify which [factors have greatest scope for change](#)
 - [Assessments](#) of sensorimotor performance factors (Ayres, 1989; Mailloux et al., 2018)
3. Identify the postulates on how to bring about [change](#)
 - ASI intervention [method](#) design
4. Identify how to deliver the change mechanism
 - [Manual](#) (Schaaf & Mailloux, 2015)
 - [Fidelity to the method](#) (Parham et al., 2007; Parham et al., 2011; May-Benson et al., 2014)
5. Conduct [studies](#)
 - Including feasibility, single case design, and more rigorous experimental designs such as randomized clinical trials (see reviews - Watling et al, 2018)
6. Collect [sufficient evidence of effectiveness](#)
 - [to justify rigorous evaluation/implementation](#) (Schoen et al, 2018)

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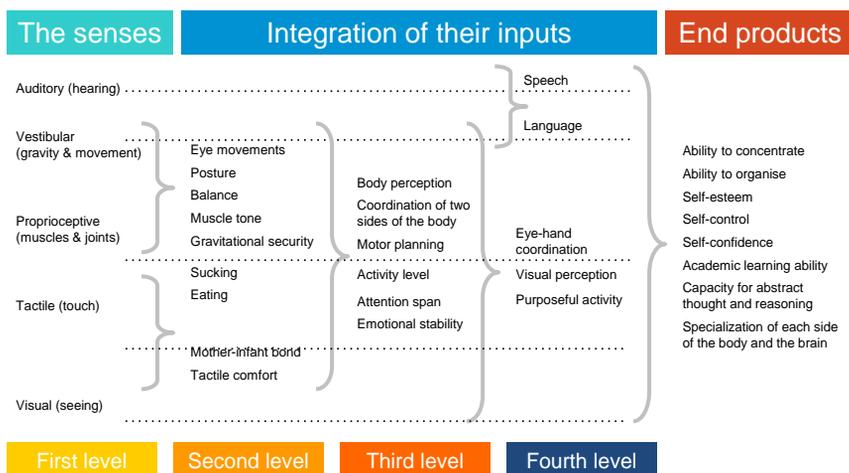
1. Understanding the Problem:
Basic Theoretical Assumptions Guiding Intervention

Sensory Integration is "the organization of sensation for use"
(Ayres, 1979)

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Sensory Integrative Processes



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Review

Ayres Theories of Autism and Sensory Integration Revisited: What Contemporary Neuroscience Has to Say

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* Correspondence: ekilroy@usc.edu

Received: 1 March 2019; Accepted: 17 March 2019; Published: 21 March 2019



Abstract: Abnormal sensory-based behaviors are a defining feature of autism spectrum disorders (ASD). Dr. A. Jean Ayres was the first occupational therapist to conceptualize Sensory Integration (SI) theories and therapies to address these deficits. Her work was based on neurological knowledge of the 1970's. Since then, advancements in neuroimaging techniques make it possible to better understand the brain areas that may underlie sensory processing deficits in ASD. In this article, we explore the postulates proposed by Ayres (i.e., registration, modulation, motivation) through current neuroimaging literature. To this end, we review the neural underpinnings of sensory processing and integration in ASD by examining the literature on neurophysiological responses to sensory stimuli in individuals with ASD as well as structural and network organization using a variety of neuroimaging techniques. Many aspects of Ayres' hypotheses about the nature of the disorder were found to be highly consistent with current literature on sensory processing in children with ASD but there are some discrepancies across various methodological techniques and ASD development. With additional characterization, neurophysiological profiles of sensory processing in ASD may serve as valuable biomarkers for diagnosis and monitoring of therapeutic interventions, such as SI therapy.

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Perspective

Neural Foundations of Ayres Sensory Integration®

Shelly J. Lane ^{1,2,3}, Zoe Mailloux ³, Sarah Schoen ⁴, Anita Bundy ¹, Teresa A. May-Benson ⁵, L. Diane Parham ⁶, Susanne Smith Roley ⁷ and Roseann C. Schaaf ³

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Abstract: Sensory integration, now trademarked as Ayres Sensory Integration® or ASI is based on principles of neuroscience and provides a framework for understanding the contributions of the sensory and motor foundations of human behavior. The theory and practice of ASI continues to evolve as greater understanding of the neurobiology of human behavior emerges. In this paper we examine core constructs of ASI identified in the seminal work of Dr. Jean Ayres, and present current neuroscience research that underlies the main patterns of sensory integration function and dysfunction. We consider how current research verifies and clarifies Ayres' propositions by describing functions of the vestibular, proprioceptive, and tactile sensory systems, and exploring their relationships to ocular, postural, bilateral integration, praxis, and sensory modulation. We close by proposing neuroplasticity as the mechanisms underlying change as a result of ASI intervention.

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Viewpoints

Multisensory Integration and the Society for Neuroscience: Then and Now

Barry E. Stein, Terrence R. Stanford, and Benjamin A. Rowland

Department of Neurobiology and Anatomy, Wake Forest School of Medicine, Winston-Salem, North Carolina 27157

The operation of our multiple and distinct sensory systems has long captured the interest of researchers from multiple disciplines. When the Society was founded 50 years ago to bring neuroscience research under a common banner, sensory research was largely divided along modality-specific lines. At the time, there were only a few physiological and anatomical observations of the multisensory interactions that powerfully influence our everyday perception. Since then, the neuroscientific study of multisensory integration has increased exponentially in both volume and diversity. From initial studies identifying the overlapping receptive fields of multisensory neurons, to subsequent studies of the spatial and temporal principles that govern the integration of multiple sensory cues, our understanding of this phenomenon at the single-neuron level has expanded to include a variety of dimensions. We now can appreciate how multisensory integration can alter patterns of neural activity in time, and even coordinate activity among populations of neurons across different brain areas. There is now a growing battery of sophisticated empirical and computational techniques that are being used to study this process in a number of models. These advancements have not only enhanced our understanding of this remarkable process in the normal adult brain, but also its underlying circuitry, requirements for development, susceptibility to malfunction, and how its principles may be used to mitigate malfunction.



2. Factors with the greatest scope for change: Assessments Guiding Intervention

AYRES SENSORY INTEGRATION® INTERVENTION





SENSORY INTEGRATION PATTERNS

(AYRES 1965 – 1989; MULLIGAN, 1998; MAILLOUX ET.AL., 2011; VAN JAARSVELD ET AL., 2014)

- Motor planning problems
(1965, 1966, 1969, 1972, 1977 & 1989; 1998; 2011; 2014)
- Visual perception + visual praxis problems
(1965, 1966, 1969, 1972, 1977 & 1989; 1998; 2011; 2014)
- Vestibular, postural & bilateral problems
(1965, 1966, 1969, 1972, 1977 & 1989; 1998; 2011; 2014)
- Tactile defensiveness
(1965, 1966, 1969, 1972; 2011)
- Somatosensory perception problems
(1969, 1972, 1977, 1989)



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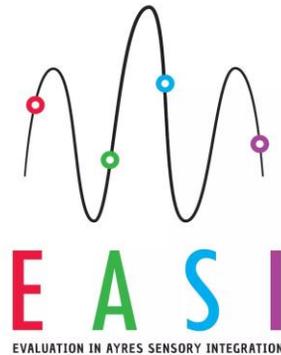
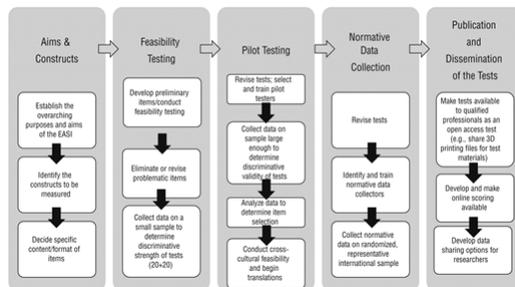
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Evaluation in Ayres Sensory Integration (EASI)

(Mailloux, Parham, Smith Roley et al., 2018)

Normative data collection phase



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3. Postulates for change: Eliciting adaptive responses

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Implications for Ayres Sensory Integration®

Neuroplasticity studies on environmental enrichment is closest match to OT/SI

- Control over activity
- Novelty
- Challenge
- Playful environment
- Lifelike context



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ASI Frame of Reference Postulates for Change

Combination of the following to **facilitate positive change** that is generalized across contexts,

i.e. to be more adaptive

Therapist's professional and clinical reasoning including knowledge and skills of ASI theory and practice acquired through professional qualification and post professional training

A playful supportive relationship between the child and therapist

A fun and inviting environment with space to swing, move and crash and a variety of affordances that can be manipulated and moved

Physical engagement in sensory motor activities that are safe, motivating, fun, yet challenging in the areas of needed growth and development

Communication with caregivers: Reframing behaviors, empowering the child, and updating the child and caregiver's occupational narrative as the child gains competencies

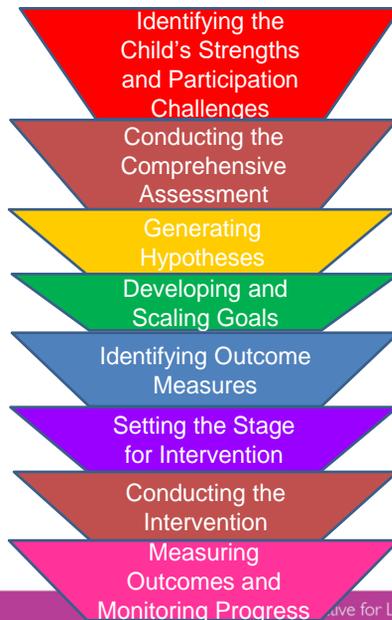
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Advances in ASI Intervention EBP Steps in Data Driven Decision Making

Schaaf & Mailloux (2015)



M5 & M6 focuses on the ASI intervention methods and evidence for practice

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4. Delivering the change mechanism Providing Manualized Intervention with Fidelity

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ASI Intervention is an EBP

- Feasible
- Acceptable
- Replicable

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ASI - Feasible

"The intervention is safe and feasible to implement, acceptable to parents and therapist, and therapists were able to implement protocol with adequate fidelity. These data provide support for implementation of a randomized control trial of this intervention and identify specific procedural enhancements to improve study implementation."

(Schaaf, Benevides, Kelly, & Mailloux, 2012).



ASI - Acceptable

Autism Speaks Survey - What therapies work best for you child?
<https://www.autismspeaks.org/blog/2012/09/25/top-8-autism-therapies-%E2%80%93-reported-parents>

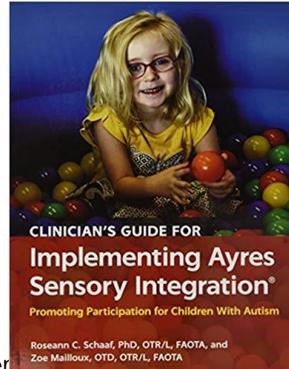
1. Occupational Therapy – 39%
2. Speech Therapy – 27%
3. ABA Therapy – 15%
4. Social Skills Classes – 8%



ASI - Replicable

ASI Intervention Fidelity Measure

- Parham et al., 2007
- Parham et al., 2011
- May-Benson et al., 2014



Use of a fidelity measure allows a researcher to determine if an intervention was delivered according to the manual

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**WHEN DONE WITH FIDELITY,
ASI INTERVENTION IS:**

PROVIDED BY A QUALIFIED
PROFESSIONAL
GUIDED BY ASSESSMENT,
CUSTOMIZED SENSORY MOTOR PLAY
TOWARD RELEVANT OUTCOMES



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ASIFM STRUCTURE ELEMENTS

- Part I: Therapist Qualifications
- Part II: Safe Environment
- Part III: Record Review
- Part IV: Space and Equipment
- Part V: Communication with
Parents & Teachers



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ASIFM Process Elements (Parham et al., 2011)

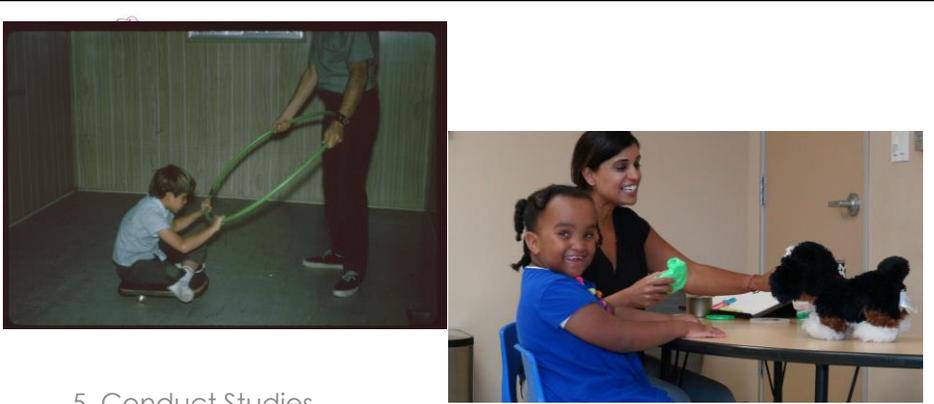
- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Physical safety 2. Sensory opportunities (vestibular, tactile and proprioceptive) 3. Supports sensory modulation to attain/maintain a regulated state 4. Supports postural/ ocular/ oral/ or bilateral motor coordination 5. Challenges praxis and organization of behavior | <ol style="list-style-type: none"> 6. Collaborative activity choice 7. Just Right Challenge 8. Ensures Success 9. Supports motivation to play 10. Establishes therapeutic alliance |
|--|---|



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5. Conduct Studies
Research Guiding Intervention

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Ayres's Intervention Research

- 1972 – Improving Academic Scores through SI
- 1976 – Effect of SI Therapy on Learning Disabled Children (Valentine-Kline Foundation)
- 1978 – Learning Disabilities and the Vestibular System
- 1980 – Ayres & Tickle Hyper-responsivity as a Predictor of Positive Response to Sensory Integrative Procedures by Autistic Children

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Ayres's Outcomes

- Academic improvement in children receiving special education and OT using sensory integration (Ayres, 1976; 1978)
- Pre and Post test using SCSIT and SCPNT, dichotic listening, ITPA, FCTCAA, WRAT, and the SORT
- Handwriting improved



1980's ASI Intervention Evidence

Offenbacher Meta-analysis (1982):

8 experimental studies analyzed
(3 of 8 studies done by Ayres)

N=317 children

Average effect size of .79

Outcomes in the areas of motor, academic, & language

<https://pdfs.semanticscholar.org/3d79/91a9635ff6482c7ee25359a03d12402175d0.pdf>



1980-1990's ASI Intervention Evidence

Despite Ayres's meticulous groundbreaking research applied to her intervention methods

Critiques

Arendt, MacLean, and Baumeister (1988)

Hoen & Baumeister (1994)

Polatajko, Kaplan, and Wilson (1992)

Schaffer (1984)



1990's ASI Intervention Evidence

Vargas & Camilli Meta-analysis (1999)

Analyzed 16 experimental studies

(Ayres 4/16 studies)

Included studies of adults

Average effect size of .29 compared to no treatment

Effect size was only .09 compared to alternative treatment methods



1990's ASI Intervention Evidence

Daems (1994): Review of 57 studies

Many studies, but not the best quality symptomatic of the state of research overall in OT at the time

Polatajko, Kaplan, & Wilson (1992)

SI treatment was not effective in treating academic problems in children with learning disabilities. Unclear whether or not SI treatment was more effective than perceptual motor approaches.... HOWEVER

Compared to no-treatment control groups, **children receiving SI made significant gains**

Children receiving **SI did not make significantly more gains** than an alternative treatment (e.g., tutoring, perceptual-motor)



2000's ASI Intervention Evidence

Miller (2003) & Mulligan (2003):

Miller found more than 80 studies

Majority of studies flawed in regard to:

Intervention replicability

Sample homogeneity

Outcome measures sensitive & reliable

Rigorous methodology

Concluded:

Effectiveness of ASI is neither proven nor disproven



2000's ASI Intervention Evidence

Need for Manualization & Fidelity to Method

Most effectiveness studies did not document measurement of fidelity

Fidelity = degree to which intervention adheres to principles

In many studies, the intervention description did not seem to follow Ayres's principles

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6. Provide Sufficient Evidence Current Practice

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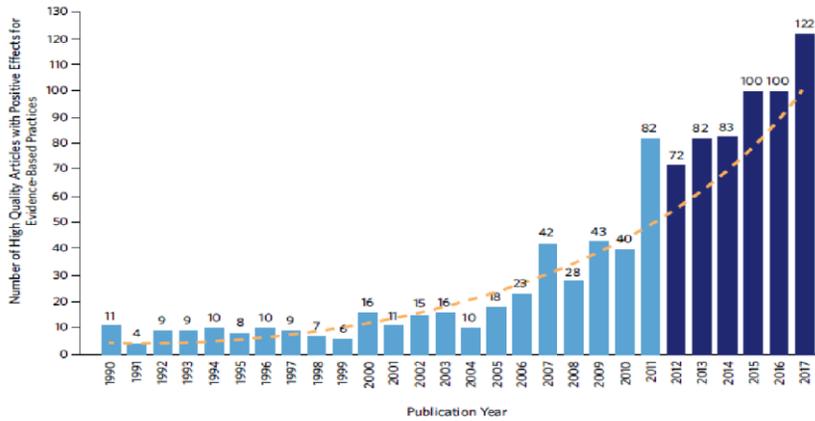
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Frank Porter Graham Child Development Institute, 2020

Figure 1.2 Trends in autism intervention research



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Kilroy, Aziz-Zadeh, & Cermak, 2019

Brain Sci. 2019, 9, 68

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Publication Search on PubMed for Autism and Sensory Processing

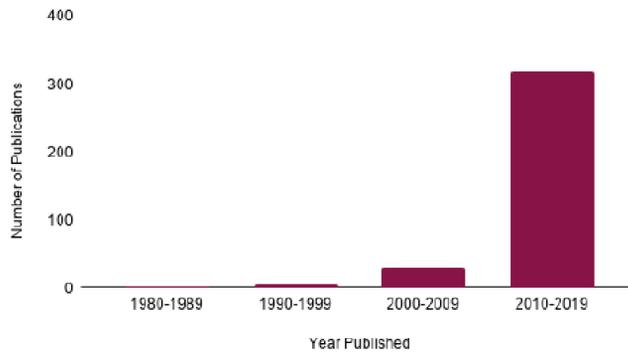


Figure 1. PubMed publication search for Autism and Sensory modalities. Publications by decade for Autism Spectrum Disorder and sensory processing from 1980 through 2019.

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2000- present Advances in ASI Intervention EBP

Further Research

- Omairi, C. (in press). Positive effects found as a result of an RCT
- Schaaf, R.C. two grant funded RCT's underway
- EASI in normative data collection phase and will provide a more accessible tool for characterization of the sample for research

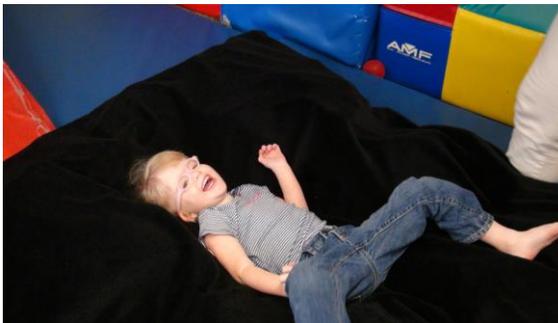
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Practice Informs Research and Research Refines Practice



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What are the active ingredients of change?

MOST LIKELY a combination

- sensory, motor, & cognitive stimulation
- environmental novelty
- opportunities for engagement in challenging tasks
- internal locus of control



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To be Evidence-Based Sensory Integration in Practice

Occupational Therapists using ASI

Must have post graduate training and adhere to the manualized intervention according to fidelity

Therefore, one of the most important active ingredients is

YOU!

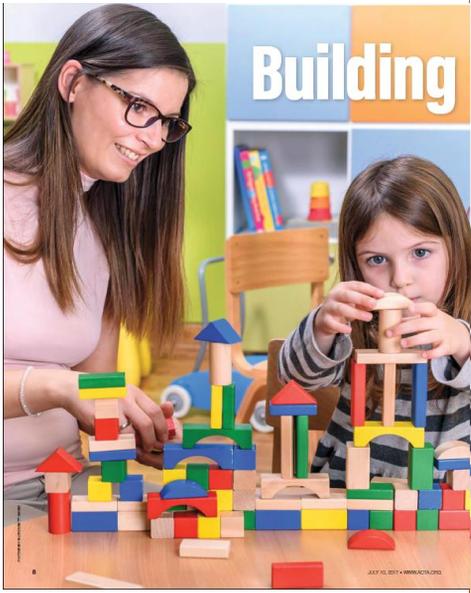


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International Council for Education in Ayres Sensory Integration (ICEASI)



Building Competency in SI

Evidence-Based Guidelines for Occupational Therapy Using Ayres Sensory Integration®

Annie Baltazar Mori
Anjali Carrasco Koester
D'Andre Holland
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Rosalind Gray Rogers
Susanne Smith Roley
Elisabeth Soechting
Annemarie VanJaarsveld

Occupational therapy practitioners are seeking information to build their knowledge and skills through postgraduate continuing education in sensory integration.

Over the years, sensory integration (SI) has gained popularity in practice, with increasing evidence and guidelines for its use in occupational therapy practice (American Occupational Therapy Association (AOTA), 2010, 2014, 2017; Reynolds & Luskens, 2006; Schaeff et al., 2014; Schaeff et al., 2015; Whiting, Irving, Dewa, & Schaeff, 2015). Evidence of occupational therapy practice has also grown. A 2015 AOTA survey showed early assessment and school as the top work settings for occupational therapists and occupational therapy assistants in terms of number of practitioners—more than one-third of the total workforce (AOTA, 2015b).

Praxis as early as 1993, Gail-Dunst and Brune (1996) found that occupational therapists in the United States working with children with autism at schools most frequently used a sensory integrative approach. According to Schaeff (2011), 90% of occupational therapists employ strategies of SI in their work with children with autism. SI was identified as one of the three most requested approaches by parents (Green, Prutch, Lichten, & Eggleston, 2006; Mandell, Novak, & Timp, 2007), with a steady increase in the number of studies, now at 1 out of 47 children, ages 3 to 17 years (Austin Speaks, 2017).

SI engagement in occupational therapy and in research related to occupational therapy practice. Currently, many health and education professionals recognize that occupational therapy is the go-to profession for SI and sensory processing (Reynolds, Whiting, Zappella, & May-Benson, 2012). Because of the complex nature of SI, occupational therapy practitioners are seeking information to build their knowledge and skills in this area through postgraduate continuing education.

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Advances in ASI Intervention EBP

PROPOSED PATHWAYS TO EXPERTISE IN AYRES SENSORY INTEGRATION® (ASI)	
LEVELS	KNOWLEDGE AND SKILLS
LEVEL 1: ENTRY LEVEL OUTCOMES	<ol style="list-style-type: none"> 1. Introduction to the seminal work of A. Jean Ayres 2. Sensory contributions to development, including concepts of body-centered sensations, sensory motor skills, and praxis 3. Sensory challenges, including reactivity, perception, postural and motor skills, and praxis 4. When to refer to a professional with post-graduate specialization in ASI 5. Basic principles and equipment used in classic ASI intervention 6. Impact of sensory systems on the lived experience, including occupations, of people with sensory challenges.
LEVEL 2: CERTIFICATE LEVEL OUTCOMES Training programs typically consist of 120 contact hours or more	<ol style="list-style-type: none"> 1. Historical and Current Foundations of Sensory Integration (SI) Theory 2. Foundations of SI in Occupational Therapy and Occupational Science 3. Ayres Sensory Integration® as Trademarked Term 4. Typical SI development 5. The impact of SI across the lifespan 6. Neurobiological foundations for SI 7. Models of SI function and dysfunction 8. Terminology related to SI 9. Reliability and validity of direct and indirect assessments of SI and praxis 10. Research from factor analyses supporting knowledge of the patterns of SI function and dysfunction 11. Evidence on SI and praxis deficits in various populations 12. Clinical reasoning tools such as Data Driven Decision Making 13. Differentiating SI deficits from other types of difficulties 14. ASI intervention planning based on systematic reasoning and hypothesis generation 15. Linking engagement in occupation and participation with SI for goal setting and outcomes measurement 16. Considerations of a manualized intervention 17. Structural and process elements of ASI intervention 18. Distinguishing ASI intervention methods from other interventions 19. Evidence on effectiveness of ASI methods 20. Benefits and limitations of the ASI approach
LEVEL 2 SKILLS DEMONSTRATING THE ABILITY TO:	<ol style="list-style-type: none"> 1. Choose and administer ASI assessments that inform understanding of participation challenges relevant to the profession 2. Administer assessments reliably 3. Support interpretation with objective data 4. Interpret, synthesize, and analyze assessment data and achieve meaningful goals 5. Communicate assessment results in a conclusive and understandable way 6. Relate SI assessment findings to reasons for referral and participation 7. Make an impact and empower others to effect change for the person with SI difficulties 8. Understand therapeutic use of self in ASI intervention 9. When SI is warranted, meet criteria for fidelity in ASI intervention
LEVEL 3: ADVANCED LEVEL OUTCOMES	<ol style="list-style-type: none"> 1. Shows motivation to continue learning 2. Builds expertise in one or more areas of research, advocacy, education, and practice 3. Links with professionals with additional expertise within and outside of their own profession 4. Contributes to new knowledge and skills in ASI 5. Takes a leadership role in their community of practice 6. Shares knowledge (e.g., through publications or lectures)
LEVEL 4: EXPERT LEVEL OUTCOMES	Experts are identified as individuals with exemplary knowledge and skills who make substantial contributions to ASI research, advocacy, education, or practice.

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Baltazar Mori, A., Koester, A. C., Holland, D., Fernandes, P., Rogers, R. G., Roley, S. S., ... Van Jaarsveld, A. (2017). Building competency in SI. *OT Practice*, 22 (12), 8–13.

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Ayres's Implications for Research (unpublished lecture)

"The implications for research on sensory integration theory and practice, are limited only by the nature of the human brain and the occupational therapist's willingness to study that brain, research on it, and to study children in relation to that knowledge.

(It takes more than willingness; it takes money, too.)

Some of the research in the future will need to include neurophysiological and other highly precise investigative methods, such as those used by neuroscientists."

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Ayres's Implications for Education (unpublished lecture)

"The implication for education include emphasis on the neuroscience, neuroscientific research methods, and the ability and opportunity to relate derived knowledge to human beings in a clinical situation."



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Ayres's Implication for Practice (unpublished lecture)

- "The possibilities for practice are limited only by the knowledge and open-mindedness of the therapist.
- **SI theory is based on the study of the vertebrate brain. All OT patients have vertebrate brains.**
- Sometimes application of SI principles is paramount; sometimes it is worth only awareness.
- A large and important area that should be developing is mental health.
- The domain of learning disabilities has been entered but is in considerable need of refinement."



ASI as Evidence Based Practice – Updated References 2020

Steinbrenner, J. R., Hume, K., Odom, S. L., Morin, K. L., Nowell, S. W., Tomaszewski, B., Szendrey, S., McIntyre, N. S., Yücesoy-Özkan, S., & Savage, M. N. (2020). *Evidence-based practices for children, youth, and young adults with Autism*. The University of North Carolina at Chapel Hill, Frank Porter Graham Child Development Institute, National Clearinghouse on Autism Evidence and Practice Review Team.

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Schaaf, R.C., Benevides, T. Mailloux, Z., Faller, P., Hunt, J., van Hooydonk, E., Freeman, R., Leiby, B., Sendekci, J., & Kelly, D. (2014). An Intervention for Sensory Difficulties in Children with Autism: A Randomized Trial. *J Autism Dev Disord*. 44(7): 1493–1506. Published online 2013 Nov 10. doi: 10.1007/s10803-013-1983-8



References

See attached list

Also see:

<https://www.siglobalnetwork.org/research-and-literature>

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Module 4 Review

Clinical Reasoning for Intervention Planning
using Ayres Sensory Integration® Research
in the Interpretation of Assessment Results



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Module 6 (M6) **Providing ASI Intervention with Fidelity**

- Lesson 1: Updates in evidence-based ASI Intervention
- Lesson 2: ASI Patterns, M4 Review
- Lesson 3: Goal Setting & Measuring Outcomes
- Lesson 4: Structure for Providing ASI with Fidelity
- Lesson 5: Facilitating the Adaptive Response
- Lesson 6: Process of Providing ASI with Fidelity
- Lesson 7: Consultation, Sensory Strategies & Environmental Modifications

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What is Clinical Reasoning?

Mattingly (1991, p. 981) outlines five domains of knowledge upon which clinical reasoning in pediatric OT is built:

- (a) understanding of the patient's inner world of motivations, commitments, and tolerances;
- (b) assessment of the environment in which the task is taking place;
- (c) knowledge of the child's physical and cognitive deficits and capacities and her knowledge of how to intervene with a child who manifests these dysfunctions;
- (d) reading of the nature of the therapeutic relationship and
- (e) goals for the child both in the session and over a longer period

3



Using Data Driven Decision Making (DDDM) to Support Clinical Reasoning in ASI

- Use of DDDM in RCT showing efficacy of OT using ASI (Schaaf, et al., 2014; Schaaf & Mailloux, 2015)
- Steps 1 & 2 covered in Modules 1-3:
 - Step 1: Identifying Child's Strengths and Participation Challenges
 - Step 2: Conducting a Comprehensive Assessment



4



SI Constructs to be considered to provide a Comprehensive Assessment in ASI (see M2 & M3)

- Sensory Perception (vestibular, proprioceptive, tactile and visual)
- Ocular, Postural and Bilateral Motor Integration (vestibular/proprioceptive-based)
- Praxis (somatosensory-based; visual-based; language-based & ideation-based)
- Sensory Reactivity



- Somatodyspraxia: tactile & motor planning deficits
(1965, 1966, 1969, 1972, 1977 & 1989, 1998, 2011, 2014)
- Visuodyspraxia: visual perception/visual praxis deficits
(1965, 1966, 1969, 1972, 1977 & 1989, 1998, 2011, 2014)
- Vestibular, ocular, postural & bilateral deficits
(1965, 1966, 1969, 1972, 1977 & 1989, 1998, 2011, 2014)
- Sensory Reactivity: tactile defensiveness & hyperactivity/distractibility
(1965, 1966, 1969, 1972, 1997, 2006, 2014, 2015)
- Other factors seen in some studies
(auditory language; somatosensory perception)
(1969, 1972, 1977, 1989, 1998, 2011, 2014)

Ayres 1965 – 1989; Mulligan, 1998; Mailloux Et Al., 2011; Van Jaarsveld Et Al., 2014)



Analysis of Sensory Integrative Functions

Visual-Praxis	Vestibular Bilateral Integration	Proprioception	Tactile Somato-dyspraxia	Sensory Reactivity (Modulation)
Visual motor	Postural control	Gross motor skills	Praxis	Arousal Affect Activity Level Attention
Visual construction	Bilateral coordination Sequencing	Fine motor skills	Auditory - Language Organization of behavior	State/Self Regulation

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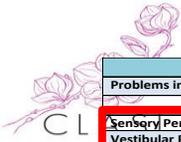
SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL ▲ = SIPT ★ = EASI ● = SPM ◻ = OTHER TESTS					
Problems in Vestibular Bilateral Integration		Problems in Somatopraxis		Problems in Visuopraxis	
Sensory Perception Vestibular Processing ___ PRN/VN ▲★ (low score is a sign of vestibular based problem) ___ SPM ● ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, spatial orientation scores on VPr:D, VPr:C ★)	Proprioception ___ KIN/Prop JT ▲★ ___ Prop: F ★ ___ position awareness ___ use of force ___ SPM ●	Tactile Perception ___ FL_LTS/TP: L ▲★ ___ GRA/TP: D ▲★ ___ MFP/TP: S ▲★ ___ TP:O ★ ___ SPM ● ___ poor ability to find or manipulate objects w/o vision	Visual Perception ___ SV ▲ ___ FG/VP: S ▲★ ___ SPM ● ___ other visual perception tests (e.g. DTVP, TVPS ◻) ___ visual perception abilities (e.g. puzzles, hidden figure games)	Sensory Reactivity Sensory Hyper-Reactivity Signs of <u>exaggerated</u> or <u>heightened</u> responses: ___ SR: Overall (Hyper) ___ SPM Bal & Mov't. ● ___ PC ★ ___ SR-Motion/Gravity ___ prolonged VN*	Sensory Hypo Reactivity Signs of <u>under</u> or <u>delayed</u> responses: Observations of lack of awareness of motion ___ SPM Touch ● ___ Hypo tactile reactivity TP tests ★
Praxis & Motor Related Functions					
Postural/Ocular ___ SWB/Bal ▲★ ___ PC ★ ___ O: M & Pr ★ ___ other (e.g. BOT-2, SOSI; COP) ◻ ___ SPM ● ___ extensor tone ___ righting reactions	Postural Mechanisms ___ PC ★ ___ SWB/Bal ▲★ ___ other balance tests (e.g. BOT-2) ◻ ___ posture in sitting & standing	Somatosensory-based Praxis ___ PPr/Pr:P ▲★ ___ SPR/Pr: S ▲★ ___ OPr ▲ ___ SPM ● Language-based Praxis ___ PrVC/ Pr:FD ▲★ Ideation-based Praxis ___ Pr:I ★ ___ other (e.g. TIP) ___ SPM ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	Visuopraxis ___ MAC ▲ ___ DC/ VPr:D ▲★ ___ CP/ VPr: C ▲★ ___ other visual motor tests (e.g. Beery VMI-Motor Coordination) ◻ ___ SPM ● ___ ability to draw, write, build, fold, etc.	___ SPM Hearing ● ___ SR-Auditory ★ ___ SPM Taste & Smell ● ___ SR-Olfactory	___ SPM Hearing ● ___ Hypo auditory reactivity A:L ★ ___ SPM Smell ● ___ SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain, or other sensation) *Hyper reactive responses during or following rotation may be observed, particularly in conjunction with high VN
Bilateral Integration—Midline ___ BMC/BI ▲★ ___ OPr ▲ ___ Spr ▲ ___ (MFP/GRA) ▲ ___ ability to coordinate both sides of the body ___ crossing midline/laterality ___ jumping jacks, skipping, etc. ___ Auditory: Localization ★ ___ New test-not yet classified	Non-SI Scores/Data Suggesting patterns other than sensory integration ___ High VN or PRN with low PrFD or PRVC and no other signs of dyspraxia ___ signs of neuromotor problems (e.g. high tone, tremor, ataxia, etc.) ___ without other signs of sensory or praxis problems ___ other				

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Problems in Sensory Perception



SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL							
Problems in Vestibular Bilateral Integration		Problems in Somato-Praxis		Problems in Vision-Praxis			
Sensory Perception Vestibular Processing PRN/VOR ▲ ★ (shortened duration) ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CPR)		Proprioception ___ KIN ▲ ___ position awareness; use of force		Tactile Perception ___ MFP ▲ ___ FI ▲ ___ GRA ▲ ___ LTS ▲ ___ ability to find or manipulate objects w/o vision		Visual Perception ___ SV ▲ ___ FG ▲ ___ other visual perception tests (e.g. DTVP, TVPS) ■ ___ visual perception abilities (e.g. puzzles, hidden figure games)	
Praxis & Motor Related Functions							
Postural/Ocular ___ SWB ▲ ___ PC & B ★ ___ Ocular M & Pr ★ ___ MAC ▲ ___ other (e.g. BOT-2) ■ ___ extensor tone ___ righting reactions		Postural Mechanisms ___ SWB ▲ ___ PC&B ★ ___ other balance tests (e.g. BOT-2) ■ ___ posture in sitting & standing		Somatosensory-based Praxis ___ PPr ▲ ___ OP ▲ ___ SPPr ▲ ___ BMC ▲ Language-based Praxis ___ PrVC ▲ Ideation-based Praxis ___ Pr:I ★ ___ other (e.g. TIP) ■ ___ SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks		Visuo-Praxis ___ MAC ▲ ___ DC ▲ ___ CPR ▲ ___ other visual motor tests (e.g. VMI) ■ ___ ability to draw, write, build, fold, etc.	
Bilateral Integration—Midline ___ BMC ▲ ___ BI ★ ___ OPr ▲ ___ SVCU ▲ ___ SPPr ▲ ___ PHU ▲ ___ (GRA) ▲ ___ (MFP) ▲ ___ ability to coordinate both sides of the body ___ crossing midline/ laterality ___ jumping jacks, skipping, etc.				Problems in Sensory Reactivity Sensory Reactivity Sensory Over-Reactivity Signs of <u>over or heightened</u> responses: ___ SPM Bal & Mov't. ● ___ Prolonged PRN with signs of over-reactivity ▲ ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ● ___ SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain or other sensation)			
				Sensory Under Reactivity Signs of <u>under</u> responses: ___ SPM Bal & Mov't. ● ___ SPM Touch ● ___ SR-Tactile ● ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)			

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Problems in Sensory Perception



Sensory Perception			
Vestibular Processing ___ PRN/VN ▲ ★ ___ lack of signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CPR) ▲	Proprioception ___ KIN ▲ ___ Prop JP ★ ___ Prop: F ★ ___ position awareness; use of force	Tactile Perception ___ MFP ▲ ___ FI ▲ ___ GRA ▲ ___ LTS ▲ ___ TP:S ★ ___ TP:O ★ ___ TP:L ★ ___ TP:D ★ ___ ability to find or manipulate objects w/o vision	Visual Perception ___ SV ▲ ___ FG ▲ ___ VP: S ★ ___ other visual perception tests (e.g. DTVP, TVPS) ■ ___ visual perception abilities (e.g. puzzles, hidden figure games)

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Data Driven Decision Making (DDDM) to Support Clinical Reasoning in ASI Steps 1 & 2 Case Example:

Rio is a 7 year old boy with no medical or educational diagnosis. Now in a regular education grade 2 classroom, he is falling behind his peers in reading, writing and other school work. Rio enjoys skateboarding, but falls a lot. He would like to learn to surf someday, but swimming is hard for him. Although he is a kind, verbal, smart boy with an independent spirit, he cannot tie his shoes, button small buttons or zip his pants independently. Rio is a very active boy and he is starting to get into trouble often at school. A psychologist referred Rio's parents to an OT for an assessment, after no learning or psychological issues were found on her assessment.



Using Data Driven Decision Making (DDDM) to Support Clinical Reasoning in ASI: Steps 1 & 2 Case Example:

Identifying Child's Strengths/Interests and Participation Challenges

Strengths/Interests:

- Kind
- Smart and motivated toward independence
- Good language skills
- Interested in skateboarding and swimming

Participation Challenges

- Struggles with reading and writing
- Falls when skateboarding and cannot swim
- Struggles with tying shoes, buttoning small buttons and zipping his pants
- High activity level and trouble with school work is causing difficulties for him at school

Conducting a Comprehensive Assessment

Previous assessments had ruled out speech and language problems, learning disorder, intellectual deficits and any other specific diagnosis, such as ADHA or ASD. Since the types of participation problems that Rio displays may occur in conjunction with an underlying problem in sensory integration, the following measures were used in the OT assessment:

- Sensory Integration & Praxis Tests (SIPT)
- Some tests from the Evaluation in Ayres Sensory Integration (EASI)
- Sensory Processing Measure (SPM)
- Interviews with parent & teacher; observations at home & school



Use the form in your M4 handout to list the strengths/interests and participation challenges, as well as the assessment measures you used, to assess the child or children you tested.

Identifying Child's Strengths/Interests and Participation Challenges

Conducting a Comprehensive Assessment

Strengths/Interests:

Previous assessments:

Measures applied in this assessment:

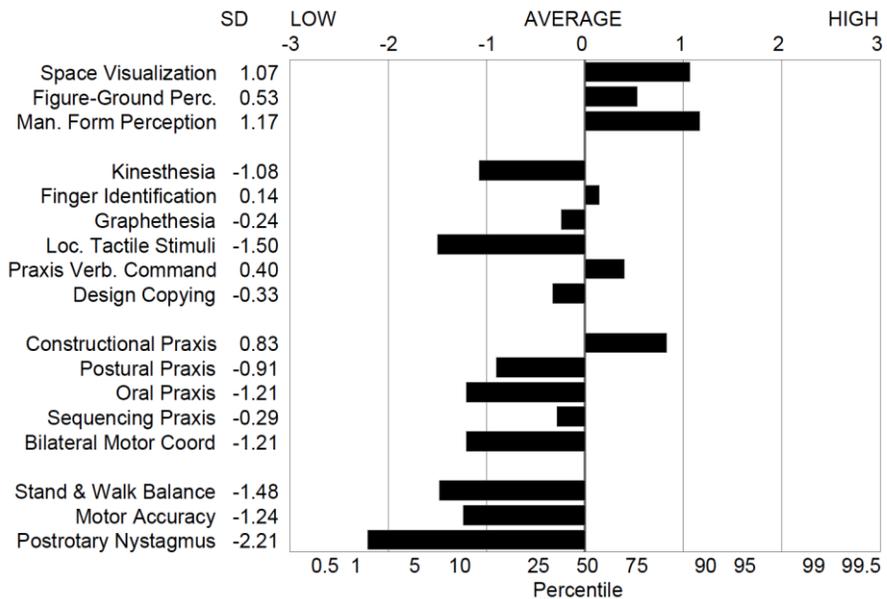
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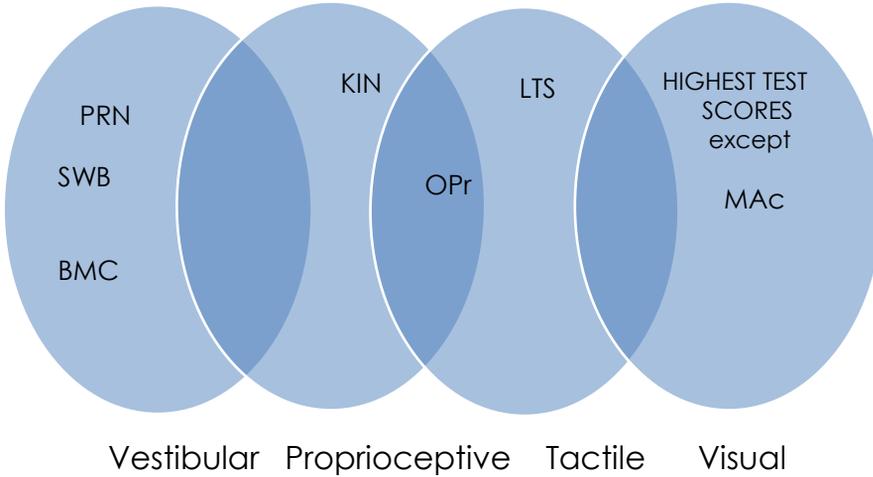
SIPT



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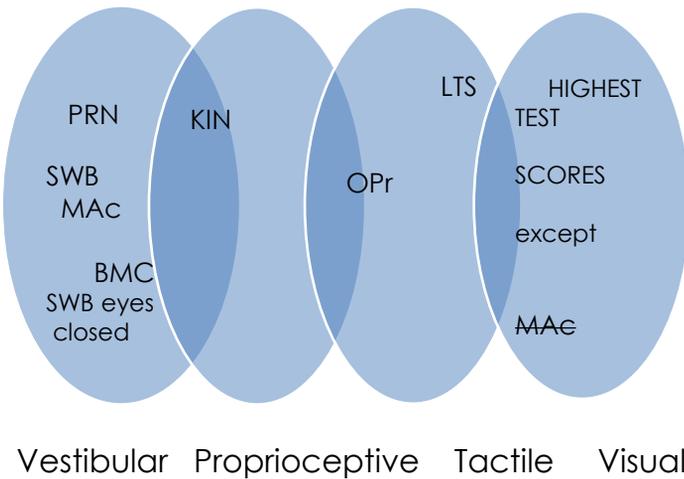
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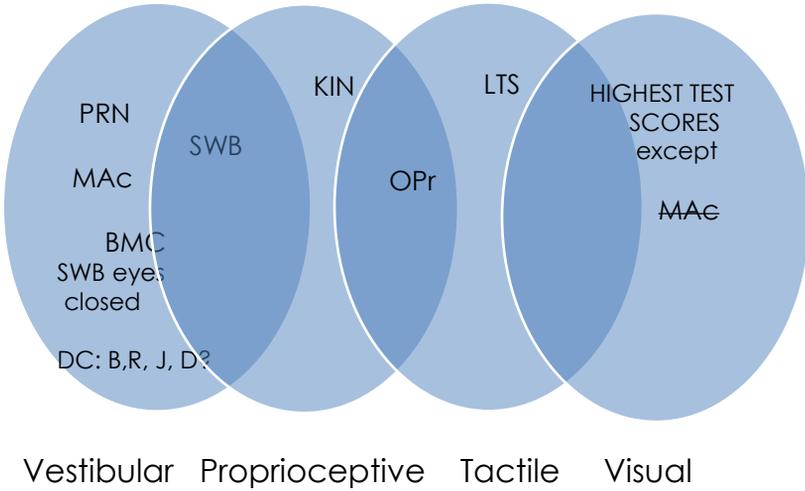


Test	Score	Test	Score
Space Visualization (SV)		Design Copying (DC)	
* Time-adjust accuracy	1.07	* Total accuracy	-0.33
Accuracy	1.12	Adjusted accuracy	-1.10
Time	0.97	Part I accuracy	0.64
Contralateral use	1.55	Part II accuracy	-1.26
Preferred hand use	1.33	Part II SMH listed on next page	
Figure-Ground Perception (FG)		Constructional Praxis (CPr)	
* Accuracy	0.53	* Total accuracy	0.83
Time	-0.45	Part I accuracy	0.87
Manual Form Perception (MFP)		Part II accuracy	0.79
* Total accuracy	1.17	Part II errors listed on next page	
Total time	0.27	Postural Praxis (PPr)	
Part I accuracy	0.53	* Total accuracy	-0.91
Part I right accuracy	-0.15	Oral Praxis (OPr)	
Part I left accuracy	1.11	* Total accuracy	-1.21
Part I time	0.69	Sequencing Praxis (SPr)	
Part I right time	0.81	* Total accuracy	-0.29
Part I left time	0.40	Hand accuracy	-0.35
Part II accuracy	1.28	Finger accuracy	-0.16
Part II right accuracy	1.09	Bilateral Motor Coordination (BMC)	
Part II left accuracy	1.10	* Total accuracy	-1.21
Part II time	0.10	Arm accuracy	-1.01
Part II right time	0.23	Feet accuracy	-1.13
Part II left time	-0.05	Standing and Walking Balance (SWB)	
Kinesthesia (KIN)		* Total score	-1.46
* Total accuracy	-1.08	Eyes open	-0.24
Right hand accuracy	-0.94	Eyes closed	-2.39
Left hand accuracy	-0.91	Right foot	0.40
Finger Identification (FI)		Left foot	-1.34
* Total accuracy	0.14	Motor Accuracy (MAc)	
Right hand accuracy	0.74	* Weighted total acc	-1.24
Left hand accuracy	-0.51	Unweighted total acc	-0.97
Graphesthesia (GRA)		Pref hand weight acc	-1.68
* Total accuracy	-0.24	Pref hand unweight acc	-1.65
Right hand accuracy	-0.07	Nonpref hand weight acc	-0.81
Left hand accuracy	-0.37	Nonpref hand unweight acc	-0.28
Localization of Tactile Stimuli (LTS)		Postrotary Nystagmus (PRN)	
* Total accuracy	-1.50	* Average nystagmus	-2.21
Right hand accuracy	-0.95	Average clockwise	-2.14
Left hand accuracy	-1.31	Average cnt clockwise	-2.29
Praxis on Verbal Command (PVC)		Time 1 clockwise	-2.21
* Total accuracy	0.40	Time 1 cnt clockwise	-2.13
Total Time	0.46	Time 2 clockwise	-2.05
		Time 2 cnt clockwise	-2.06

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Complete

Test _____ **Score**

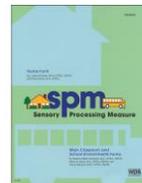
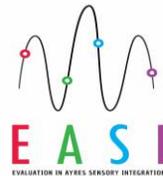
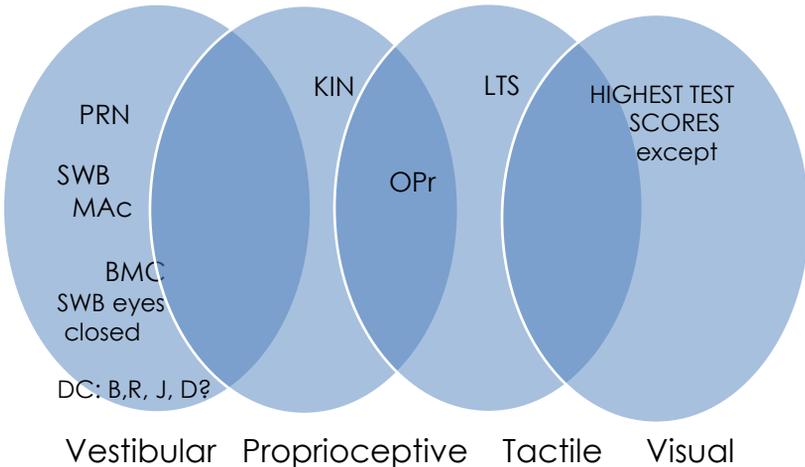
Design Copying (DC)
Atypical approach parameters:

(B) Boundaries	-2.67
(A) Additions	0.29
(S) Segmentations	0.85
(R) Reversals	-1.16
(L) Right-to-left	0.06
(I) Inversion	0.05
(J) Jogs	-3.00
(D) Distortions	-1.03

Constructional Praxis (CPr)
Part II errors parameters:

(1) Displacement 1-2.5 cm	0.78
(2) Displacement > 2.5 cm	0.14
(3) Rotation > 15 degrees	-0.03
(4) Reversals	0.73
(5) Incorrect but logical	-0.18
(6) Gross mislocations	0.12
(7) Omissions	0.04

Key: U/S: Major score unscorable N/A: Test
SD Score below -3.00 are reported as -3.00
SD Scores above 3.00 are reported as 3.00





SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL -Notes and Observations					
Problems in Vestibular Bilateral Integration		Problems in Somatopraxis		Problems in Visuopraxis	Problems in Sensory Responsiveness
Behavioral Signs ___ appears to crave movement and lack signs of dizziness ___ appears to have low endurance for upright activities or tasks ___ appears to have good praxis skills in contrast to struggles with bilateral skills	Behavioral Signs: ___ appears to seek heavy work or joint traction or compression activities ___ poor body position awareness ___ may take extra time or trials to position self	Behavioral Signs: ___ appears to seek extra touch input when manipulating objects ___ appears not to use tactile feedback; may use vision more than usual to guide actions ___ appears to seek simple sensory based actions with limited complex planning ability	Behavioral Signs: ___ appears to miss seeing things or shows confusion in differentiating objects/shapes ___ appears not to use vision as much as expected ___ appear to seek extra visual input	Behavioral Signs: ___ appears to have extreme reactions to sensations (e.g. such as the ways things feel, smell or sound) ___ appears to seek some sensations while avoiding others ___ high or disorganized activity level ___ poor attention or distractibility	Behavioral Signs: ___ appears not to notice things sensations such as sounds, touch or motion ___ appears to seek some sensations while avoiding others ___ low or disorganized activity level ___ lethargy, apathy or poor attention
Additional Notes	Additional Notes	Additional Notes	Additional Notes	Additional Notes	Additional Notes

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SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL					
Problems in Vestibular Bilateral Integration		Problems in Somatopraxis		Problems in Visuopraxis	Problems in Sensory Reactivity
Sensory Perception Vestibular Processing -2.21 PRN/VOR ▲★ little signs of typical dizziness following movement DC Part II -1.26 Jogs -3.0; Reversals -1.1; Distortions -1.0 orientation in space (e.g., navigation, directionality parameters on DC or CR)▲	Proprioception -1.08 KIN ▲ * PPr borderline position awareness; use of force	Tactile Perception -1.50 LTS ▲ ___ ability to find or manipulate objects w/o vision	Visual Perception ___ other visual perception tests (e.g. DTVP, TVPS) <input type="checkbox"/> ___ visual perception abilities (e.g. puzzles, hidden figure games)	Sensory Reactivity Sensory Over-Responsivity Signs of over or heightened responses: ___ SPM Bal & Mov't ● ___ GI / PC & B ___ SPM Touch ● * SPM Hearing ● ___ SPM Taste & Smell ● ___ SPM Vision ●	Sensory Under Reactivity Signs of under responses: ___ SPM Bal & Mov't ● ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)
Praxis & Motor Related Functions Postural/Ocular -2.39 Eyes Closed SWB ▲ Eyes Closed PC & B ★ Midline Ocular M & PPr ★ -1.24 MAC ▲ ___ other (e.g. BOT-2) <input type="checkbox"/> ___ extensor tone ___ righting reactions Bilateral Integration-Midline -1.21 BMC ▲ ** BI ★ -1.21 QPr ▲ SVCU ▲ SPr ▲ PHU ▲ (GRA) ▲ (MFP) ▲ ** ability to coordinate both sides of the body ** crossing midline/laterality ___ jumping jacks, skipping, etc.	Postural Mechanisms -1.48 SWB ▲ Left foot-1.34 * PC&B ★ ___ other balance tests (e.g. BOT-2) <input type="checkbox"/> ___ posture in sitting & standing	Somatosensory-based Praxis PPr ▲ OP ▲ SPr ▲ BMC ▲ Language-based Praxis PPrVC ▲ PPrFD ▲ Ideation-based Praxis PPr ▲ Engaging, friendly cooperative <input type="checkbox"/> SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	Visuopraxis ___ other visual motor tests (e.g. VMI) <input type="checkbox"/> ___ ability to draw, write, build, fold, etc.	___ SPM Taste & Smell ● * SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain or other sensation) Trouble falling asleep Struggles with transitions Mood swings Decreased ability to calm Keep up with pace of school Social Interactions	

KEY

Area of strength



* Mild difficulty

**

Moderate difficulty

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Sensory Integration

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SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL			
Problems in Somatopra xis		Problems in Visuopra xis	
Sensory Perception Vestibular Processing -2.21 PRN/VOR ▲★ little signs of typical dizziness following movement DC Part II -1.26 Jogs -3.0★ Reversals -1.1; Distortions -1.0 orientation in space (e.g., navigation, directionality parameters on DC or CPr)▲	Proprioception -1.08 KIN ▲ * PPr, borderline position awareness; use of force	Tactile Perception MFP ▲ FI ▲ GRA ▲ -1.50 LTS ▲ ___ ability to find or manipulate objects w/o vision	Visual Perception SV ▲ FG ▲ ___ other visual perception tests (e.g. DTVP, TVPS) <input type="checkbox"/> ___ visual perception abilities (e.g. puzzles, hidden figure games)
Praxis & Motor Related Functions Postural/Ocular -2.39 Eyes Closed SWB ▲ Eyes Closed PC & B ★ Midline Ocular M & Pr ★ -1.24 MAC ▲ ___ other (e.g. BOT-2) <input type="checkbox"/> ___ extensor tone righting reactions Bilateral Integration-Midline -1.21 BMC ▲ ** BI ★ -1.21 QPr ▲ SVCU ★ ___ SPr ▲ PHU ▲ ___ (GRA) ▲ ___ (MFP) ▲ ** ___ ability to coordinate both sides of the body ** ___ crossing midline/laterality ___ jumping jacks, skipping, etc.	Postural Mechanisms -1.48 SWB ▲ Left foot -1.34 PC&B ★ * ___ other balance tests (e.g. BOT-2) <input type="checkbox"/> ___ posture in sitting & standing	Somatosensory-based Praxis PPr ▲ OP ▲ SPr ▲ BMC ▲ Language-based Praxis PrVC ▲ Pr:FD ▲ Ideation-based Praxis Pcl ★ Engaging, friendly cooperative <input type="checkbox"/> ___ SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	Visual Perception MAC ▲ DC ▲ CPr ▲ ___ (GRA/MFP) <input type="checkbox"/> ___ other visual motor tests (e.g. VMI) <input type="checkbox"/> ___ ability to draw, write, build, fold, etc.
		Problems in Sensory Reactivity Sensory Reactivity Sensory Over-Reactivity Signs of over or heightened responses: ___ SPM Bal & Mov't ● ___ GI / PC & B ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ● ___ SPM Vision ● * ___ SPM Hearing ● * ___ SPM Taste & Smell ● * ___ SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain or other sensation) ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation) Trouble falling asleep Struggles with transitions Mood swings Decreased ability to calm Keep up with pace of school Social interactions	

KEY

Area of strength

* Mild difficulty

** Moderate difficulty

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Data Driven Decision Making Hypothesis Generation		
Strengths and Challenges	Assessment Results	Generating Hypotheses
Arts and crafts, swimming, sewing, horse-back riding Good language skills, friendly, cooperative, engaging	Visual scores above average (SV, MFP) or average (CPr, DC, GRA). PrVC average Parent and therapist observed good ideation and creativity	Visual strengths and interest in varied gross and fine motor activities will allow for use of a broad range of therapeutic sensory integrative activities. Strong communication skills will allow for sharing assessment findings and setting goals with Mimi. Ideation ability will increase her involvement in the therapy process.

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Problems in Vestibular-Based Ocular, Postural & Bilateral Integration

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL					
Problems in Vestibular Bilateral Integration		Problems in Somatopraxis		Problems in Sensory Reactivity	
Sensory Perception Vestibular Processing ___ PRN/VOR ▲ ★ (shortened duration) ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CPr)		Proprioception ___ KIN ▲ ___ position awareness; use of force		Sensory Reactivity Sensory Over-Reactivity Signs of <u>over</u> or <u>heightened</u> responses: ___ SPM Bal & Mov't. ● ___ Prolonged PRN with signs of over-reactivity ▲ ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)	
Praxis & Motor Related Functions Postural/Ocular ___ SWB ▲ ___ PC & B ▲ ★ ___ Ocular M & Pr ▲ ★ ___ MAC ▲ ___ other (e.g. BOT-2) ■ ___ extensor tone ___ righting reactions		Somatosensory-based Praxis ___ PPr ▲ ___ OP ▲ ___ SPPr ▲ ___ BMC ▲ Language-based Praxis ___ PrVC ▲ Ideation-based Praxis ___ Pr:I ▲ ★ ___ other (e.g. TIP) ■ ___ SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks		Sensory Under Reactivity Signs of <u>under</u> responses: ___ SPM Bal & Mov't. ● ___ SPM Touch ● ___ SR-Tactile ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)	
Bilateral Integration—Midline ___ BMC ▲ ___ BI ▲ ★ ___ OPr ▲ ___ SPr ▲ ___ GRA) ▲ ___ MFP) ▲ ___ SVCU ▲ ___ PHU ▲ ___ ability to coordinate both sides of the body ___ crossing midline/ laterality ___ jumping jacks, skipping, etc.		Postural Mechanisms ___ SWB ▲ ___ PC&B ▲ ★ ___ other balance tests (e.g. BOT-2) ■ ___ posture in sitting & standing		Visual Perception ___ SV ▲ ___ FG ▲ ___ other visual perception tests (e.g. DTVP, TVPS) ■ ___ visual perception abilities (e.g. puzzles, hidden figure games)	
		Visual Perception ___ MAC ▲ ___ DC ▲ ___ CPr ▲ ___ other visual motor tests (e.g. VMI) ■ ___ ability to draw, write, build, fold, etc.			

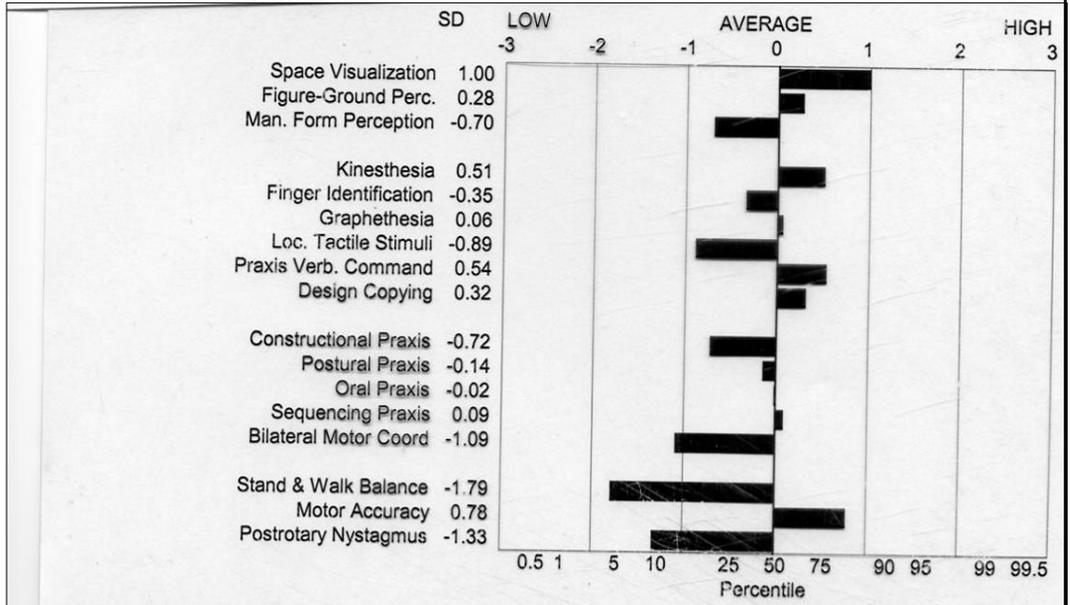
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Problems in Vestibular-Based Ocular, Postural & Bilateral Integration

SENSORY INTEGRATION ASSESSMENT	
Problems in Vestibular Bilateral Integration	
Sensory Perception Vestibular Processing ___ PRN/VN ▲ ★ ___ lack of signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CPr) ▲	Problems in Somatopraxis Proprioception ___ KIN ▲ ___ Prop JP ▲ ★ ___ Prop: F ▲ ★ ___ position awareness; use of force
Praxis & Motor Related Functions	
Postural/Ocular ___ SWB ▲ ___ Bal ▲ ___ PC ▲ ___ OM&Pr ▲ ★ ___ MAC ▲ ___ other (e.g. BOT-2) ■ ___ extensor tone ___ righting reactions	Postural Mechanisms ___ SWB ▲ ___ Bal ▲ ___ PC ▲ ★ ___ other balance tests (e.g. BOT-2) ■ ___ posture in sitting & standing
Bilateral Integration—Midline ___ BMC ▲ ___ BI ▲ ★ ___ OPr ▲ ___ SPr ▲ ___ GRA) ▲ ___ MFP) ▲ ___ SVCU ▲ ___ PHU ▲ ___ ability to coordinate both sides of the body ___ crossing midline/ laterality ___ jumping jacks, skipping, etc.	

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Vestibular Processing

- Vestibular-ocular functions
- Postural control
- Muscle tone-especially extensor tone

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Problems in Vestibular Based Ocular-Postural-Bilateral Motor Integration

Low scores commonly associated with vestibular based ocular-postural-bilateral motor integration

- Low Postrotary Nystagmus
- Low Standing & Walking Balance
- Low Bilateral Motor, Oral Praxis, Sequencing Praxis all which highlight bilateral integration
- Motor Accuracy loaded on this pattern –probably due to ocular and midline demands
- Kinesthesia had a mild loading
- Other tests such as Graphesthesia and Manual Form Perception also involve bilateral function
- Low scores or observations of problems with prone extension and other bilateral, midline or lateral functions



Problems in Vestibular Based Ocular-Postural-Bilateral Motor Integration

Parent or caregiver report of problems in planning everyday tasks

- low SPM Balance and/or Body Awareness
- report of difficulty learning or engaging in tasks that involve bilateral actions, e.g. tying shoes, folding, keyboarding, pedaling a bicycle, swimming, etc.
- difficulty tracking with eyes such as copying from near or far samples
- low endurance for sitting or standing upright
- safety concerns around tripping, falling, running into things
- disorganized behavior
- strong desire for movement activities without signs of dizziness

Observations in play, at school, in daily tasks



Overview of Vestibular-Bilateral Integration Deficits

Description	Identifying Measures	Examples of Functional Problems Associated
<p>This pattern is characterized by signs of poor vestibular processing, along with difficulties in related motor functions such as muscle tone, postural and ocular control, balance, midline integration and bilateral coordination.</p>	<p>Low scores on tests of vestibular processing, such as the following tests from the SIPT, as well as supplemental observations: Postrotary Nystagmus, Standing and Walking Balance</p> <p>Poor ability to assume/maintain a prone extensor pattern, Inadequate equilibrium or postural responses, Poor ocular control, Low muscle tone</p> <p>In conjunction with low scores on tests of bilateral integration and sequencing, such as the following tests from the SIPT: Bilateral Motor Coordination, Sequencing Praxis, Oral Praxis</p> <p>Other tests of balance or bilateral coordination, e.g: The balance and bilateral motor coordination tests of the Bruininks-Oseretsky Test-2</p> <p>Balance items on developmental tests And or observations of poor bilateral or midline functions such as: Avoidance of crossing midline, Poor establishment of laterality, Difficulty with directionality</p> <p>In addition, the following tests of the SIPT have been associated with this pattern, hypothesized to share some bilateral, sequencing, ocular or proprioceptive function: Manual Form Perception, Graphesthesia, Motor Accuracy, Kinesthesia</p>	<p>Difficulty with tasks requiring coordination of both sides of the body such as cutting, pedaling or swimming.</p> <p>Slouching or difficulty staying upright for long periods of time</p> <p>Trouble with keeping the eyes on a moving target or tracking across a page</p> <p>Difficulty staying seated for long periods of time, due to a strong desire for movement</p> <p>Late or poor establishment of hand preference, right-left confusion and/or avoidance of crossing the body midline.</p>

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Problems in Somatopraxis

Proprioception KIN ▲ Prop JP ★ Prop: F ★ position awareness; use of force	Tactile Perception MFP ▲ FI ▲ GRA ▲ LTS ▲ TP:S ★ TP:O ★ TP:L ★ TP:D ★ ability to find or manipulate objects w/ vision
Postural Mechanisms SWB ▲ Bal ★ PC ★ other balance tests (e.g. BOT-2) ✓ posture in sitting & standing	Somatosensory-based Praxis PPr ▲ OP ▲ SPR ▲ BMC ▲ Pr:P ★ Pr: S ★ Language-based Praxis PrVC ▲ Pr:FD ★ Ideation-based Praxis Pr:I ★ other (e.g. TIP) ✓ SPM Planning & Ideas ● ability to plan novel actions ability to learn new skills/ coordination in tasks

Problems in Praxis

Problems in Somatosensory-Based Praxis

Problems in Language-Based Praxis

Problems in Ideation-Based Praxis

Problems in Visuopraxis

Visual Perception SV ▲ FG ▲ VP: S ★ other visual perception tests (e.g. DTVP, TVPS) ✓ visual perception abilities (e.g. puzzles, hidden figure games)	Visuopraxis MAc ▲ DC ▲ CPr ▲ VP: D ★ VP: C ★ other visual motor tests (e.g. VMI) ✓ ability to draw, write, build, fold, etc.
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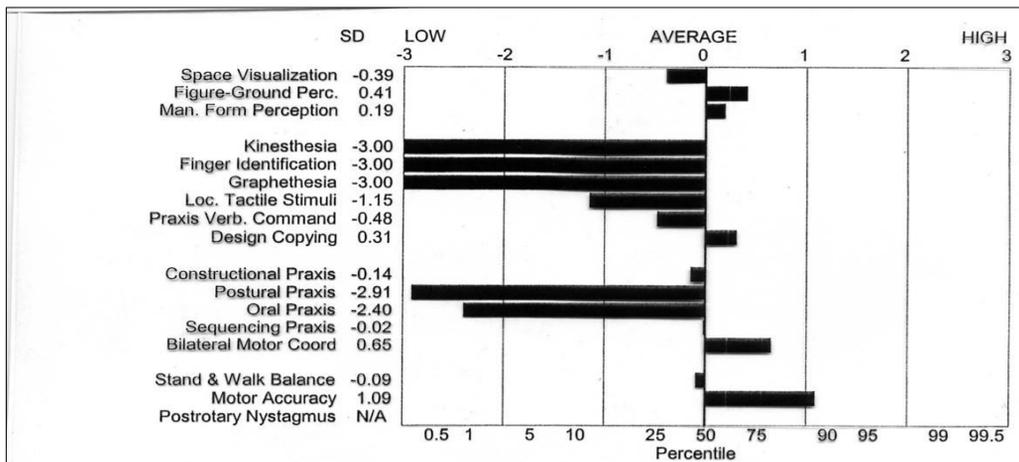


Problems in Somatosensory Based Praxis

Somatopraxia Pattern

- Poor motor planning –especially based on face and body imitation
- Poor somatosensory processing
- May include other aspects of poor motor planning e.g. language based-, ideation based-, visual based-praxis

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Problems in Somatosensory Based Praxis

Low scores commonly associated with the somatopraxis pattern

- Low Postural Praxis
- Low Oral Praxis
- Other praxis scores such as Sequencing Praxis, Praxis on Verbal Command, Constructional Praxis, Bilateral Motor coordination
- Low tactile perception scores (e.g. Manual Form Perception, Finger Identification, Graphesthesia, Localization of Tactile Stimuli)
- Low scores or observations of problems in proprioception (e.g. Kinesthesia, Standing & Walking Balance)

Parent or caregiver report of problems in planning everyday tasks

- low SPM Planning and Ideas
- report of difficulty learning new tasks, knowing how to play with toys, engaging in games/sports, etc.

Observations in play, at school, in daily tasks



Overview of Somatodyspraxia

Description	Identifying Measures	Examples of Associated Functional Problems
This pattern is characterized by poor somatosensory (especially tactile) perception in conjunction with signs of poor motor planning involving the imitation, planning and sequencing and actions.	<p>Low scores on tests of tactile perception, such as the following tests from the SIPT:</p> <ul style="list-style-type: none"> • Finger Identification • Localization of Tactile Stimuli • Graphesthesia • Manual Form Perception 	<p>Difficulty learning new skills, especially those that involve guiding actions based on tactile feedback, such as putting arm in a sleeve or buttoning when getting dressed or toweling oneself dry after bathing.</p>
	<p>In conjunction with low scores on tests of praxis, such as the following tests from the SIPT and supplemental observations:</p> <ul style="list-style-type: none"> • Postural Praxis • Oral Praxis • Sequencing Praxis • Praxis on Verbal Command • Difficulty with initiation timing, sequencing of actions 	<p>Poor performance in sports or movement activities, especially those that may involve imitation and body position sense, such as soccer or dance</p> <p>Limited play skills, such as knowing what to do with toys or knowing how to pretend to be or do something.</p>



Problems in Visual Based Praxis

Visuopraxis Pattern

- Poor motor planning –especially based on visual perception
- Poor visual perception
- May include other aspects of poor motor planning e.g. language based-, ideation based-, visual based-praxis and visuo- and somatopraxis commonly occur together in same child



Problems in Visual Based Praxis

Low scores commonly associated with the visuopraxis pattern

- Low Constructional Praxis
- Low Design Copying
- Low Motor Accuracy
- Other praxis scores may also be low
- Low visual perception scores (e.g. Space Visualization, Figure Ground)
- Manual Form Perception and Graphesthesia have visual elements so these tests can be low

Parent or caregiver report of problems in planning everyday tasks

-low SPM Visual Scale
-report of difficulty writing, drawing, puzzles, crafts etc.

Observations in play, at school, in daily tasks



Overview of Visuodyspraxia

Description	Identifying Measures	Functional Examples
<p>This pattern is characterized by poor visual perception in conjunction with signs of poor visual motor skills and planning.</p>	<p>Low scores on tests of visual perception, such as the following tests from the SIPT:</p> <ul style="list-style-type: none"> • Space Visualization • Figure Ground Perception • Graphesthesia • Manual Form Perception <p>Other visual perceptual tests, e.g.: Developmental Test of Visual Perception-2</p> <p>In conjunction with low scores on visual motor or visual praxis, such as the following tests from the SIPT:</p> <ul style="list-style-type: none"> • Motor Accuracy • Design Copying • Constructional Praxis <p>Or other visual motor tests, such as:</p> <ul style="list-style-type: none"> • Visual Motor Integration Test • Visual Motor subtests of the Bruininks-Oseretsky Test-2 	<p>Difficulty with writing, coloring or drawing</p> <p>Difficulty with following visual plans to build or construct something</p> <p>Avoidance of visual games or puzzles</p>

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Problems in Language Based Praxis

Language based praxis pattern

- Auditory language tests were included in studies less often than other sensory motor functions
- When auditory language tests were included, they tended to load as a pattern-not more or less associated with any of the other sensory and motor functions.
- In SIPT studies, the language based praxis pattern was called Dyspraxia on Verbal Command
- New tests of EASI will allow further exploration of the relationships between auditory language functions and other sensory integrative measures

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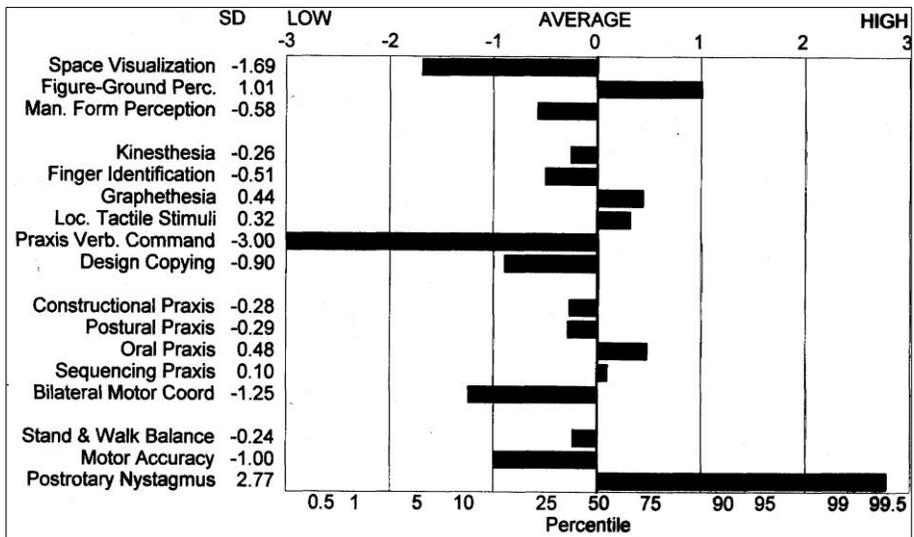
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Dyspraxia on Verbal Command

Praxis on Verbal Command Pattern

- Low Praxis on Verbal Command
- Prolonged PRN
- Key element of this particular pattern was absence of signs of other low scores in sensory perception or praxis
- Clinical experience suggests that this pattern is often more characterized by difficulties in language versus praxis; may also reflect a "higher level problem" in the nervous system





Problems in Ideation Based Praxis

- No studies yet on Ideation Based Praxis Tests
- New tests of EASI will allow further exploration of the relationships between ideation based praxis and other sensory integrative measures

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL					
Problems in Vestibular Bilateral Integration		Problems in Somatoprxis		Problems in Sensory Reactivity	
Sensory Perception		Proprioception		Sensory Over-Reactivity	
Vestibular Processing PRN/VOR ▲ ★ (shortened duration) ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CPr)		KIN ▲ ___ position awareness; use of force		Signs of over or heightened responses: ___ SPM Bal & Mov't. ● ___ Prolonged PRN with signs of over-reactivity ▲ ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ● ___ SPM Vision ●	
Tactile Perception ___ MFP ▲ ___ FI ▲ ___ GRA ▲ ___ LTS ▲ ___ ability to find or manipulate objects w/o vision		Visual Perception ___ SV ▲ ___ FG ▲ ___ other visual perception tests (e.g. DTVP, TVPS) ■ ___ visual perception abilities (e.g. puzzles, hidden figure games)		Signs of under responses: ___ SPM Bal & Mov't. ● ___ SPM Touch ● ___ SR-Tactile ● ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)	
Praxis & Motor Related Functions					
Postural/Ocular ___ SWB ▲ ___ PC & B ★ ___ Ocular M & Pr ★ ___ MAC ▲ ___ other (e.g. BOT-2) ■ ___ extensor tone ___ righting reactions		Postural Mechanisms ___ SWB ▲ ___ PC&B ★ ___ other balance tests (e.g. BOT-2) ■ ___ posture in sitting & standing		Somatosensory-based Praxis ___ PPr ▲ ___ OP ▲ ___ SPR ▲ ___ BMC ▲ Language-based Praxis PrVC ▲ Ideation-based Praxis Pr:l ★ ___ other (e.g. TIP) ■ SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	
Visuoprxis ___ MAC ▲ ___ DC ▲ ___ CPr ▲ ___ other visual motor tests (e.g. VMI) ■ ___ ability to draw, write, build, fold, etc.		Sensory Under Reactivity ___ SPM Bal & Mov't. ● ___ SPM Touch ● ___ SR-Tactile ● ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)			



Problems in Sensory Reactivity

Problems in Sensory Reactivity	
Sensory Reactivity	
Sensory Over-Reactivity	Sensory Under Reactivity
Signs of <u>over</u> or <u>heightened</u> responses:	Signs of <u>under</u> responses:
___ SPM Bal & Mov't. ●	___ SPM Bal & Mov't. ●
___ GI / PC & B ★	___ SR-Motion/Gravity ★
___ SR-Motion/Gravity ★	___ SPM Touch ●
___ SPM Touch ●	___ RP/ TP tests ★
___ TD scores TP tests	___ SR-Tactile ★
___ SR-Tactile ★	___ SPM Hearing ●
___ SPM Hearing ●	___ SR-Auditory ★
___ SR-Auditory ★	___ SPM Taste/Smell ●
___ SPM Taste & Smell ●	___ SR-Olfactory ★
___ SR-Olfactory ★	___ SPM Vision ●
___ SPM Vision ●	___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)
___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain or other sensation)	

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Problems in Sensory Reactivity

- Irregular responses to sensory stimuli
- Specific sensory hyper or hypo sensory reactivity, e.g. tactile defensiveness, gravitational insecurity

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Overview of Sensory Hyper-Reactivity

Description	Identifying Measures	Examples of Functional Problems Associated
<p>Hyper-reactivity to sensation</p> <p>Excessive or exaggerated reactions to typical levels of sensation which interfere with participation in daily activities.</p> <p>The fight, flight or freeze reaction may be manifested as a result of sensory hyper-reactivity and it may also produce anxiety, a high activity level, and/or inattention (Reynolds and Lane).</p>	<p>Parent, teacher and other caregiver report measures, in conjunction with observations of the child, are currently the most commonly used assessments for identifying problems in sensory hyper-reactivity. Scores in the "some problems" or "definite dysfunction range" and/or affirmative responses on specific items on the Sensory Processing Measure or Sensory Profile are signs of hyper-reactivity to sensation: Some examples of items that suggest hyper-sensory reactivity by sensory system from the SPM and SP are shown below:</p> <p>Visual: Seems bothered by light especially bright lights (blinks, squints, cries, close eyes, etc.)</p> <p>Auditory: Dislikes certain types of lighting, such as midday sun, strobe lights, flickering lights, or fluorescent lights.</p> <p>Tactile: Seems bothered by ordinary household sounds, such as vacuum cleaner, hair dryer, or toilet flushing; seems frightened of sounds that do not usually cause distress in other kids his or her age; holds hands over ears to protect ears from sound</p> <p>Oral: Pulls away from being touched; becomes distressed by the feel of new clothes; avoids touching or playing with finger paint, paste, sand, clay, mud, glue, or other messy things; dislikes teeth brushing, more than most kids his or her age</p> <p>Gustatory: Gags easily with food textures or food smells that are typically part of children's diets; avoids certain tastes or food smells that are typically part of children's diets</p> <p>Olfactory: Shows distress at smells that other children do not notice</p> <p>Vestibular: Shows distress when his or her head is tilted away from the upright position, vertical position; avoids playground equipment</p>	<p>Difficulty participating in or tolerating settings, activities or tasks that seems specifically related to one or more sensory aspects of the event and with reactions that appear to demonstrate a greater than typical reaction to the sensation, such as the examples shown below:</p> <p>Visual: May avoid outdoor play when it is sunny or have trouble in settings that have specific lighting, such as fluorescent lights.</p> <p>Auditory: May avoid activities such as birthday parties, shopping at the mall, parades or restaurants due to level of noise.</p> <p>Tactile: May have trouble getting dressed due to reactions to fabrics; may have difficulty with activities of daily living such as having face washed or teeth brushed</p> <p>Gustatory: May not be able to participate in family mealtimes or outings with peers that involve eating (such as a picnic)</p> <p>Olfactory: May not be able to tolerate settings with a variety of smells, e.g., school cafeteria or cleaning supply aisle of a market</p> <p>Vestibular: May avoid play activities that involve movement, such as swings or climbing activities.</p>

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Future studies with current and developing tests will continue to refine and verify understanding of patterns based on ASI constructs.

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Add behavioral observations, interviews, etc., as well.
 Note that many behaviors can be associated with a variety
 of underlying problems-remember to think critically and
 carefully before forming conclusions!



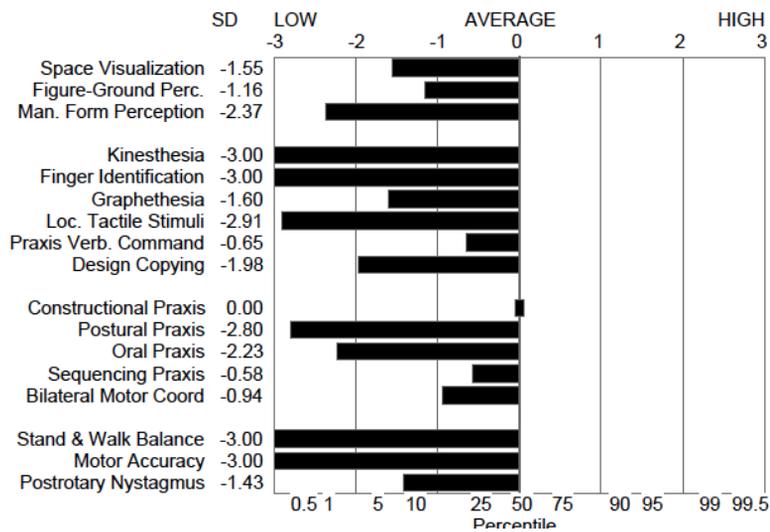
SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL -Notes and Observations					
Problems in Vestibular	Bilateral Integration		Problems in Visuoprxaxis	Problems in Sensory Responsiveness	
Behavioral Signs	Behavioral Signs:	Behavioral Signs:	Behavioral Signs:	Behavioral Signs:	Behavioral Signs:
___ appears to crave movement and lack signs of dizziness ___ appears to have low endurance for upright activities or tasks ___ appears to have good praxis skills in contrast to struggles with bilateral skills	___ appears to seek heavy work or joint traction or compression activities ___ poor body position awareness ___ may take extra time or trials to position self	___ appears to seek extra touch input when manipulating objects ___ appears not to use tactile feedback; may use vision more than usual to guide actions ___ appears to seek simple sensory based actions with limited complex planning ability	___ appears to miss seeing things or shows confusion in differentiating objects/shapes ___ appears not to use vision as much as expected ___ appear to seek extra visual input	___ appears to have extreme reactions to sensations (e.g. such as the ways things feel, smell or sound) ___ appears to seek some sensations while avoiding others ___ high or disorganized activity level ___ poor attention or distractibility	___ appears not to notice things sensations such as sounds, touch or motion ___ appears to seek some sensations while avoiding others ___ low or disorganized activity level ___ lethargy, apathy or poor attention
Additional Notes	Additional Notes	Additional Notes	Additional Notes	Additional Notes	Additional Notes



The following SIPT scores reveal many areas of difficulty



Example A



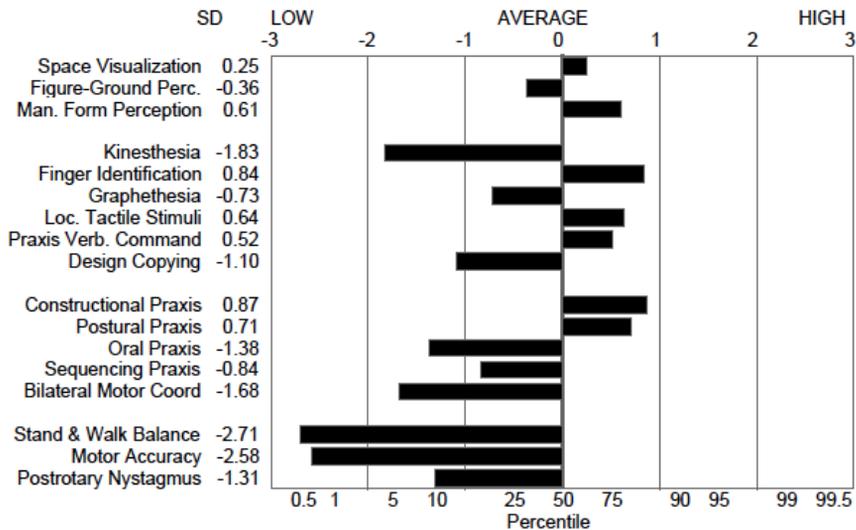


However, a careful check on the Example A's scores revealed:

- Average Praxis on Verbal Command, which aligned with reports of good language skills
- Average Constructional Praxis. Review of sub-scores revealed that Figure Ground Perception appeared lowered by very "quick" responses (noted by a high time score of +2.18).
- Consideration of low PRN and low SWB and other observations suggested that this child's low scores on SV, DC, and MAC may have been related to problems in vestibular based spatial and ocular concerns.
- Although many SIPT scores were low, this child did not show atypical scores on the SPM.

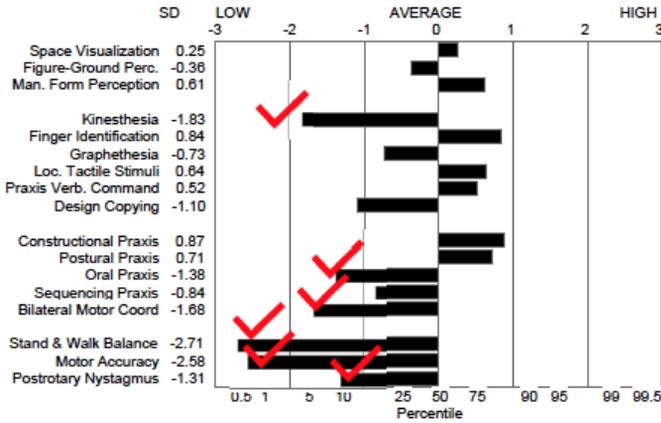


Example B -in contrast to Example A, Example B has fewer low scores; however, the scores that are low are similar to a recognizable pattern-Problems in Vestibular





Example B compared to tests associated with the Vestibular-Bilateral Integration Patterns



Mailloux, et al, 2011	Ayres 1989	Mulligan 1998
Vestibular Bilateral Integration & Sequencing	Bilateral Integration & Sequencing	Bilateral Integration & Sequencing
Oral Praxis	Sequencing Praxis	Bilateral Motor Coordination
Standing Walking Balance	Bilateral Motor Coordination	Sequencing Praxis
Postrotary Nystagmus	Graphesthesia	Oral Praxis
Bilateral Motor Coordination	Standing Walking Balance	Graphesthesia
Motor Accuracy	Oral Praxis	
Graphesthesia	Manual Form Perception	
Sequencing Praxis		
(Kinesthesia)		

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Synthesis of Assessment Data Using an Assessment Tool

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL ▲ =SIPT ★ = EASI = SPM/SP ● = OTHER TESTS □					
Problems in Vestibular Bilateral Integration		Problems in Somatopraixs		Problems in Visuopraixs	
Sensory Perception Vestibular Processing PRN/VN ▲ ★ ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CP) ▲		Proprioception KIN ▲ ___ position awareness; use of force		Tactile Perception ___ MFP ▲ ___ FI ▲ ___ GRA ▲ ___ LTS ▲ ___ ability to find or manipulate objects w/o vision	
Praxis & Motor Related Functions Postural/Ocular ___ SWB ▲ ___ PC ★ ___ OM & Pr ★ ___ MAC ▲ ___ other (e.g. BOT-2) □ ___ extensor tone ___ righting reactions Bilateral Integration—Midline ___ BMC ▲ BI ★ ___ OPPr ▲ SVCU ▲ ___ SPR ▲ PHU ▲ ___ (___) GRA ▲ ___ (___) MFP ▲ ___ ability to coordinate both sides of the body ___ crossing midline/ laterality ___ jumping jacks, skipping, etc.		Postural Mechanisms ___ SWB ▲ ___ PC ★ ___ other balance tests (e.g. BOT-2) □ ___ posture in sitting & standing		Somatosensory-based Praxis ___ PPr ▲ ___ OP ▲ ___ SPPr ▲ ___ BMC ▲ Language-based Praxis ___ PrVC ▲ ___ Pr:FD ★ Ideation-based Praxis ___ Pr:I ★ ___ other (e.g. TIP) □ ___ SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	
				Visual Perception ___ SV ▲ ___ FG ▲ ___ other visual perception tests (e.g. DTVP, TVPS) □ ___ visual perception abilities (e.g. puzzles, hidden figure games)	
				Sensory Reactivity Sensory Over-Reactivity Signs of <u>over or heightened</u> responses: ___ SPM Bal & Mov't ● ___ GI / PC ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ● ___ SPM Vision ● ___ SPM Taste & Smell ● ___ SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain or other sensation)	
				Sensory Under Reactivity Signs of <u>under</u> responses: ___ SPM Bal & Mov't ● ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)	

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Synthesis of Assessment Data Using an Assessment Tool

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL ▲=SIPT ★=EASI = SPM/SP ● = OTHER TESTS □					
Problems in Vestibular Bilateral Integration		Problems in Somatopraxis		Problems in Sensory Reactivity	
Sensory Perception Vestibular Processing PRN/VN ▲ ★ ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CPr) ▲		Proprioception KIN ▲ ___ position awareness; use of force		Sensory Reactivity Sensory Over-Reactivity Signs of <u>over or heightened</u> responses: ___ SPM Bal & Mov't. ● ___ GI / PC ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ●	
Praxis & Motor Related Functions Postural/Ocular SWB ▲ PC ▲ OM & Pr ▲ ★ MAc ▲ ★ ___ other (e.g. BOT-2) □ ___ extensor tone ___ righting reactions Bilateral Integration—Midline BMC ▲ BI ★ OPr ▲ SVCU ▲ SPr ▲ PHU ▲ () GRA ▲ () MFP ▲ ___ ability to coordinate both sides of the body ___ crossing midline/laterality ___ jumping jacks, skipping, etc.		Somatosensory-based Praxis PPr ▲ OP ▲ SPr ▲ BMC ▲ Language-based Praxis PrVC ▲ Pr:FD ★ Ideation-based Praxis Pr:I ★ ___ other (e.g. TIP) □ ___ SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks		Sensory Under Reactivity Signs of <u>under</u> responses: ___ SPM Bal & Mov't. ● ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)	

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Synthesis of Assessment Data Using an Assessment Tool

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL ▲=SIPT ★=EASI = SPM/SP ● = OTHER TESTS □					
Problems in Vestibular Bilateral Integration		Problems in Somatopraxis		Problems in Sensory Reactivity	
Sensory Perception Vestibular Processing PRN/VN ▲ ★ ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, directionality parameters on DC or CPr) ▲		Proprioception KIN ▲ ___ position awareness; use of force		Sensory Reactivity Sensory Over-Reactivity Signs of <u>over or heightened</u> responses: ___ SPM Bal & Mov't. ● ___ GI / PC ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ●	
Praxis & Motor Related Functions Postural/Ocular SWB ▲ PC ▲ OM & Pr ▲ ★ MAc ▲ ★ ___ other (e.g. BOT-2) □ ___ extensor tone ___ righting reactions Bilateral Integration—Midline BMC ▲ BI ★ OPr ▲ SVCU ▲ SPr ▲ PHU ▲ () GRA ▲ () MFP ▲ ___ ability to coordinate both sides of the body ___ crossing midline/laterality ___ jumping jacks, skipping, etc.		Somatosensory-based Praxis PPr ▲ OP ▲ SPr ▲ BMC ▲ Language-based Praxis PrVC ▲ Pr:FD ★ Ideation-based Praxis Pr:I ★ ___ other (e.g. TIP) □ ___ SPM Planning & Ideas ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks		Sensory Under Reactivity Signs of <u>under</u> responses: ___ SPM Bal & Mov't. ● ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)	

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Example B's scores are shown on the assessment tool on the next slide

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SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL					
Problems in Somatopraxis		Problems in Visuopraxis		Problems in Sensory Reactivity	
Sensory Perception					
Vestibular Processing -1.31 PRN/VOR ▲★ (shortened duration) ___ signs of typical dizziness following movement POOR orientation in space (e.g., navigation, directionality parameters on DC or CPr) Jogs -3.0; Distortions -1.69	Proprioception -1.2 KIN ▲ POOR position awareness; use of force	Tactile Perception OK MFP ▲ OK FI OK GRA OK LTS OK ability to find or manipulate objects w/o vision	Visual Perception OK SV OK FG ___ other visual perception tests (e.g. DTVP, TVPS) <input type="checkbox"/> OK visual perception abilities (e.g. puzzles, hidden figure games)	Sensory Over-Reactivity All OK Signs of <u>over</u> or <u>heightened</u> responses: ___ SPM Bal & Mov't. ● ___ Prolonged PRN with signs of over-reactivity ▲ ___ SPM Touch ● ___ SPM Hearing ● ___ SPM Taste & Smell ●	Sensory Under Reactivity All OK Signs of <u>under</u> responses: ___ SPM Bal & Mov't. ● ___ SPM Touch ● ___ SR-Tactile ___ SPM Hearing ● ___ SPM Taste/Smell ● ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)
Praxis & Motor Related Functions					
Postural/Ocular -2.71 SWB ▲ POOR PC & B POOR Ocular M & Pr -2.58 MAC ▲ ___ other (e.g. BOT-2) <input type="checkbox"/> POOR extensor tone POOR righting reactions	Postural Mechanisms ___ SWB ▲ ___ PC&B ★ ___ other balance tests (e.g. BOT-2) <input type="checkbox"/> ___ posture sitting & standing	Somatosensory-based Praxis OK PPr ___ OP ▲ ___ SPr ▲ ___ BMC ▲ Language-based Praxis OK PrVC Ideation-based Praxis OK Pr:I (e.g. TIP) <input type="checkbox"/> OK SPM Planning & Ideas OK ability to plan novel actions OK ability to learn new skills/ coordination in tasks	Visuopraxis ___ MAC ▲ ___ DC ▲ OK CPr ___ other visual motor tests (e.g. VMI) <input type="checkbox"/> OK ability to draw, write, build, fold, etc.		
Bilateral Integration—Midline -1.68 BMC ▲ POOR BI ★ -1.38 OPPr ▲ -1.05 SVCU ▲ ___ SPr ▲ ___ PHU ▲ ___ GRA ▲ ___ MFP ▲ POOR ability to coordinate both sides of the body POOR crossing midline/laterality POOR jumping jacks, clapping, etc.					

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Example A Hypothesis Generation

Participation Challenge	Assessment Data	Hypothesis
Struggles with reading and writing	Low PRN Poor ocular motor skills Jogs and distortions on DC	Vestibular-based issues problems with ocular control affect ability to keep his place when reading and writing
Falls when skateboarding and cannot swim	Low SWB Low BMC	Poor balance and bilateral coordination make these activities difficult
Struggles with tying shoes, buttoning small buttons and zipping his pants	Low BMC; poor BI on EASI Low SVCU Poor postural control	Poor ability to coordinate both hands, difficulty crossing midline, and poor postural control make these ADL tasks difficult
High activity level and trouble with school work is causing difficulties for him at school	Low PRN and other signs of vestibular dysfunction	Nature of vestibular problems (low PRN and other signs) suggest need for more motion than other children, making it difficult to stay seated for long

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Example B Hypothesis Generation

Interests and Strengths	Assessment Data	Hypothesis
Kind; smart and motivated toward independence	Well regarded by teacher and peers	Good disposition and strong motivation will support therapeutic process
Good language skills	Good scores on PrVC	Strong communication skills will allow for sharing assessment findings in an appropriate way with Rio and involving him in the therapy process
Interested in skateboarding and swimming	Low PRN and other signs of vestibular dysfunction suggest need for movement	Motivation to participate in these activities will be helpful in overcoming the balance and bilateral challenges and also offer a good option for needed movement-related activities

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Linking the **assessment data** to **participation** affords:

- Ability to understand the underlying obstacles that are interfering with participation more clearly
- Opportunity to communicate about the nature of the problem more clearly to the parent, teacher and other caregivers
- Roadmap for next steps-setting goals, identifying outcome measures and planning for intervention



Case Preparation Guide DDDM Review

For Case Summaries to be Completed During and Following M4 and M5

See Case Preparation Template for Example

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Case Preparation Guide - DDDM

Data-Driven Decision Making Table

Identifying the Child's Strengths and Participation Challenges	Conducting the Comprehensive Assessment	Generating Hypotheses	Developing and Scaling Goals	Identifying Outcome Measures	Setting the Stage for Intervention	Conducting the Intervention	Measuring Outcomes and Monitoring Progress

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Demographic and Background History

- Initials or pseudonym
- Age
- Occupational Profile
- Background Information
- History: developmental, medical, educational, diagnoses, and intervention services which have been received
- Reason for choosing this child for testing, i.e., why were SI concerns suspected

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Strengths and Challenges	Identifying Strengths and Challenges	Assessment Results	Generating Hypotheses
<p>What can the client do with and without supports?</p> <p>What are the challenges to participation as determined by the client and caregivers?</p>	<ul style="list-style-type: none"> ▶ Consider participation challenges in occupation e.g. difficulty getting dressed as opposed to an underlying performance skill such as poor fine motor ▶ Specific information about child's abilities and challenges 		

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Participation Strengths/Challenges Child's Interests & Abilities

Strengths and
Challenges

- Describe the child as an individual
- Consider participation challenges in occupation e.g. difficulty getting dressed as opposed to an underlying performance skill such as poor fine motor

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Conducting a Comprehensive Assessment	Identifying Strengths and Challenges	Assessment Results	Generating Hypotheses
<p>Provide reliable and valid test scores in relevant areas;</p> <p>Interpret the test data relative to the available research showing the relationship between tests</p>		<ul style="list-style-type: none"> ▶ Standardized tests e.g. bar graph from SIPT ▶ Standardized questionnaire data e.g. SPM ▶ Structured and unstructured observations ▶ Interviews ▶ Record review ▶ Preliminary conclusions re: patterns of SI function and dysfunction 	

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Assessment Interpretation Tool

Conducting a Comprehensive Assessment

- Chart test data and observation on the assessment interpretation tool (note that entering scores in different colors helps to differentiate problem areas; use the tool in word, then save as a PDF to preserve formatting to insert in PPT)

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL			
Problems in Vestibular Bilateral Integration			
Problems in Somatopraxis		Problems in Visuopraxis	
Sensory Perception Vestibular Processing ___ VN ★ (low score is a sign of vestibular based problem) ___ SPM ● ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, spatial orientation scores on VPr:D, VPr:C ★)	Proprioception ___ Prop: JT ★ ___ Prop: F ★ ___ position awareness ___ use of force ● ___ SPM ●	Tactile Perception ___ TP: L ★ ___ TP: D ★ ___ TP: S ★ ___ TP: O ★ ___ SPM ● ___ poor ability to find or manipulate objects w/o vision	Visual Perception ___ VP: S ★ ___ SPM ● ___ other visual perception tests (e.g., DTVP, TVPS) ● ___ visual perception abilities (e.g., puzzles, hidden figure games)
Praxis & Motor Related Functions Postural/Ocular ___ Bal ★ ___ PC ★ ___ O: M & Pr ★ ___ other (e.g., BOT-2, SOSI, COP) ● ___ SPM ● ___ extensor tone ___ righting reactions Bilateral Integration-Midline ___ BI ★ ___ ability to coordinate both sides of the body ___ crossing midline/laterality ___ jumping jacks, skipping, etc. Auditory: Localization ★ New test-not yet classified	Postural Mechanisms ___ PC ★ ___ Bal ★ ___ other balance tests (e.g., BOT-2) ● ___ posture in sitting & standing Non-SI Scores/Data Suggesting patterns other than sensory integration ___ High VN or PRN with low PFD or PRVC and no other signs of dyspraxia ___ signs of neuromotor problems (e.g. high tone, tremor, ataxia, etc.) without other signs of sensory or praxis problems ___-other	Somatosenory-based Praxis ___ Pr:P ★ ___ Pr:S ★ ___ SPM ● Language-based Praxis ___ Pr:FD ★ Ideation-based Praxis ___ Pr:I ★ ___ other (e.g. TIP) ● ___ SPM ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	Visuopraxis ___ VPr: D ★ ___ VPr: C ★ ___ other visual motor tests (e.g. Beery VMI-Motor Coordination) ● ___ SPM ● ___ ability to draw, write, build, fold, etc.
Sensory Reactivity Sensory Hyper-Reactvity Signs of over or heightened responses: ___ SR: Overall (Hyper) ___ SPM Bal & Mov't ● ___ PC ★ ___ SR-Motion/Gravity ___ prolonged VN* ___ SPM Touch ● ___ Hyper tactile reactivity TP tests ★ ___ SR-Tactile ★ ___ SPM Hearing ● ___ SR-Auditory ★ ___ SPM Taste & Smell ● ___ SR-Olfactory ★ ___ SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain, or other sensation) *Hyper reactive responses during or following rotation may be observed, particularly in conjunction with high VN		Sensory Hypo Reactivity Signs of under or delayed responses: ___ Observations of lack of awareness of motion ___ SPM Touch ● ___ Hypo tactile reactivity TP tests ★ ___ SPM Hearing ● ___ Hypo auditory reactivity A:L ★ ___ SPM Smell ● H-45, P-44 ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)	

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Generating Hypotheses

Relate the impression from the array of assessment data with the contribution to presenting difficulties

Strengths and Challenges

Assessment Results

Generating Hypotheses

Consider the relationship between the various sensory integrative constructs and the contributions to function; and the way that sensory integrative deficits may interfere with every day life

e.g. vestibular postural and bilateral deficits often interfere with spatial perception, sitting still comfortably, and the ability to coordinate head/neck/eye control essential for copying from the board

e.g. praxis deficits often interfere with the ability to plan and organize one's body, tools, spatial arrangement of materials, and time especially relative to others, or when expected to conform with other people's ideas/plans

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Generate Hypotheses about SI in Relation to Presenting Concerns

Generating
Hypotheses

- What are the strengths that enable the child to do well in certain areas or to learn from certain sensory channels?
- In what way do sensory integration challenges contribute to learning and behavior reported by the caregivers?

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Developing Goals	Generating Hypotheses	Developing Goals	Identify Proximal & Distal Outcome Measures
<p>Style of goal writing may be specific to setting (e.g. IEP or insurance)</p>		<p>Establish goals that are relevant, achievable, and reflective of the areas of need and potential ability of the client within a determined time-frame e.g. following 6 months of intervention, 1 hour per week.</p>	

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Developing Goals

Developing Goals

- Write 2 suggested goals, based on referring problems and assessment findings
- Include both the functional outcome, as well as the underlying obstacle to performance in the goal, if possible

<p>Identifying Outcome Measures</p> <p>Determine outcome measures to be used to assess progress toward goals and improvements at home, at school, or in community</p>	Generating Hypotheses	Develop Goals	Identify Proximal & Distal Outcome Measures
			<p>Proximal Measures may include: SIPT, SPM, Beery VMI</p> <p>Distal Measures may include: Goal Attainment Scales; Family Life Impact Questionnaire (FLIQ); Adaptive Behavior Assessment Scale (ABAS-3)</p>



Outcome Measures

Identifying Outcome Measures

Proximal Outcome Measures	
Distal Outcome Measures	

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Setting the Stage for Intervention

Assessment drives goals, goals drive the service, therefore determine the level and type of service necessary based on the hypotheses and what is necessary to achieve the predicted goals

Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post - Tx
<p>If ASI is required, in order to be evidence-based, it is essential to practice this intervention with fidelity.</p> <p>ASI may not be the only type of intervention required, and OT is often not the only professional providing services.</p> <p>Services are provided relative to the child's setting, schedule, and available resources</p>		

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Setting the Stage for Intervention

Setting the Stage for Intervention

- Meet the Structural Elements of Fidelity to ASI
 - Who, what, when and where
 - Service Recommendation? How much and for how long
- Design therapeutic activities to address identified goal areas

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Conducting Intervention

Planning the intervention activities with adherence to process elements for fidelity to ASI

Setting the Stage for Intervention

Conducting the Intervention

Displaying Outcomes Post - Tx

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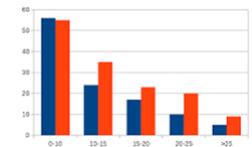
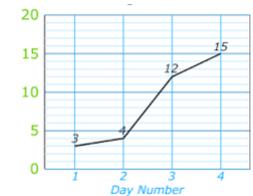


Conducting Intervention

Conducting Intervention

- Caregiver Education
 - Consultation/collaboration
 - Accommodations

- Meet the Process Elements of Fidelity to ASI
 - How will activities be designed relative to assessment results?
 - How will the therapist scaffold for success and facilitate adaptive responses?
 - How does the child and therapist create a partnership and atmosphere of collaboration, fun, and play?

<div style="background-color: #e91e63; color: white; padding: 10px; margin-bottom: 10px; text-align: center;"> <h3>Outcomes Measurement</h3> </div> <p>Following a course of intervention, provide measures that show changes and provide accountability for therapy services</p>	Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post -Tx
			<ul style="list-style-type: none"> ▶ Conduct Outcome Measures and document data ▶ What changed? ▶ What's next? <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div>



OT using ASI Intervention: Recommendations for Further Services

Outcomes
Measurement

- Options:
 - OT – Discontinued – all goals met; positive changes seen on proximal and distal outcome measures -no further goals required
 - OT – Continued – services remain the same with revised hypotheses, goals and new outcome measures
 - OT – Continued with increased intensity of services due to increased needs or observed increase in progress when intensity increased
 - OT – Continued with decreased intensity of services due to progress but continued concerns
- Suggestions for the Home, School, and Community
- Referrals as needed



Case Preparation Example

Case Summaries to be Completed During and Following M4 and M5

The Main Slides Required for the Case Summaries are Described Here

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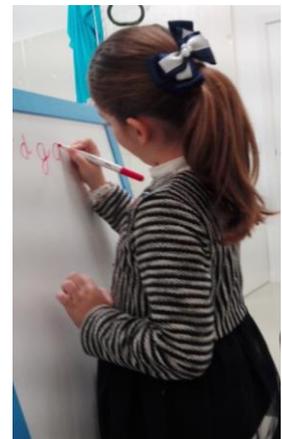
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1



Case Example: G

- Age:
 - 7 years and 8 months
- School:
 - 2nd grade
- History:
 - Birth 39 weeks
 - Difficulties in Reading and Handwriting
 - Typical development
 - Psychology, Speech therapy and Occupational therapy



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2



Participation

Strengths/Interests

Challenges

Strengths and Challenges

- Loves when she can do things that she is supposed to do
- Likes to be praised
- Difficulty staying in her seat at school and during mealtime
- Trouble with buttoning and pedaling a bike
- Difficulty completing her written work at school
- Feels sad that friends make fun of her as she tends to let her tongue hang out
- Limited social interactions-always says she wants puzzles instead of movement activities because she's not good at it

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3

Occupational Profile:

Family Life Impact Questionnaire (FLIQ)

Conducting a Comprehensive Assessment

	A	O	S	R/N	N/A	Comments
Does your child...						
I. relate to being part of the family?	X					
I. interact with parents and significant adults?	X					
I. interact and play with siblings/cousins?		X				
I. "fit in" with peers?			X			
I. play with friends?			X			
I. make and keep friends?				X		
I. get invited by other children to events such as birthday parties?				X		
I. invite friends for play dates?			X			
I. gets invited by other children for play dates?				X		

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FLIQ

Conducting a Comprehensive Assessment

How often do the following daily household routines run smoothly for your child and family?	A	O	S	R/N	N/A	Comments
l. cleaning up and dressing in the morning			X			
l. getting ready to go somewhere			X			
l. leaving the house in the morning			X			
l. meal preparation and cleanup		X				
l. mealtimes		X				
l. bathing activities			X			
l. grooming activities			X			
l. homework				X		
l. cleaning up			X			
l. chores			X			
l. putting personal belongings away				X		
l. returning household objects to their proper place				X		
l. getting ready for and going to bed		X				

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Observations During Testing

Conducting a Comprehensive Assessment

- Calm during testing
- Slow to respond during testing, in transitions, in positioning self and materials
- Uses excessive trunk and wrist flexion when she is writing, says it's to "see what she's writing"
- Uses excessive effort and force in handwriting
- Shows difficulties in left to right letter formation in handwriting
- Seems to have slow processing and low arousal level
- Avoids crossing midline during items

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6



SPM-Home Form

Conducting a Comprehensive Assessment

- “Some Problems” in Hearing

- **Note: Total Score is Incorrect** Therapist needs to rescore

Likely due to including sum of social participation and ideas and planning in total score

%	T	PS	VIS	AUD	TAT	COR	EQM	PLI	TOT	T	%
80	37-40	35-44	29-32	37-44	36-40	35-44	33-36	170-224	80		
79	35-36	33-34	27-28	36	34-35	34	31-32	164-169	79		
78	34	32	26	34-35	33	33		154-163	78		
77		31	25	33	32	31-32	30	142-153	77		
76		33	30	24	31	29-30		140-141	76		
75		32	28-29	23	32	30	27-28	29	137-139	75	
>99	74	31	27	22	30-31	29	26	28	133-136	74	>99
99	73	31			28-29	28	27	131-132	73	99	
72		26	21	27	27	25	26	129-130	72		
98	71	30	25	20	26	26	24	122-128	71	98	
70		29	24	19	25	25	25	118-121	70		
97	69	28	23	18	25	24	23	24	110-118	69	97
96	68		21-22	17	23-24	23	22		106-109	68	96
67		27	20	16	22	22	23		103-105	67	
95	66	26	19	15	21	21	21	22	99-102	66	95
93	65	25	19	20	20	20	21		94-98	65	93
92	64	24	18	19	19	19	20		92-93	64	92
90	63	23	17	18	18	18	19		88-91	63	90
88	62	22		12					84-87	62	88
86	61		16		17	17	17	18	81-83	61	86
84	60	21			16	16	17		79-80	60	84
82	59		15	11	16	15	16		77-78	59	82
79	58	20						16	75-76	58	79
76	57		14		15	14			73-74	57	76
73	56	19		10					71-72	56	73
69	55	18			14	13			70	55	69
66	54		13				14		69	54	66
62	53	17					13		67-68	53	62
58	52			9	13	12		12	66	52	58
54	51	16					13	12	65	51	54
50	50		12						64	50	50
46	49	15							63	49	46
42	48				12	11		11	62	48	42
38	47						12		62	47	38
34	46								61	46	34
31	45	13						10	61	45	31
27	44								60	44	27
24	43	12		8					59	43	24
21	42								59	42	21
18	41								41	18	
16	40	10-11	11		11	10	11	9	56-58	40	16

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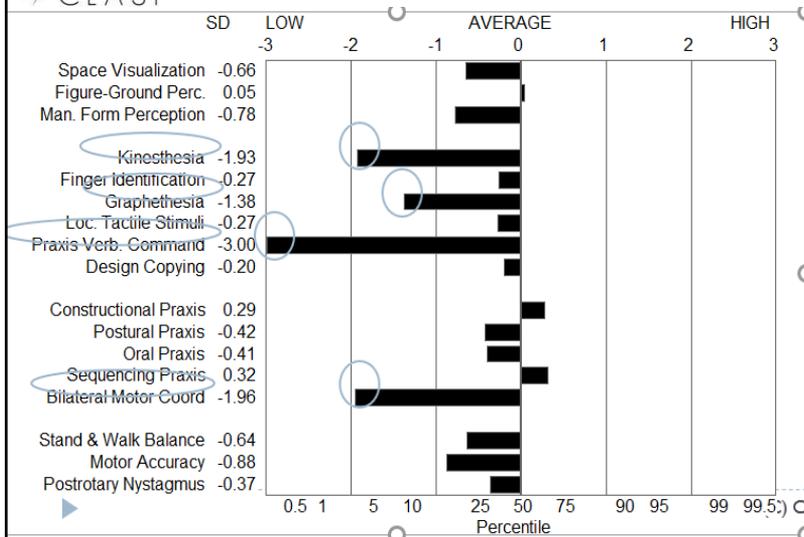
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SIPT

Conducting a Comprehensive Assessment

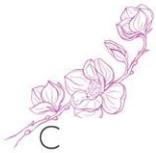


- Low SVCU (-1.35)
- Low MFP Part II: -1.49
- Low subscores CPR:
 - rotation > 15 degrees (-1.05)
 - reversals (-1.58)

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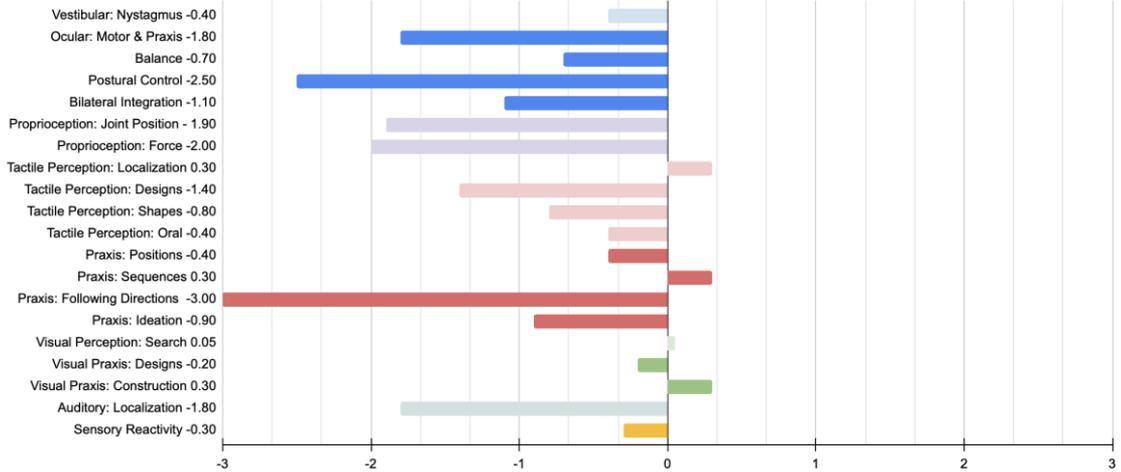
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8



EASI

SCORES



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SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL					
Problems in Vestibular Bilateral Integration					
Problems in Somatopraxis		Problems in Visuopraxis		Problems in Sensory Reactivity	
Sensory Perception Vestibular Processing -0.37_PRN/VN★ (low score is a sign of vestibular based problem) ___ SPM ___ signs of typical dizziness following movement ___ -1.58_ orientation in space (e.g., navigation, spatial orientation scores on VPr:D; VPr:C★)	Proprioception -1.93_KIN/Prop JT▲★ -2.0_Prop: F★ ___ position awareness ___ use of force ___ SPM	Tactile Perception -0.30_FI_LTS/TP:▲★ -1.40_GRA/TP: D▲★ -0.80_MFP/TP:S▲★ -0.30 ___ SPM ___ poor ability to find or manipulate objects w/o vision	Visual Perception -0.66_SV▲ +0.05_FG/VP: S▲★ ___ SPM ___ other visual perception tests (e.g. DTVP, TVPS) ___ visual perception abilities (e.g. puzzles, hidden figure games)	Sensory Reactivity Sensory Hyper-Reactivity Signs of over or heightened responses: OK All SPM Bal & Mov't. ___ PC★ ___ SR-Motion/Gravity★ ___ prolonged VN* ___ SPM Touch ___ Hyper tactile reactivity TP tests ___ SR-Tactile★	Sensory Hypo Reactivity Signs of under or delayed responses: OK All Observations of lack of awareness of motion ___ SPM Touch ___ Hypo tactile reactivity TP tests ___ SPM Hearing ___ Hypo auditory reactivity A.L.★ ___ SPM Smell ___ SPM Vision ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain, or other sensation)
Praxis & Motor Related Functions					
Postural/Ocular -0.70_SWB/Bal▲★ -2.50_PC★ -1.80_O: M & Pr★ ___ other (e.g. BOT-2, SOSI; COP)☑ ___ TYP_SPM ___ extensor tone ___ righting reactions	Postural Mechanisms -2.50_PC★ -0.70_SWB/Bal★ ___ other balance tests (e.g. BOT-2)☑ ___ posture in sitting & standing	Somatossensory-based Praxis -0.40_PPr/Pr:P▲★ +0.30_SPR/Pr: S▲★ -0.40_OPr▲ ___ TYP_SPM Language-based Praxis -3.00_PrVC/Pr:FD▲★ Ideation-based Praxis -0.90_Pr:I★ ___ other (e.g. TIP) TYP_SPM ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	Visuopraxis ___ MAC▲ -0.20_DC/ VPr:D★ +0.29_CPr/ VPr: C★ ___ other visual motor tests (e.g. Beery VMI-Motor Coordination) TYP_SPM ___ ability to draw, write, build, fold, etc.	___ SPM Hearing ___ SR-Auditory★ ___ SPM Taste & Smell ___ SR-Olfactory ___ SPM Vision ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain, or other sensation) *Hyper reactive responses during or following rotation may be observed, particularly in conjunction with high VN	___ SPM Hearing ___ Hypo auditory reactivity A.L.★ ___ SPM Smell ___ SPM Vision ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)
Bilateral Integration-Midline -1.10_BMC/BI▲★ -0.40_OPr▲ +0.30_SPr▲ -1.38_GRA MFP - 0.80 ___ ability to coordinate both sides of the body ___ crossing midline/ laterality ___ jumping jacks, skipping, etc. -1.8 Auditory: Localization★ New test-not yet classified Some Problems_SPM	Non-SI Scores/Data Suggesting patterns other than sensory integration ___ High VN or PRN with low PrFD or PrVC and no other signs of dyspraxia ___ signs of neuromotor problems (e.g. high tone, tremor, ataxia, etc.) without other signs of sensory or praxis problems ___ other	(C) CLASI 2022			

Generating Hypotheses

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Initial Impression Regarding G's Sensory Integration Patterns (Identifying Proximal Areas of Concern)

Generating
Hypotheses

Strengths:

- Good visual praxis including visual perception and visual motor skills
 - (VP:D; VP:S) (SV, FG, DC, MAC)
- Good imitation praxis
 - (Pr:I, Pr:P;, Pr:S) (PPr, Opr, SPr)

Difficulties:

- Poor somatosensory awareness including proprioception and some aspects of tactile perception
 - (Prop:JP, Prop:F, TP:S) (KIN, GRA)
- Poor postural control and head and trunk alignment
 - (PC; Bal) (KIN, EASI, low extensor tone)
- Difficulty with spatial orientation including crossing midline
 - (TP:S; BI; PC; O:M&P) (GRA, Low SVCU, low directionality scores on CPPr, BMC, crossing midline, skipping, jumping jacks)
- Difficulty with auditory processing and planning actions from verbal directions
 - (Pr:FD, AL) (PrVC, SPM Hearing)

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Initial Impression Related to Participation (Linking Proximal Areas to Distal Areas of Concern)

Generating
Hypotheses

Strengths

G's good visual motor, visual praxis, and imitation abilities support her motivation in academic tasks and her interest in puzzles

Challenges:

Poor proprioception, as well as difficulty with orientation in space affect G's ability to master geometry concepts and to keep her writing within the lines

Poor proprioception and postural control interfere with ability to stay upright in seat.

Difficulty with spatial processing including orientation in space and crossing midline, as well as poor bilateral coordination affect G's ability to button and pedal

Problems in proprioception and some aspects of tactile perception, as well as difficulty planning actions from verbal directions, interferes with G's ability to interact successfully with her peers; she likely misses verbal and somatosensory cues; these issues also likely make her unaware that her tongue is hanging out of her mouth

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Strengths and Challenges	Assessment Results	Generating Hypotheses
<p>G. is a lovely girl who likes to be helped. She loves making puzzles and despite her difficulties she also likes academic activities.</p> <p>G. Has difficulty with geometric type tasks affecting her performance in mathematics. She also has trouble with writing activities at school.</p> <p>G is frustrated about her social interactions</p> <p>G has trouble with buttoning and with pedaling a bike</p> <p>G has some trouble staying upright in her seat at school and at mealtime</p>	<p>Good SV, FG, DC, MAC, CPr, MFP & Praxis; Typical PRN</p> <p>Poor KIN, GRA Low SVCU, low directionality scores on CPr</p> <p>Poor KIN, GRA Low PrVC</p> <p>Poor BMC, GRA, SVCU, low orientation in space, extensor tone, crossing midline, skipping, jumping jacks.</p> <p>Poor KIN, poor head and trunk alignment on EASI</p>	<p><u>Strengths</u> G's good visual motor, visual praxis, and imitation abilities support her motivation in academic tasks and her interest in puzzles</p> <p><u>Difficulties:</u> Poor proprioception and poor haptic perception, as well as difficulty with orientation in space affect G's ability to master geometry concepts and to keep her writing within the lines</p> <p>Problems in proprioception and some aspects of tactile perception, as well as difficulty planning actions from verbal directions, interferes with G's ability to interact successfully with her peers; she likely misses verbal and somatosensory cues; these issues also likely make her unaware that her tongue is hanging out of her mouth</p> <p>Difficulty with spatial processing including orientation in space and crossing midline, as well as poor bilateral coordination affect G's ability to button and pedal</p> <p>Poor proprioception and postural control interfere with ability to stay upright in seat.</p>

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Linking **Proximal Areas** to be Addressed During Intervention to **Distal Outcome Areas**

Developing Goals

- Proximal Areas

Increase physically active, sensory motor play

Decrease over-reliance on visual motor activities

Improve:

- Proprioceptive awareness
- Graphomotor skills
- Spatial orientation
- Arousal Regulation
- Processing speed
- Auditory processing
- Postural Control
- Ocular Motor Control
- Bilateral Motor Control

- Distal Areas

- G will stay in her seat at school and during mealtime
- G will master buttoning and pedaling a bike
- G will complete her written work at school in a designated time frame
- G will demonstrate improved social participation and increased confidence during play activities with peers

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Goals (Linking Proximal and Distal Areas)

Developing Goals

1. G will show improved vestibular-postural control so that she is able to stay in her seat comfortably for the duration of a lesson or meal (approximately 15 minutes) on 2/3 opportunities per day over a two week period, as measured by caregiver observation.
2. G will show improved bilateral motor control so that she is able to complete her written work within the same time frame as her peers, with 80% accuracy for spatial alignment, and no more than one adult reminder/support, on 4/5 opportunities as measured by caregiver observation.
3. G will demonstrate improved body awareness and bilateral coordination needed to self-initiate engagement in gross motor activities (e.g. hopscotch, jump rope, ball games, follow the leader etc.) during play with peers at home and at school 3/5 days per week as measured by caregiver observation.

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Identifying Measurable Outcome Tools Pre-Intervention

Identifying Outcome Measures

Proximal Outcome Measures

e.g.

- EASI: PC, BI
- EASI: O:M⪻ P:FD; A:L
- SIPT: KIN, GRA
- SIPT: PrVC
- SIPT: BMC

Distal Outcome Measures

e.g.

- Goal Attainment Scaling
- Test of Handwriting Skills-Revised (THS)
- Family Life Impact Questionnaire (FLIQ)
- Adaptive Behavior Assessment Scale (ABAS-3)

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Generating Hypotheses	Developing Goals	Identify Proximal & Distal Outcome Measures
<p>Strengths: G's good visual motor, visual praxis, and imitation abilities support her motivation in academic tasks and her interest in puzzles</p> <p>Difficulties: Poor proprioception and poor haptic perception, as well as difficulty with orientation in space affect G's ability to master geometry concepts and to keep her writing within the lines</p> <p>Problems in proprioception and some aspects of tactile perception, as well as difficulty planning actions from verbal directions, interferes with G's ability to interact successfully with her peers; she likely misses verbal and somatosensory cues; these issues also likely make her unaware that her tongue is hanging out of her mouth</p> <p>Difficulty with spatial processing including orientation in space and crossing midline, as well as poor bilateral coordination affect G's ability to button and pedal</p> <p>Poor proprioception and postural control interfere with ability to stay upright in seat.</p>	<ol style="list-style-type: none"> 1. G will show improved vestibular-postural control so that she is able to stay in her seat comfortably for the duration of a lesson or meal (approximately 15 minutes) on 2/3 opportunities per day over a two-week period, as measured by caregiver observation. 2. G will show improved bilateral motor control including spatial awareness so that she is able to complete her written work with no more than one adult reminder/support, within the same time frame as her peers, on 4/5 opportunities as measured by caregiver observation. 3. G will demonstrate improved body awareness and bilateral coordination needed for self-initiated engagement in gross motor activities (e.g. hopscotch, jump rope, ball games, follow the leader etc.) during play with peers at home and at school 3/5 days per week as measured by caregiver observation. 	<p>Proximal Measures:</p> <ul style="list-style-type: none"> • SIPT: KIN, GRA • SIPT: PrVC • SIPT: BMC • EASI: PC, BI • EASI: O:M&Pr; • EASI: P:FD; A:L <p>Distal Measures:</p> <ul style="list-style-type: none"> • Test of Handwriting Skills-Revised (THS) • Family Life Impact Questionnaire (FLIQ) • Adaptive Behavior Assessment Scale (ABAS-3)
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Recommendation for Service

Is an ASI Intervention Approach Warranted?

Setting the
Stage for
Intervention

- Based on the evaluation findings, G demonstrates sensory integration deficits that are impacting her participation in needed and desired activities of daily living.
- OT services using evidence-based ASI methods may assist G in addressing her participation challenges.

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Evidence for ASI Intervention

Setting the
Stage for
Intervention

Sensory Integration and processing difficulties:

- **Impact meaningful childhood occupations** (Chien, Rodger, Copley, Branjerdporn, & Taggart, 2016; Reynolds, et al., 2017)
- **Impact function, learning, and emotional and behavioral responses** (Watling, Miller Kuhaneck, Parham, & Schaaf, 2018)

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Evidence for ASI Intervention

Setting the
Stage for
Intervention

AOTA OT Practice Guidelines (Watling, Miller Kuhaneck, Parham, & Schaaf, 2018)

- Children and youth with challenges in sensory integration and sensory processing and their families can benefit from occupational therapy consultation and intervention
- ASI intervention can be used by OT practitioners to help clients meet meaningful individualized goals and improve function and participation.
- ASI Intervention:
 - Reduces the need for caregiver assistance in self-care and social function
 - Reduces autistic mannerisms

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Recommendation for Service (Adhering to ASI Fidelity for Structural Elements)

Setting the
Stage for
Intervention

- 1x week for 60 minute sessions, 1:1 intervention with qualified Occupational Therapist
- G's profile warrants OT intervention using an ASI approach in a space equipped for sensory motor activities that adheres to fidelity
- 30-minutes per month of consultation/collaboration for parent education and the establishment of a home program
- Duration for a period of 1 year with reevaluation at that time to determine further recommendations

Referral: Speech and language therapy services

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Intervention Planning with Fidelity to ASI Designing Activities to Prepare for Intervention Session

Setting the
Stage for
Intervention

Intervention Activities Targeting Goal Area 1: G will show improved vestibular-postural control so that she is able to stay in her seat comfortably for the duration of a lesson or meal (approximately 15 minutes) on 2/3 opportunities per day over a two week period, as measured by caregiver observation.

Vestibular activities involving balance, postural challenges and working in prone. Challenge head, neck, and eye control. Provide incremental increases in the demand for speed, accuracy, and balance and motor control by unstable surfaces, inclines, and use of ropes, handles, and pulleys

Exposure to sensory regulatory strategies that include vibration, oral motor toys, deep pressure, and muscle work opportunities, like compression garments, burrowing under pillows, creating dark quiet spaces or caves, elimination of bright lights or unnecessary sounds/talking

Work with her caregivers on a home program to apply sensory-based activities used in the intervention sessions, before and after mealtimes

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Intervention Planning with Fidelity to ASI Designing Activities to Prepare for Intervention Session

Setting the
Stage for
Intervention

Intervention Activities Targeting Goal Area 2: G will show improved bilateral motor control so that she is able to complete her written work within the same time frame as her peers, with 80% accuracy for spatial alignment, and no more than one adult reminder/support, on 4/5 opportunities as measured by caregiver observation.

Vestibular activities involving postural challenges and working in prone. Challenge head, neck, and eye control.

Incorporate visual motor and visual tracking with target games, hide and seek, and eye spy games

Incorporate fine motor writing tasks into active play with score keeping, drawing a treasure map, making a food menu

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Intervention Planning with Fidelity to ASI Designing Activities to Prepare for Intervention Session

Setting the
Stage for
Intervention

Intervention Activities Targeting Goal Area 3: G will demonstrate improved body awareness and bilateral coordination needed to self-initiate engagement in gross motor activities (e.g. hopscotch, jump rope, ball games, follow the leader etc.) during play with peers at home and at school 3/5 days per week as measured by caregiver observation.

Active sensory motor activities using resistance and weight (heavy work) to increase proprioception feedback- pushing, pulling, carrying, looking for objects under pillows

Total body somatosensory perception and praxis challenges:
Climbing and crashing, Lycra “washing machine rides”
Rolling up and down inclines with various textured surfaces, deep pressure input with a ball or pillows, challenge body-centered praxis with obstacle courses.

Incorporate age appropriate games, such as sports that require bilateral coordination and crossing midline

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Intervention with Fidelity to ASI Scaffolding to Facilitate Integration and Adaptive Responses

Conducting
Intervention

- *(Refer to the scaffolding model and clinical reasoning resources)*
- Strengths: Start with visual motor activities such as targets or puzzles
 - Note: When child feels fatigued, insecure or dysregulated, go back to activities in the area of strength
- Pair sensory strengths with more challenging sensory areas during multisensory activities
- Add challenges in the areas of need – arousal regulation, processing speed, auditory perception, vestibular-proprioceptive awareness, spatial orientation, and postural-ocular-and bilateral coordination
 - Increase the demand for speed, accuracy, balance and motor control by unstable surfaces, inclines, and use of ropes, handles, and pulleys

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Intervention with Fidelity to ASI Collaboration/Consultation

Conducting
Intervention

Coaching and caregiver education and **sensory-based strategies** and accommodations to support carry over of the direct ASI intervention in both the home and community setting

- **Sensory-based techniques** must be individually tailored and frequently monitored for success (Bodison & Parham, 2018)
 - Sensory strategies will be introduced during 1:1 intervention sessions and observed and documented on a weekly basis for success and appropriateness of fit.
- **Caregiver education and coaching** in the use and value of these explored sensory strategies in the home and the community will also be monitored through weekly parent report (Miller-Kuhanek & Watling, 2018)
 - Provide research and education resources to help parent understand how Shane's sensory integrative difficulties impact function
 - For example: how somatopraxis and balance impact body awareness and play

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Intervention with Fidelity to ASI Collaboration/Consultation

Conducting
Intervention

Sample Accommodations for the Home, School, and Community

- Provide breaks as a critical part of her day. The evidence is conclusive that taking away breaks has no positive outcome for children, but rather has clear detrimental effects. See Pellegrini et al., 1993; 2013; and Jarrett et al., 1998; 2013.
- Reminders to review work and visually scan her responses.
- Ergonomically appropriate desk and chair with good lighting when doing seat-work
- Supports to ensure accurate auditory processing of instructions
- Visual schedule/materials checklist
- Combine visual directions with auditory instructions
- Chunk or separate tasks into manageable steps

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Implementing Evidence-Based ASI with Fidelity

Conducting
Intervention

ASI INTERVENTION FIDELITY RATINGS

STRUCTURE – 100

PROCESS - 94

1. 4
2. 4
3. 3
4. 4
5. 4
6. 3
7. 4
8. 4
9. 4
- 10.4

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Reevaluation (Determining the Next Steps)

Outcomes Measurement

- Re-evaluation after 6 months indicated progress in all areas with continued needs in the area of somatosensory awareness and vestibular bilateral control
- Recommendation
 - OT to be continued with decreased intensity of services due to progress but continued concerns

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Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post -Tx
<ul style="list-style-type: none"> • 1:1 with Qualified Occupational Therapist • 1x week, 60 minute sessions, for 1 year • in a space equipped for sensory motor activities via ASI intervention • Therapist meets criteria for Fidelity to ASI Intervention <p>Referral: Speech and language therapy services</p>	<p>Build on Strengths and Scaffold for an integrated sense of self and adaptive response</p> <p>Start with visual motor activities such as ensuring that she can see what she's doing and what's going on around her; motivating with puzzles</p> <p>Start with puzzles in prone on the floor and starting to introduce proprioceptive-vestibular activities (e.g. find the treasure she needs to go throw the sea (swing) to pick up the pieces on the other island).</p> <p>Work toward Adaptive Responses Add challenges in the areas of need – arousal regulation, processing speed, auditory perception, vestibular-proprioceptive awareness, spatial orientation, and postural-ocular-and bilateral coordination</p>	<p>To be measured and reported objectively, ideally in chart format</p> <p>G demonstrated improvement on SIPT and EASI (proximal areas) notably:</p> <ul style="list-style-type: none"> • vestibular spatial abilities, • auditory comprehension, • Speed and accuracy of handwriting <p>Resulting in improvements on FLIQ and Teacher/Academic Reports (distal areas):</p> <ul style="list-style-type: none"> • Social play with peers • Willingness to engage in playground activities • Reduced fatigue with academic tasks • Increased speed and accuracy of academic work production

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Case Preparation Template

*These blank slides may be used
to prepare the required Case Summaries*

Case Summaries are to be Completed During and Following M4 and M5

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1



Case Example

- Age:
- School:
- History:

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2



Participation
Strengths/Interests

Participation
Challenges

**Strengths and
Challenges**

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3



Occupational Profile:
Family Life Impact Questionnaire (FLIQ)

**Conducting a
Comprehensive
Assessment**

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4



Observations During Testing

Conducting a Comprehensive Assessment

5



SIPT

Conducting a Comprehensive Assessment

6



EASI

Conducting a Comprehensive Assessment



Complete the Interpretation Tool

Generating Hypotheses

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL			
* = EASI ● = SPM □ = OTHER TESTS			
Problems in Vestibular Bilateral Integration		Problems in Sensory Reactivity	
Problems in Somatopraxis		Problems in Visuopraxis	
Sensory Perception			
Vestibular Processing VN ★ (low score is a sign of vestibular based problem) SPM ● signs of typical dizziness following movement orientation in space (e.g., navigation, spatial orientation scores on VPr:D; VPr:C ★	Proprioception Prop:IT ★ Prop:F ★ position awareness use of force SPM ●	Tactile Perception TP:L ★ TP:D ★ TP:S ★ TP:O ★ SPM ● poor ability to find or manipulate objects w/o vision	Visual Perception VP:S ★ SPM ● other visual perception tests (e.g., DTVP, TVPS) □ visual perception abilities (e.g. puzzles, hidden figure games)
Praxis & Motor Related Functions		Sensory Reactivity	
Postural/Ocular Bal ★ PC ★ O: M & Pr ★ other (e.g., BOT-2, SOSI, COP) □ SPM ● extensor tone righting reactions Bilateral Integration—Midline BI ★ ability to coordinate both sides of the body crossing midline/laterality jumping jacks, skipping, etc. Auditory Localization ★ New test-not yet classified	Postural Mechanisms PC ★ Bal ★ other balance tests (e.g., BOT-2) □ posture in sitting & standing Non-SI Scores/Data Suggesting patterns other than sensory integration High VN or PRN with low PrFD or PRVC and no other signs of dyspraxia signs of neuromotor problems (e.g. high tone, tremor, ataxia, etc.) without other signs of sensory or praxis problems other	Somatosensory-based Praxis Pr:P ★ Pr:S ★ SPM ● Language-based Praxis Pr:FD ★ Ideation-based Praxis Pr:I ★ other (e.g. TP) ● SPM ● ability to plan novel actions ability to learn new skills/ coordination in tasks	Sensory Hyper-Reactivity Signs of over or heightened responses: SR: Overall (Hyper) SPM Bal & Mov't ● PC ★ SR-Motion/Gravity prolonged VN* SPM Touch ● Hyper tactile reactivity TP tests ★ SR-Tactile ★ SPM Hearing ● SR-Auditory ★ SPM Taste & Smell ● SR-Olfactory ★ SPM Vision ● other observations or caregiver report on reactions to sensory input (e.g. temperature, pain, or other sensation) *Hyper reactive responses during or following rotation may be observed, particularly in conjunction with high VN
		Sensory Hypo Reactivity Signs of under or delayed responses: Observations of lack of awareness of motion SPM Touch ● Hypo tactile reactivity TP tests ★ SPM Hearing ● Hypo auditory reactivity A:L ★ SPM Smell ● H-45, P-44 SPM Vision ● other observations or caregiver report on reactions to sensory input (e.g. temperature, pain or other sensation)	

*Replace the Assessment Tool shown here with the one you have filled out for your case.



Initial Impression Regarding Sensory Integration Patterns (Identifying Proximal Areas of Concern)

**Generating
Hypotheses**

Participation Strengths/Interests:

Participation Challenges:

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Initial Impression Related to Participation (Linking Proximal Areas to Distal Areas of Concern)

**Generating
Hypotheses**

Participation Strengths/Interests:

Participation Challenges:

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Participation Challenges	Assessment Results	Generating Hypotheses
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Participation Strengths/Interests	Assessment Results	Generating Hypotheses
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Linking **Proximal Areas** to be Addressed During Intervention to **Distal Outcome Areas**

Developing Goals

- Proximal Areas
- Distal Areas

Increase
Decrease

Improve:



Write 2 Goals (Linking Proximal and Distal Areas)

Developing Goals

- 1.
- 2.



Identify Measurable Outcome Tools Pre-Intervention

Identifying
Outcome
Measures

Proximal Outcome Measures
e.g.

Distal Outcome Measures
e.g.

Generating Hypotheses	Developing Goals	Identify Proximal & Distal Outcome Measures
<p><u>Participation Strengths/Interests:</u></p> <p><u>Participation Challenges:</u></p>	<ol style="list-style-type: none"> 1. 2. 	<p>Proximal Measures:</p> <p>Distal Measures:</p>



Recommendation for Service Is an ASI Intervention Approach Warranted?

Setting the
Stage for
Intervention

- Based on the evaluation findings...



Evidence for ASI Intervention

Setting the
Stage for
Intervention



Recommendation for Service

Setting the
Stage for
Intervention

Service Delivery Model?

Frequency and Duration?

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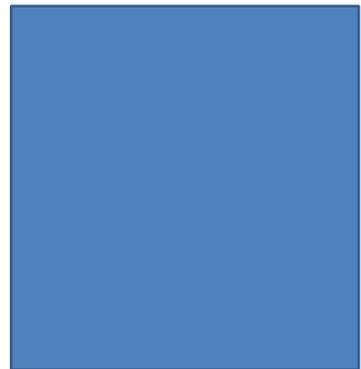
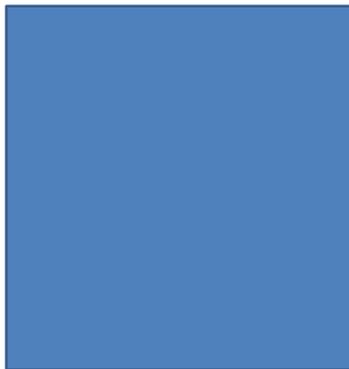
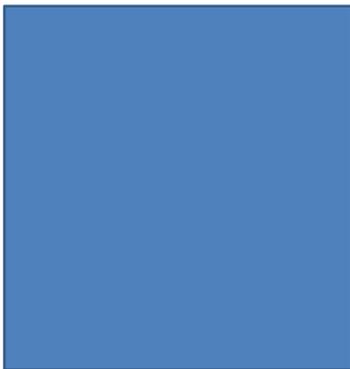
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Intervention Planning with Fidelity to ASI Design 2-3 Activities to Prepare for Intervention Session

Setting the
Stage for
Intervention

Intervention Activities Targeting Goal Area 1:



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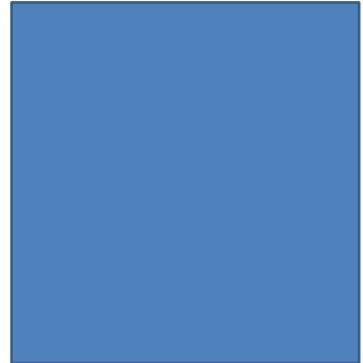
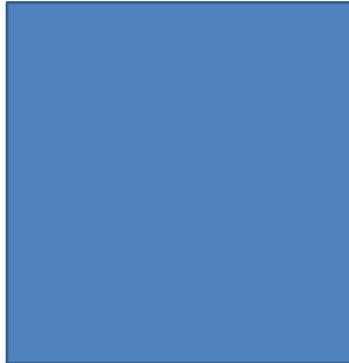
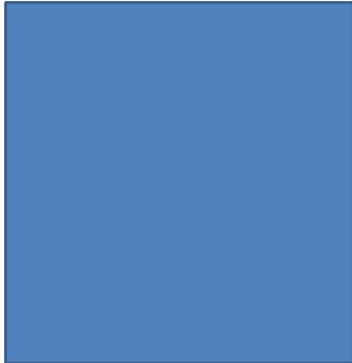
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Intervention Planning with Fidelity to ASI Design 2-3 Activities to Prepare for Intervention Session

Setting the
Stage for
Intervention

Intervention Activities Targeting Goal Area 2:



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Intervention with Fidelity to ASI Scaffolding to Facilitate Integration and Adaptive Responses

Conducting
Intervention

- *(Refer to the scaffolding model and clinical reasoning resources)*
- Start with Strengths
- Sensory supports and challenges that can be paired during multisensory activities
- Identify areas of adaptive responses in the areas of need

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Intervention Planning with Fidelity to ASI Collaboration/Consultation

Conducting
Intervention

Accommodations for the Home, School, and Community

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Implementing Evidence-Based ASI with Fidelity

Conducting
Intervention

Use Fidelity Measure to Rate ASI Intervention

STRUCTURE – 100

PROCESS –

1. _
2. _
3. _
4. _
5. _
6. _
7. _
8. _
9. _
10. _

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Reevaluation (Determining the Next Steps)

Outcomes
Measurement

To be measured and reported objectively, ideally in chart format

- Time Frame?
- Recommendation?

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Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post -Tx

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M6: Goal Setting and Measuring Outcomes

Dr. Susanne Smith Roley
OTD, OTR/L, FAOTA

*Acknowledgement to original SI
theory lectures by Dr. A. Jean Ayres
and all who have contributed to SI
theory development since that time.*



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Module 6 (M6) Providing ASI Intervention with Fidelity

- Lesson 1: Updates in evidence-based ASI Intervention
- Lesson 2: ASI Patterns, M4 Review
- Lesson 3: Goal Setting & Measuring Outcomes
- Lesson 4: Structure for Providing ASI with Fidelity
- Lesson 5: Facilitating the Adaptive Response
- Lesson 6: Process of Providing ASI with Fidelity
- Lesson 7: Consultation, Sensory Strategies & Environmental Modifications

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2



Outcomes

Is the therapy worth it?



“The goal of (OT) intervention is to help the child and family engage in meaningful occupations and co-occupations”

(Smith Roley, 2006, p. 71)

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3



Outcomes

Is the therapy worth it?

Engaging in intervention requires a social contract with the client and caregivers to

Work together toward a positive outcome

Ethically

Reliability

Within the domain of practice

According to the best available evidence

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ASI & Participation



Additional Resources

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5



Linking Sensory Factors to Participation

Schaaf, R. C., Cohn, E. S., Burke, J., Dumont, R., Miller, A., & Mailloux, Z. (2015). Linking sensory factors to participation: Establishing intervention goals with parents for children with autism spectrum disorder. *American Journal of Occupational Therapy*, 69, 6905185005.

Purpose: Describe exploratory analysis of 160 parent-identified goals for children with autism. Parents often focus on independence in activities of daily living and social participation when setting goals for their children with autism spectrum disorders. Occupational therapy practitioners use clinical reasoning to translate these goals to define occupation-based outcomes.

Methods: Identified sensory integrative factors hypothesized to influence each goal and then categorized the goals using the Occupational Therapy Practice Framework: Domain and Process and the International Classification of Functioning, Disability and Health (ICF). Most goals were at the ICF participation and activity levels.

Findings: Activities of daily living were the most common area of occupation identified, followed by social participation and play. Sensory reactivity and somatopraxis were the most frequently occurring sensory integrative factors.

Implications: The value of addressing parent goals using a systematic reasoning process to identify factors affecting participation and the importance of measuring participation outcomes are discussed.

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Examining the impact of sensory processing difficulties on the family on the everyday routines of families of children with autism (Schaaf et al., 2011)

Purpose: Qualitative study exploring the lived experience of how sensory-related behaviors of children with autism affected family routines.

Method: In-depth semi-structured interviews were conducted with four primary caregivers regarding the meaning and impact of their child's sensory-related behaviors on family routines that occurred inside and outside the home.

Findings: Sensory behaviors are one factor that limited family participation in work, family and leisure activities; and that **parents employed specific strategies to manage individual and family routines in light of the child's sensory-related behaviors.**

Implications: This information has important **implications for professionals who work with families of children with autism to decrease caregiver stress and to increase life satisfaction for the child and family.**

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Relationship between Sensory Processing and Participation

Ismael, N., Lawson, L. M., & Hartwell, J. (2018). Relationship between sensory processing and participation in daily occupations for children with autism spectrum disorder: A systematic review of studies that used Dunn's sensory processing framework. *American Journal of Occupational Therapy*, 72, 7203205030. <https://doi.org/10.5014/ajot.2018.024075>

Purpose and Methods: Research measuring sensory processing in children with autism spectrum disorder (ASD) has shown variability in terms of measures used and participant ages, contributing to difficulty in interpreting and summarizing the findings of these studies. In an attempt to clarify the status of the literature, researchers conducted a systematic review of studies that focused on participation in daily occupations and evaluated sensory processing in children with ASD aged 5–13 yr using Dunn's sensory processing framework.

Findings: Evidence from 7 studies shows that sensory processing has a significant impact on participation in daily life of children with ASD. Additional research using more robust scientific methods is needed.

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Occupational Therapy Using Sensory Integration to Improve Participation of a Child With Autism

Schaaf, R. C., Hunt, J., & Benevides, T. (2012). Occupational therapy using sensory integration to improve participation of a child with autism: A case report. *American Journal of Occupational Therapy*, 66, 547–555. <http://dx.doi.org/10.5014/ajot.2012.004473>

Purpose: Case report that describes the changes in adaptive behaviors and participation of 1 child with autism during a 10-wk program of intensive occupational therapy using a sensory integrative approach (OT–SI) following a manualized protocol. This case is part of a larger study examining the efficacy of the OT–SI approach.

Findings: Researchers found **improvement in sensory processing**, as measured by the Sensory Integration and Praxis Tests, as well as **enhanced participation in home, school, and family activities**, as indicated on parent-rated goal attainment scales.

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Outcomes

Measuring progress and impact



Measurable statements that identify the expected results of a intervention in order to determine it's effectiveness

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Outcomes Measuring Progress and Impact



- What is the predicted change you expect relative to the cost of your service (time, money, and otherwise)?
- Predicted change must be impactful, relevant and meaningful
- The more knowledge and skills by the therapist, the better the outcomes

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Reported Outcomes of ASI that maybe difficult to measure

- Improved engagement in daily activities
- Improved ability to hold still & pay attention
- Increased tolerance to change
- Improved ability to generalize
- Improved social language
- Improved organizational skills
- Hopefulness & resilience
- Improved quality of life for family



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Parental Hopes (Cohn, 2000, 2001, 2014)

Cohn, E., Miller, L. J., & Tickle-Degnen, L. (2000). Parental hopes for therapy outcomes: Children with sensory modulation disorders. *American Journal of Occupational Therapy*, 54, 36–43.

Purpose: Qualitative study that explored parents' points of view regarding their [hopes for the outcomes of occupational therapy using a sensory integration treatment approach](#).

Method: Data collected as part of a larger research project on the effectiveness of rehabilitating children who have sensory modulation disorders. Five interviews were randomly selected from 17 parent interviews conducted in the larger study. Data was analyzed using grounded theory methods.

Findings: Three themes pertinent to the occupations of children and two themes related to the occupations of parenting and sustaining family life emerged. Child-focused outcomes include [social participation, self-regulation, and perceived competence](#). Parent-focused outcomes include learning strategies to support children and obtaining personal validation.

Discussion: Interventions are proposed that relate to children's participation in contexts in which they live, learn, and play, as well as the support of parents in the occupations of parenting.

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Parental Hopes (Cohn, 2000; 2001; 2014)

Cohn, E. S., Kramer, J., Schub, J. A., & May-Benson, T. (2014). Parents' explanatory models and hopes for outcomes of occupational therapy using a sensory integration approach. *American Journal of Occupational Therapy*, 68, 454–462.

PURPOSE: To describe parents' concerns and hopes for their children who would be receiving occupational therapy using a sensory integration approach.

METHOD: Content analysis of 275 parental responses to three open-ended questions on developmental– sensory history intake forms.

FINDINGS: Parents' descriptions of why they sought for their children were categorized into four overarching concerns about their [children's challenges: self-regulation, interacting with peers, participating in skilled motor activities, and self-confidence](#). Parents often linked these concerns together, revealing explanatory models of how they make sense of potential relationships among their children's challenges and how these challenges affect occupational performance. Parents hoped occupational therapy would help their children develop self-understanding and frustration tolerance to self-regulate their behavior in socially acceptable ways.

IMPLICATIONS: Assessment and intervention should explicitly focus on links among self-regulation, social participation, skills, and perceived

competence to address (C) CLASI 2022 Collaborative for Leadership in Ayres Sensory Integration

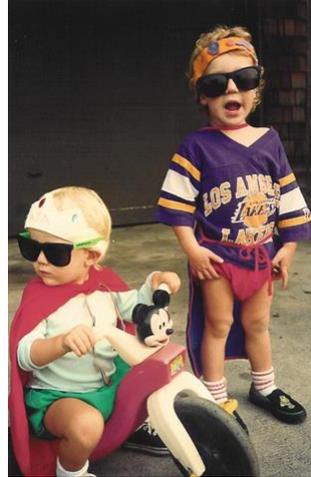
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Outcomes Measuring Progress and Impact

Early in the intervention process, select outcomes and measures that are

- Valid, reliable, sensitive to change, & consistent with outcomes
- Congruent with client goals
- Based on their ability to predict future outcomes



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Outcomes Measuring Progress and Impact

Apply outcomes to measure progress and adjust goals and interventions (OTPF-4, AOTA, 2014).

- Compare progress toward goal achievement to outcomes throughout the intervention process.
- Assess outcome use and results to make decisions about the future direction of intervention.

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Outcomes Measuring Progress and Impact

Make it Clear - McEwen (2009) *Writing case reports*

When reporting on outcomes, ensure that the team understands the scope and dimension of the changes, predicted with a clear understanding of the relationship between assessment findings, intervention, and results.

Reports can vary:

- Narrative
- Tables
- Graphs
- Scans/photographs



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Outcomes Measuring Progress and Impact

Be Systematic in Data Collection

- Understand the implications of your recommendation and choice of therapeutic methods
- Collaborate with the team members
- Seek mentorship with experts

- Be humble, conscientious, and rigorous in your responsibility to the client and your profession

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Using Data Driven Decision Making (DDDM) to Support Clinical Reasoning in ASI

- Steps of DDDM (Schaaf & Mailloux, 2015)
 - Developing and Scaling Goals
 - Identifying Outcome Measures



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Generating Hypotheses	Developing Goals	Identify Proximal & Distal Outcome Measures
<p><u>Strengths</u></p> <p><u>Difficulties:</u></p>	<ol style="list-style-type: none"> 1. 2. 	<p>Proximal Measures:</p> <p>Distal Measures:</p>
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Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post - Tx
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Developing Goals

Link Proximal Areas to Distal Participation-Related Outcomes e.g.

- Increased posture & balance ↔ Stamina while doing seated classwork
- Decreased tactile reactivity ↔ Improved emotional regulation
- Increased gravitational security ↔ Speed and safety on stairs
- Increased fine motor skills ↔ Completing handwriting assignment
- Improved praxis ↔ Organizing time, materials
- Sequencing a multi step task ↔ Independently completing routines
- Imitation of hand a facial gestures ↔ Following demonstrated instructions

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Developing Goals

Example: Rio and his struggles with reading and writing

Present level:

Rio cannot read a full line of text on a worksheet or in a book without losing his place. He needs to use his finger to track, but often jumps to another line or misses sections of text. These problems occur 100% of the time. When copying, he also always loses his place and also has trouble getting started in the correct place or moving through items in order. For example, he may start with the last item on a worksheet. When he writes letters, he uses awkward and inefficient directionality in making lines. He also shows trouble crossing his midline and using both hands (e.g. to hold paper with one hand, when writing with the other.) Rio puts his head down on his desk and slumps in his chair 50% of class time.

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Developing Goals

Presenting Participation Challenge

struggles with reading and writing

Underlying problem as identified through hypothesis

inefficient processing of vestibular sensory input which affects ability to extend neck and to keep head up; to coordinate head and eye movements; and to use bilateral hand movements

Desired Functional Outcome

ability to read and write school assignments without losing place and with efficient directionality in completing worksheets and forming letters

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Developing Goals

Rio will develop improved function in the sensory system (the vestibular sensory system) which supports the ability to:

- to coordinate head and eye movements
- remain upright (against gravity) with good posture
- to use efficient bilateral hand movements, spatial orientation & directionality for forming letters and completing worksheets

...so that he can

- read and copy 3 sentences without losing his place, 90% of times observed
- remain upright at his desk without putting his down or slumping in his chair for 90% of times observed
- use both hands to manage the paper, and use appropriate spatial orientation and efficient directionality for forming letter and completing worksheets, 90% of time observed.

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Developing Goals

U.S. School-Based Outcomes

Individualized Education Plan (IEP) Goals:

Method to document annual progress towards educationally relevant outcomes

IEP Goals Related to Common Core for OT/PT

Your Therapy Source, Inc. www.yourtherapysource.com

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Identifying Outcome Measures

Purpose

- Like goals, identifies expected outcomes of intervention
- Focus is more specific to monitoring response to intervention
- Like goals, provides an opportunity to communicate focus and purpose of services
- Lays the roadmap for intervention

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Identifying Outcome Measures

- **Outcomes are specific MEASURES**
- Outcome measurement provides objective assessment of the effectiveness of intervention
- Outcome measures are determined at the onset of intervention including who, where, and how
- **Proximal outcomes** are described as sensory motor factors or performance skills identified in the assessment
- **Distal outcomes** are participation-related resulting from improved overall integration such as performance patterns and occupations

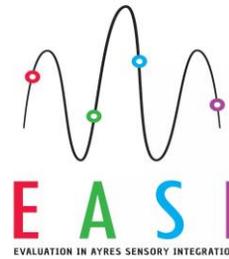
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Sample Proximal Outcome Measures



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Sample Distal Outcome Measures

- **Adaptive Behavior Assessment System**
- (ABAS-3, Harrison et al., 2015)
- **Family Life Impact Questionnaire**
- (FLIQ, Smith Roley, Mailloux et al., submitted 2020)
- **Goal Attainment Scaling**
- (GAS, Mailloux et al., 2007)
- **Pediatric Evaluation of Disability Inventory**
- (PEDI, Haley et al., 1992)
- **Canadian Occupational Performance Measure (COPM)**, Law et al., 2014)
- **Scope** (Bower et al., 2006)
- (<https://moho.uic.edu/productDetails.aspx?aid=9>)

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Identifying Outcome Measures

Considerations for standardized tests

- If choosing tests, focus on those where change is expected following intervention
- Best tests are the ones which are most stable (check test-retest reliability)
- If using tests with lower test-retest reliability, choose more than one-e.g. tactile tests



Identifying Outcome Measures

Considerations for “indirect” measures

- If considering a caregiver report (e.g. SPM or SP) remember that you are measuring perception from other person
- Clinical experience suggests that scores on this type of measure may get worse initially-perhaps caregivers become more aware of problems with education?



Identifying Outcome Measures

Considerations for distal measures

- Currently, few tests that assess participation
- Those available often focus on physical ability/disability

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Identifying Outcome Measures

- Goal Attainment Scaling-Useful Distal Outcome Measure
 - Parent Interview
 - Setting goal, current level and expected outcome
 - Scaling Goals
- Considerations
 - Equidistance
 - One change variable
 - Technical check

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Identifying Outcome Measures

Example: Rio and his struggles with reading and writing

Current level:

Rio cannot read a full line of text on a worksheet or in a book without losing his place. He needs to use his finger to track, but often jumps to another line or misses sections of text. These problems occur 100% of the time. When copying, he also always loses his place and also has trouble getting started in the correct place or moving through items in order. For example, he may start with the last item on a worksheet. When he writes letters, he uses awkward and inefficient directionality in making lines. He also shows trouble crossing his midline and using both hands (e.g. to hold paper with one hand, when writing with the other.) Rio puts his head down on his desk and slumps in his chair 50% of class time.

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Identifying Outcome Measures

EXAMPLE: Rio and his struggles with reading and writing

Proximal Outcome Measures

- Ocular motor integration (EASI OM &P)
- Postural Control (EASI PC &B)
- Bilateral Motor Coordination (SIPT –BMC)
- Crossing midline (SIPT-SVCU)

Distal Outcome Measures

- Scaled goals (GAS)

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Identifying Outcome Measures

EXAMPLE: Rio and his struggles with reading and writing
Intervention: OT 2 hours per week for 6 months with additional classroom and home consultation

Much less than expected -2	Less than expected -1	Expected Level 0	More than expected +1	Much more than expected +2
Rio will be able to read and write 1 sentences (at least 8 words) without losing his place, 90% of time observed	Rio will be able to read and write 2 sentences (at least 8 words) without losing his place, 90% of time observed	Rio will be able to read and write 3 sentences (at least 8 words) without losing his place, 90% of time observed	Rio will be able to read and write 4 sentences (at least 8 words) without losing his place, 90% of time observed	Rio will be able to read and write 5 sentences (at least 8 words) without losing his place, 90% of time observed

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Identifying Outcome Measures

Example: Rio and his struggles skateboarding swimming
Current level:

Although Rio is very motivated to skateboard and swim, he is not developing the skills needed for these activities. He cannot balance on one foot, nor coordinate both sides of his body to make a skateboard move forward. At this time, he can stand on the board with two feet, but is unable to propel it forward without falling. He enjoys being in a swimming pool in the shallow end, but is unable to coordinate either his upper or lower extremities for swim strokes and kicking.

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Identifying Outcome Measures

EXAMPLE: Rio and his struggles with skateboarding and swimming

Proximal Outcome Measures	Distal Outcome Measures
<ul style="list-style-type: none"> Postural Control (EASI PC &B) Bilateral Integration (SIPT-BMC; EASI-BI) Balance (SIPT-SWB; EASI PC &B) 	<ul style="list-style-type: none"> Scaled goals (GAS)



Identifying Outcome Measures

EXAMPLE: Rio and his struggles with skateboarding
 Intervention: OT 2 hours per week for 6 months with additional classroom and home consultation

Much less than expected -2	Less than expected -1	Expected Level 0	More than expected +1	Much more than expected +2
Rio will be able to balance on a skateboard for 5 seconds (without propelling himself with his other foot), without falling off the board, 90% of time observed	Rio will be able to balance on a skateboard and propel himself for 1 "kick" with his other foot, without falling off the board, 90% of time observed	Rio will be able to balance on a skateboard and propel himself for 3 "kicks" with his other foot, without falling off the board, 90% of time observed	Rio will be able to balance on a skateboard and propel himself for 6 "kicks" with his other foot, without falling off the board, 90% of time observed	Rio will be able to balance on a skateboard and propel himself for 10+ "kicks" with his other foot, without falling off the board, 90% of time observed



Pediatric Quality of Life Measures

- Child Health Questionnaire (CHQ)
- DISABKIDS Chronic Generic Measure (DCGM)
- KINDL-R Questionnaires
- Pediatric Quality of Life Inventory (PedsQL) 4.0 Generic Core Scales
- Quality of My Life Questionnaire (QoML)

Hullmann, Ryan, Ramsey, Chaney, & Mullins. (2011)

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Program Outcomes

- Valid and reliable questionnaires and surveys
- Focus groups to collect qualitative data
 - Why?
- Distinguish effective programs and practices for clinical use
- Prove the value of existing programs to funders and stakeholders
- Identify aspects of programs that may need improvement or clarity

The Compassion Capital Fund National Resource Center (CCF), U.S. Department of Health and Human Services, (2010). Strengthening non-profits: a capacity builders resource library, measuring outcomes. Dare Mighty Things, Inc.

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"We certainly need to improve our observational techniques in the meantime (while we create assessments). Since some of us think we do bring about some improvement in children with sensory integrative dysfunction, we must be using some criteria for determining improvement.

One of the criteria I use is whether the child seems to demonstrate an urge toward growth and self-actualization. If he becomes very caught up in the activity and directs himself strongly and with great zest, I feel that I have been successful in planning an activity which was appropriate for him that day and that I probably have brought about a little bit of improvement during the session.

An urge toward growth or self-actualization to a greater extent than I usually see is one of the things that one can't measure well enough to put into a computer. These are the things I would like to see us explore in the future."

A. J. Ayres, 1969

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THE ISSUE IS
Goal Attainment Scaling as a Measure of Meaningful Outcomes for Children With Sensory Integration Disorders
 Jan M. Gillberg, Susan A. Miller, Barbara, Susan A. Miller, Lucy Ann Miller, Barbara Smith, Susan A. Miller, Elizabeth C. Cole, John A. Kover, L. Sheri F. Davis, Suzanne Smith, Riley, Roseann C. Schaaf, Sarah A. Sisson

Parent Perspectives of Occupational Therapy Using a Sensory Integration Approach
 Ellen S. Calkins
 Key Words: Family • sensory needs • quality of life

Resources

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References

See attached list

Also see:

<https://www.siglobalnetwork.org/research-and-literature>

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M6

Providing ASI Intervention with Fidelity

Dr. Susanne Smith Roley
OTD, OTR/L, FAOTA

*Acknowledgement to the original SI
Intervention designed by Dr. A. Jean
Ayes and to all who have contributed to
SI intervention research and practice
since that time.*



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Module 6 (M6)

Providing ASI Intervention with Fidelity

- Lesson 1: Updates in evidence-based ASI Intervention
- Lesson 2: ASI Patterns, M4 Review
- Lesson 3: Goal Setting & Measuring Outcomes
- **Lesson 4: Structure for Providing ASI with Fidelity**
- Lesson 5: Facilitating the Adaptive Response
- Lesson 6: Process of Providing ASI with Fidelity
- Lesson 7: Consultation, Sensory Strategies & Environmental Modifications

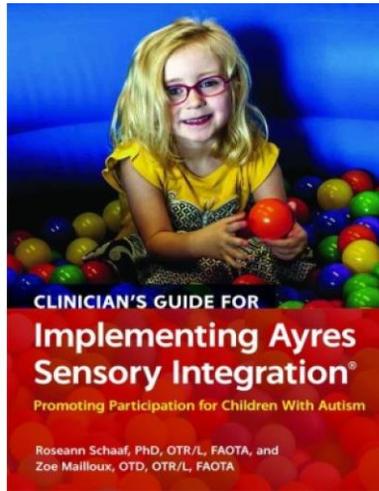
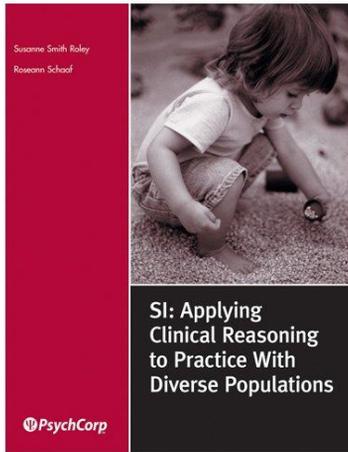
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ASI is a Manualized Evidence-Based Intervention
(Schaaf & Smith Roley, 2016; Schaaf & Mailloux, 2015)
Practiced with Fidelity (Parham et al., 2011)



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Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post -Tx

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ESSENTIAL STRUCTURE ELEMENTS OF ASI



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ASI Intervention STRUCTURE ELEMENTS

- Part I: Therapist Qualifications
- Part II: Safe Environment
- Part III: Record Review
- Part IV: Space and Equipment
- Part V: Communication with
Parents & Teachers



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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

- 1.A. Professional Qualifications and Standards
- 1.B. Building Professional and Clinical Reasoning Skills
- 1.C. Setting up the Environment

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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.A. Professional Qualifications

- Professional Degree in Health Sciences
 - Occupational Therapy
 - Physical Therapy
 - Speech and Language Pathology
- Adhere to Standards of Practice
 - Operating within professional domain of concern
 - Ethics
 - Inclusion
 - Accountability



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1. ESSENTIAL STRUCTURAL ELEMENTS OF ASI 1.A. Professional Qualifications

Postgraduate Training and Mentorship
Advanced Level **Knowledge** and **Skills**

- theory
- assessment
- hypothesis generation
- intervention
- outcomes



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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI 1.B. Building Professional Reasoning Theory to Practice

- Thorough and appropriate evaluation
- Communication with family and other related professionals
- Recommend intervention that includes the child, caregivers, & funding agency
 - Direct service to client
 - Caregiver-focused education & modeling
 - Environmental supports and modifications

Schaaf, R. and Smith Roley, S., 2006; Parham et al., 2011; Schaaf & Mailloux, 2015



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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.B. Building Professional Reasoning: Theory to Practice

KNOWLEDGE

- Related neurological and psychobiological research
- Typical and atypical development
- Relationship of underlying sensory and motor functions to outcomes
- Relationship between the different aspects of SI and praxis
- Interpretation of structured and unstructured assessment data related to SI and praxis
- Effectiveness of intervention and intervention strategies that will address the reason for referral and accomplish the desired outcomes

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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.B. Building Professional Reasoning: Theory to Practice

SKILLS

Implement intervention that supports engagement in occupation

- Design **therapeutic activities** that are at the just right challenge
- Instill value with caregivers for **healthy habits and routines including sensorimotor activities**
- Implement **environmental modifications** that support the child's participation



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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.B. Building Professional Reasoning: Theory to Practice

Keep Growing!

Create Mentorship Opportunities

Use your social network

- Find leaders in the area for consultation

- Get together with colleagues for case analyses

- Share resources with friends

- Read the literature

- Analyze your clinical data for trends

- Get advanced degrees

- Volunteer at the state and national level with professional organizations

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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.C. Setting Up the Environment

A sensory integration environment mimics a "natural" play environment. (Ayres, 1972)

Therapeutic activities similar to those related to the objectives are the most effective (Bundy, 2002).



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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.C. Setting Up the Environment

- A sensory rich environment
- Child's responses guide therapist choices
- Therapist introduces activities based upon child's preferences and abilities
- Therapist structures and scaffolds opportunities to promote increasingly more complex skills and interactions
- Child's adaptive responses are facilitated through increased complexity and challenges (speed, intensity, self-organization, etc.)
- Therapist creates activities that are motivating to the child to facilitate healthy occupational engagement and generalizability of skills

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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.C. Setting Up the Environment

Building space and equipment

- equipment, space and design invite play
- sensory opportunities
- flexible arrangement of equipment
- space to move and swing and crash
- physically safe
- activity is its own reward



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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.C.Setting Up the Environment

Equipment Provides Affordances

that are varied, inviting, easily available, and can be manipulated within the space

"In the Gibsonian framework, objects possess particular attributes that, within the context of a given environment, invite or elicit interaction. Within this model, the environment drives ideation, the perceptual attributes of the environment provide the stimulus for the action."

May-Benson, 2001 pg 173.



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Ayres on SI Intervention

As we understand more and more about the sensorimotor needs of our patients, it is increasingly apparent that we need to invent equipment that can support their growth and development. Ayres, 1972



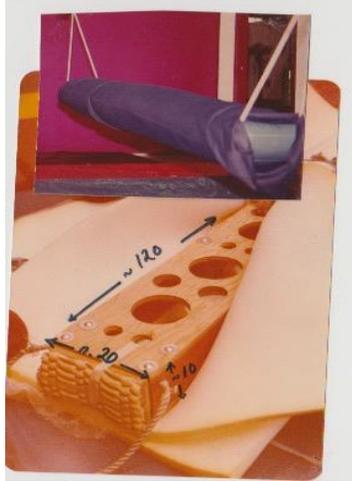
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Ayres



Southpaw



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An Example of Set-up



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Tour of Stephen Chen's clinic

- I just walk around my sensory gym, and talk about it in this video:
- <https://youtu.be/CjzT8EZpmbE>



- www.espacioskiboo.com
- <https://www.youtube.com/watch?v=7JVeBXNT8jg&feature=youtu.be>



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Ceiling Structures

Structure Engineer ; Loading Test; Observation Check

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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.C. Setting Up the Environment

- Playground suspension systems and mountain climbing equipment are usually strong and reliable



- Space hooks about 5' apart from each other for safety and efficiency
- With a 9' ceiling there should be a minimum of 8' between the hook and any wall

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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.C. Setting Up the Environment

Caribeener

1 kN = 101.97 kg



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1. ESSENTIAL STRUCTURE ELEMENTS OF ASI

1.C.Setting Up the Environment

ASI CANNOT be Accomplished

in environments in which the child cannot freely move his/her body or the equipment



where activities are restricted because it is unsafe to take physical risks while moving through space



with materials that are fixed or with a single obvious purpose (i.e. that should be used in a certain way in a certain place or only for a certain reason)

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References

See attached list

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Patterns for Original ASI Equipment

- Frog Swing
- Platform Swing
- Whale
- Bolster Swing



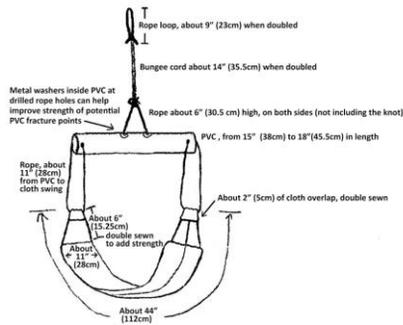
Patterns reprinted with permission, 2018

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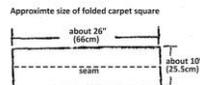
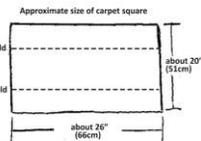


Ayres Clinic frog swing:

This is a very rough drawing (with approximate measurements) made during OT610 in 1982 of a frog swing at the Ayres Clinic. Length, size, etc, etc, of course can vary. It's just interesting to get an idea of how it started.



Carpet square for inside swing:



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ASI Frog Swing

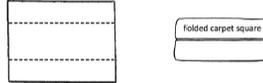
Materials

- Carpet square, about 28" (66cm) x 20" (51cm)
- Polyester fiberfill, about 28" (71cm) in width and long enough to wrap around folded carpet square 2-3 times
- Light material, such as cotton muslin, about 34" (86cm) in length x 22" (28cm) in width for the inside "pillow"
- Heavy material for cover: light canvas or denim, about 50" (127cm) in length and 25" (63.5cm) in width
- Strong rope, about 7 feet (213cm) long. We used 3/8" (9.5mm) to 1/2" (12.7mm) thick rope
- Bungee cord, about 3/4" (2cm) thick and about 30" (76cm) long
- PVC pipe. We used pipe that was 2 3/4" (6cm) in diameter and about 15" (38cm) to 18" (45.5cm) in length
- 2 metal washers, with a hole the size of the rope thickness
- Optional: PVC pipe end caps that are the size of pipe used.

Directions

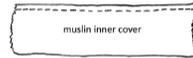
Carpet Square:

- Fold the carpet square on the dotted lines so that the two outer edges meet in the middle

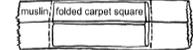


Inner "pillow":

- Cut a width of fiberfill that is slightly larger than the width of the carpet square, about 28" (71 cm.) and long enough to wrap 2-3 times around the folded carpet square.
- Make a muslin "pillow case" by folding the cloth length-wise and sewing the long edges together, creating a tube the width of the folded carpet square wrapped in fiberfill.



- Fit the carpet square into the middle of the muslin tube.
- Sew though the muslin, close to the edges of the carpet square.

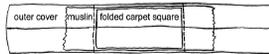


Outer cover:

- Fold the outer heavy material length-wise and sew the long edges together, creating another tube the size of the inner carpet square "pillow."



- Fit the carpet square muslin "pillow" into the middle of the outer cover tube.



- Arrange the material so that the seam of the folded carpet-square-muslin-"pillow" and the seam of the outer cover are on the same side, which will be the bottom of the swing
- Sew the carpet-square-muslin-"pillow" into the cover, sewing close to the outer edges of the carpet square to anchor it in place so that it won't twist with use.

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- Fold the ends of the outer cover over about 1/2" (1.3mm) and sew.



- To make a space to thread the ropes, fold the ends of the outer cover over again about 2" (5cm) and sew.

PVC pipe:

- Drill 2 holes through the top, each about 2"(5cm) from the center of the length of the PVC.
- Drill 2 holes on each end, from the front through the back of the PVC. Leave enough space beyond the holes to later put on the PVC caps.

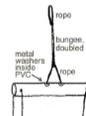


Rope:

- For the ropes on both ends of the PVC pipe, tie a knot in one end of rope; thread it from the inside to the outside of one hole; continue threading it through one end of the swing cover; and then thread the rope through the hole on the other side, from outside the PVC to inside, and make a knot.



- For the rope in the center of the PVC, tie a double knot on one end of the rope; thread a washer onto the rope until it is next to the knot; thread the rope, from the inside-out, through one of the holes (using a long piece of wire wrapped around the un-knotted end of the rope can help to reach the hole from the inside.) then thread the rope into the other hole, pulling it out the end of the PVC; thread another washer onto the rope end and make a double knot. Pull up on the middle of the rope to attach the bungee cord.
- Once all the ropes are attached, the PVC caps can be put on each end of the PVC.



Bungee cord:

- Fold the bungee cord in half to make a loop and attach it to the rope on the PVC, using a square knot.

Upper rope:

- Make a loop with the upper rope and attach it to the bungee loop, using a square knot.
- Attach a carabiner to the upper rope.



Options to strengthen PVC pipe:

- Double pipe by splitting one length-wise and forcing it over another pipe. This is how the Ayres's clinic frog swings were made, but difficult to do. We used the next method.
- Put a wooden dowel inside the PVC. We used the thickest dowel that would fit inside the pipe, and past the rope knots.

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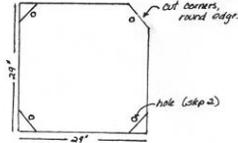
Platform Swing

materials

- 1) 1 piece of 3/4 or 1 inch plywood - Cut plywood 29 by 29 inches.
- 2) 3 pieces of plastic plumbing pipe - 1 3/4 inch diameter (wall thickness 1/4")
length: 2 pieces cut 12 1/4 inches long
1 piece cut 10 1/4 inches long
4-6 caps to fit over ends
- 3) nylon rope 1/4 inches thick
- 4) 1 piece of carpeting to cover platform plus glue & upholstery thread
Cut carpeting large enough to have 5 or 6 inches overlap onto bottom of platform.

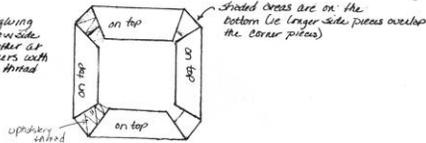
directions

- 1) cut plywood 29" by 29". Cut off corners and sand until sharp edges are slightly rounded.



- 2) drill 1/2" holes in each of four centers (measure to make sure holes are centered)
- 3) cover platform with the piece of carpet. Cut slits in carpet and fold over the edges of the platform. Glue carpet and edges down. Leave overnight.

* After gluing edges - Sew side pieces together at all corners with upholstery thread

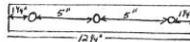


- 4) when glue is completely dry, cut holes in carpet to match holes previously cut in wood.
- 5) cut four pieces of rope 60" long. Put rope through holes leaving approximately 17" underneath. ~~QUILT 1/2022~~ 3 or 4 knots in rope underneath platform.

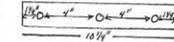


directions (cont)

- 6) drill 3 sets of 1/2" holes in each piece of pipe (sets on both sides of pipe. For longer pipes:



for shorter pipe:



- 7) thread nylon cord through 2 end holes in each of longer pipes. Tie knots.
- 8) cut 2 pieces of nylon cord 18 inches long. Thread cord through middle hole of 2 longer pipes. Tie one knot in each cord on underside of pipe.
- 9) place shorter pipe perpendicular to two longer pipes. Thread the two middle ropes from longer pipes through the two end holes of the shorter pipe. Tie knots.
- 10) cut one piece of nylon cord 22" long. Make a loop. Thread cord through the middle hole of the shorter pipe. Tie knot underneath pipe.



The directions and drawings for the platform swing were contributed by Sherry Bonanno, also a seminar student with Dr. A. Jean Ayres.



**THE WHALE
(LINEAR VERTICAL ACCELERATOR)**

One or two children may ride the whale by sitting on it and holding onto handles hung on each side. A child may also lie prone on the whale and flex all four extremities around it to hold on. While sitting up, the child holds onto the handles and jumps up and down. You can vary this activity by having the child alternate landing on his feet, then his knees. Children with better balance may not need to hold onto the handles and then have their hands free to engage in many different activities, such as throwing balls at targets or batting at a suspended ball.

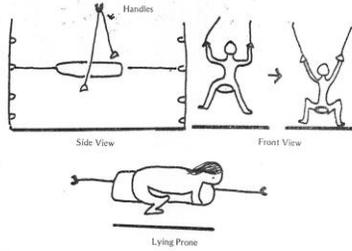
The whale provides vestibular, proprioceptive and tactile input. (Again, it is recommended that the therapist using this equipment has had training in the use of this type of sensory input and that he or she rides on the whale to experience the sensations involved.) There is a good deal of bilateral motor coordination and motor planning involved in using the whale, in addition to requiring postural adaptations and equilibrium reactions.

Always be sure that there are mats under the whale in case the child should fall. It is also important that the whale is suspended at the correct height for the weight of the child. (Lighter children will need to have the whale hung at a lower height)

**MATERIALS AND DIRECTIONS
FOR THE WHALE**

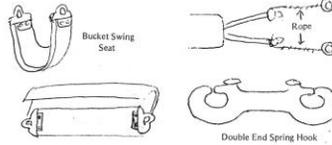
MATERIALS:

1. Airplane shock cord
2. One flexible swing seat (like those found at playgrounds). Order a bucket swing seat with metal ends: 39 inches long when laid flat. See illustration.
3. One piece of foam rubber 2 inches thick, 44 inches long. Buy enough to wrap around the swing 2-3 times.
4. One piece of cotton or polyester padding 44 inches long. Buy enough to wrap around the swing 2-3 times.
5. Four metal hooks with double end spring openings (see illustration).
6. Four metal rings - 3 inch diameter.
7. Four pieces of rope about 6 inches long.
8. One piece of material 45 inches long, 24 inches wide.



DIRECTIONS:

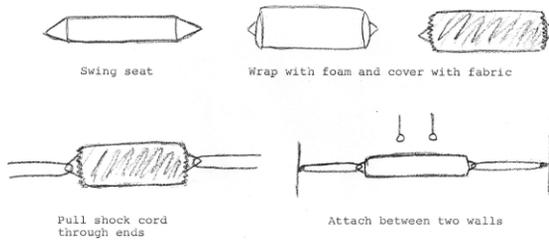
1. Lay bucket swing seat flat. Wrap cotton or polyester padding around swing.
2. Wrap foam rubber around swing. Make sure metal ends are well cushioned.
3. Sew one seam down length of material, making sure the material will fit snugly over the padded swing. Sew elastic into ends so material will fit snugly over ends, covering metal ends of swing.
4. Measure the width of the room the whale will be in. Determine how long the airplane shock cord should be from each end of the whale to the wall. Double the measurement and add about 10-12 inches to each end. This is so you can make knots at ends.
5. Thread airplane shock cord through holes in metal ends of swing, so that shock cord is doubled. The knots at each of four ends.
6. Tie the 6 inch pieces of rope around the shock cord behind the knots.
7. Tie rope to metal rings. Hook double end spring metal hooks to metal rings. Hook to rings placed in wall. (Note: make sure shock cord is pulled taut so whale can be propelled up and down)



Whale

Take a swing seat. Cover with foam and then with a fabric jacket. Place shock cord through each metal end of swing and attach regular rope and snap clips to ends. Suspend between two walls.

Child may lie across prone or sit and jump. Overhead handles may help stabilize child.





THE CONSTRUCTION AND USE OF A BOLSTER SWING

By Diane M. Baranowski-Dusick, OTR

The bolster swing is a very useful piece of equipment in the treatment of children with sensory integration problems. Like the net, it is suspended from the ceiling and can move in a linear, side-to-side or orbital pattern. Not only can the bolster swing provide different types of vestibular stimulation, it can be used to work on strengthening the muscles of flexion, to improve balance and equilibrium, and at the same time, to stimulate the tactile system. Various ways of using both sides of the body together and planning new motor movements can also be incorporated with this specific piece of equipment.

Several considerations were implemented when designing this particular bolster swing. First, it is recommended that the length of the bolster be about five feet. It is felt that this would allow enough room for two participants. Second, it is recommended that the finished diameter of the swing be approximately ten and one-half inches. From previous experience it is felt that a diameter of six to nine inches was generally too easy for a child to hold on to and maintain in the flexed position. Therefore, the diameter was increased to make this activity more challenging. The third and most important consideration is safety. Internally, the bolster swing is supported well by having a 2 x 4 board inserted through the length of the carpet tube. In addition, two, six-inch-long semi-circular pieces of wood are glued and clamped to the 2 x 4 board on each end. The tie snaps used (both swivel and non-swivel) have a spring mechanism which does not allow the latch to open until forcefully pulled down. Last, 450 pound stress NYLON woven cord is used to suspend the bolster, as it is much superior to cord made of plastic. All the above modifications have been made to insure, as much as possible, construction of a safe and long-lasting piece of equipment.

Materials Required

- One heavy cardboard carpet tube 3/8" thick with an inside diameter of approximately 4" (suggested length 5 feet).
- One 7 ft. long 2 x 4 board, "select" grade.
- One 60 x 80 x 1 inch piece of foam rubber.
- Two 2" thick circular pieces of foam rubber cut to fit the diameter of the wrapped tube (approximately 10.5").
- One-half to one yard muslin.
- One large can of spray adhesive

- (specifically for use with foam rubber).
- Two 11" long pieces of "Schedule 40" water pipe or electrical "conduit" pipe 3/4" outside diameter.
- Four 5/16" x 3 3/4" machine-threaded eye bolts with nuts.
- Four 5/16" finished hex nuts and lockwashers.
- 36 x 60" piece of 4 Mil gauge plastic sheeting (optional).
- Five feet of 1" wide Velcro.
- Two yards 60" wide synthetic fur (or any other desirable material).
- One pair shoe laces 18"-20" long.
- Two swivel cattle tie snaps 7/8" diameter.
- Four non-swivel cattle tie snaps 3/4" diameter.
- 32-36 feet (depending on height of ceiling) 450 pound stress nylon cord (not plastic) 3/8" diameter.

Total approximate cost: \$88.62

Directions for Constructing Bolster Swing

1. Cut 2 x 4 board to length of five feet. Cut four 6" long pieces from remaining board.
2. Insert 5' 2 x 4 board into cardboard carpet tube so that both ends are flush. It should fit tightly and may need to be pounded into place. (See Figure 1)
3. Use a bandsaw to cut each of the four pieces of 2 x 4, mentioned in No. 1 above, in a semi-circular shape. (See Figures 2a, b, and c). Make sure that the pieces fit securely in each of the four semi-circular spaces located at both ends of the carpet tube. (A belt sander can be used to smooth out any rough edges.)
4. Glue and insert the semi-circular pieces next to the 2 x 4 board, making sure that all ends are even. (See Figure 3). Place a C-clamp on both ends of the carpet tube resting the edges of the clamp over the semi-circular wooden pieces. Tighten the clamps so that the semi-circular pieces adhere to the 2 x 4. Let this dry for at least 24 hours.
5. Drill a 3/4" hole through the center of the carpet tube, 3 inches from each end. Make sure that both holes run perpendicular to the 4 inch sides of the 2 x 4 and parallel to the 2 inch sides. (See Figures 2 & 4)
6. Spray the outside surface of the carpet tube and the starting end of the 60 x 80 x 1" piece of foam rubber with adhesive. Keeping the ends as even as possible, wrap the foam pad around the tube. After each revolution around the tube, mark and cut

- 3/4" holes in the foam so as to match the drilled holes on each end. Also, after each revolution, spray the adhesive on the surfaces of the foam rubber which will come into contact with each other. Wrap the foam pad one revolution at a time and repeat the directions until the entire pad is used. (See Figure 5). To help secure the foam rubber pad in place, cut several 8" wide strips of muslin. Spray the end surface of the foam pad and muslin pieces with adhesive. While still wet, stretch the muslin pieces over the entire edge of the pad and press together.
7. Spray adhesive on both ends of the carpet tube and also on one side of each 2" thick circular pieces of foam rubber. Secure one circular foam piece to each end of the carpet tube. (See Figure 6)
8. To make the bolster swing water-proof (optional) cut enough 4 Mil gauge plastic sheeting to cover the circumference of the padded tube. Secure the ends of the plastic sheeting by hand-sewing them together, making two parallel rows of stitching along the entire length of the tube. Use a heavy thread. Cut two 12" circles out of the plastic sheeting. Sew one circle to each end by making two parallel rows of stitching around the entire diameter of tube.
9. Make a cover for the bolster swing out of synthetic fur or any other desirable, washable material. Sew Velcro along the entire length of the cover to insure proper closing and easy removal for cleaning. Be sure to make buttonholes to match the 3/4" holes which have been drilled through the carpet tube. Make a casing on each end of the cover. Thread one shoelace through each casing to gather and close the material on both sides.
10. Cut the "Schedule 40" water pipe or the electrical "conduit" pipe into two, 11" long pieces. Drill a 7/16" hole through each of the pipes 3/4" from each end. Remove ALL metal burrs.
11. Insert both pieces of pipe through the 3/4" holes located at each end of the bolster.
12. Place a 5/16" machine threaded eye bolt through each 7/16" hole located at the ends of both pieces of pipe. Secure each eye bolt in place by tightly screwing two 5/16" nuts on top of a 5/16" lockwasher as close to the pipe as possible. (See Figure 7)

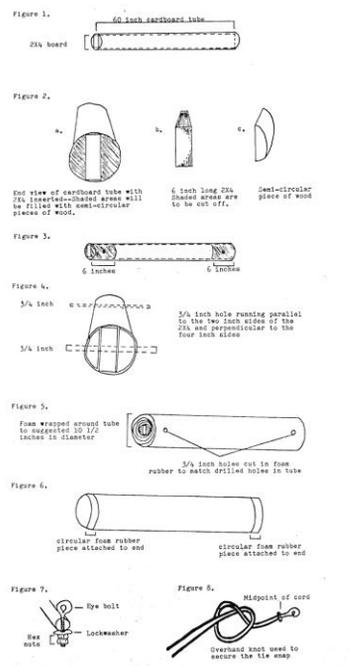
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13. Measure the distance from the suspension device at the ceiling to the desired height of the bolster swing from the floor. When measuring each of the two cords used to suspend the bolster swing, DOUBLE the above distance and add a few extra feet on each end. (For example, if the distance from the ceiling to the desired height of the bolster is seven feet, cut both suspension cords to eighteen feet.)
14. Thread each suspension cord through one SWIVEL cattle tie snap, stopping at the cord's mid-length. Secure the tie snaps in place by making an overhead knot close to the midpoint. (See Figure 8). (The swivel cattle tie snaps are to be attached to a safety-approved suspension device secured to the ceiling.)
15. Attach one NON-SWIVEL cattle tie snap to each of the remaining ends of the two suspension cords. Secure the tie snaps, again, by making an overhead knot several inches from the end of the cord. (See Figure 9). (The non-swivel cattle tie snaps are to be attached to the eye bolts of the bolster swing.)
16. Optional: Bring both sections of each suspension cord together by making another overhead knot approximately 16" from the ends with the non-swivel cattle tie snaps. More overhead knots and/or loops may be made to shorten the length if needed, or to make the suspension cords functional for another piece of equipment (i.e., trapeze bar, inner tube, etc.)
17. Burn the cord ends to stop them from fraying.

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M6

Providing ASI Intervention with Fidelity

Dr. Susanne Smith Roley
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*Acknowledgement to the original SI
Intervention designed by Dr. A. Jean
Ayres and to all who have contributed to
SI intervention research and practice
since that time.*



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Module 6 (M6)

Providing ASI Intervention with Fidelity

- Lesson 1: Updates in evidence-based ASI Intervention
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- Lesson 4: Structure for Providing ASI with Fidelity
- **Lesson 5: Facilitating the Adaptive Response**
- Lesson 6: Process of Providing ASI with Fidelity
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2.2 ESSENTIAL ELEMENTS OF ASI

Facilitating the Adaptive Response



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2.2 ESSENTIAL ELEMENTS OF ASI

Facilitating the Adaptive Response

Using therapeutic sensory motor activities for:
Improved arousal regulation
Improved sensory reactivity
Improved sensory discrimination/perception
Improve postural and motor control
Increase praxis and organization of behavior

To support higher level functions, learning, behavior,
emotion and cognition

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Analysis of Sensory Integrative Functions

Visual-Praxis	Vestibular Bilateral Integration	Proprioception Tactile	Somato-dyspraxia	Sensory Reactivity (Modulation)
Visual motor	Postural control	Gross motor skills	Praxis	Arousal Affect Activity Level Attention
Visual construction	Bilateral coordination Sequencing	Fine motor skills	Auditory - Language Organization of behavior	State/Self Regulation

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Synthesis of Assessment Data Using an Assessment Tool

SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL				
★ = EASI ● = SPM ◻ = OTHER TESTS				
Problems in Vestibular Bilateral Integration		Problems in Somatopraxis		Problems in Visuopraxis
Sensory Perception			Sensory Reactivity	
Vestibular Processing ___ VN ★ (low score is a sign of vestibular based problem) ___ SPM ● ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, spatial orientation scores on VPr:D; VPr:C ★)	Proprioception ___ Prop JT ★ ___ Prop: F ★ ___ position awareness ___ use of force ___ SPM ●	Tactile Perception ___ TP: L ★ ___ TP: D ★ ___ TP: S ★ ___ TP: O ★ ___ SPM ● ___ poor ability to find or manipulate objects w/o vision	Visual Perception ___ VP: S ★ ___ SPM ● ___ other visual perception tests (e.g., DTVP, TVPS ◻) ___ visual perception abilities (e.g. puzzles, hidden figure games)	Sensory Hyper-Reactivity Signs of over or heightened responses: ___ SR: Overall (Hyper) ___ SPM Bal & Mov't ● ___ PC ★ ___ SR-Motion/Gravity ★ ___ prolonged VN* ___ SPM Touch ● ___ Hyper tactile reactivity TP tests ★ ___ SR-Tactile ★ ___ SPM Hearing ● ___ SR-Auditory ★ ___ SPM Taste & Smell ● ___ SR-Olfactory ★ ___ SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain, or other sensation) *Hyper reactive responses during or following rotation may be observed, particularly in conjunction with high VN
Praxis & Motor Related Functions Postural/Ocular ___ Bal ★ ___ PC ★ ___ O: M & Pr ★ ___ other (e.g., BOT-2, SOSI, COP) ◻ ___ SPM ● ___ extensor tone ___ righting reactions Bilateral Integration--Midline ___ BI ★ ___ ability to coordinate both sides of the body ___ crossing midline/ laterality ___ jumping jacks, skipping, etc. ___ Auditory: Localization ★ New test-not yet classified	Postural Mechanisms ___ PC ★ ___ Bal ★ ___ other balance tests (e.g., BOT-2) ◻ ___ posture in sitting & standing Non-SI Scores/Data Suggesting patterns other than sensory integration ___ High VN or PRN with low PrFD or PRVC and no other signs of dyspraxia ___ signs of neuromotor problems (e.g. high tone, tremor, ataxia, etc.) without other signs of sensory or praxis problems ___ other	Somatosensory-based Praxis ___ Pr:P ★ ___ Pr: S ★ ___ SPM ● Language-based Praxis Pr:FD ★ Ideation-based Praxis ___ Pr:I ★ ___ other (e.g. TIP) ___ SPM ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks	Visuopraxis ___ VPr: D ★ ___ VPr: C ★ ___ other visual motor tests (e.g. Beery VMI-Motor Coordination) ◻ ___ SPM ● ___ ability to draw, write, build, fold, etc.	Sensory Hypo-Reactivity Signs of under or delayed responses: Observations of lack of awareness of motion ___ SPM Touch ● ___ Hypo tactile reactivity TP tests ★ ___ SPM Hearing ● ___ Hypo auditory reactivity A:L ★ ___ SPM Smell ● H-45; P-44 ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)

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Strengths and Challenges	Assessment Results	Generating Hypotheses
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Generating Hypotheses	Developing Goals	Identify Proximal & Distal Outcome Measures
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Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post - Tx

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2.2 ESSENTIAL ELEMENTS OF ASI

Facilitating the Adaptive Response

Although the integration of sensations is critical to function, it is of minimal use to the organism without the capacity to react to those sensations...*in such a way that the child spontaneously forms the adaptive responses that integrate those sensations.*

Making this idea work...requires a skilled therapist and a large room with a lot of simple but special equipment.
-Ayres (2005)

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2.2 ESSENTIAL ELEMENTS OF ASI Facilitating the Adaptive Response

ASI SPECIFICALLY ADDRESSES THE
SOMATOMOTOR ADAPTIVE RESPONSE



**effectively interacting with the environment
to meet a challenge,
experience mastery,
through organizing sensory information**

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2.2 ESSENTIAL ELEMENTS OF ASI Facilitating the Adaptive Response

**Ayres Adaptive Response Videotape
from simple to complex**

1. Response to passive stimulation
2. Hold on/Stay put
3. Contract/Relax muscles
4. Initiates/not complete independence
5. Independent/familiar
6. Independent/unfamiliar
7. Complex/unfamiliar

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2.2 ESSENTIAL ELEMENTS OF ASI Facilitating the Adaptive Response

ADDITIONAL ADAPTIVE RESPONSES

- Social interaction
- Organization of behavior
- Emotional – Flexibility, stability
- Intrinsic motivation
- Cognitive awareness
- Self-Regulation



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2.2 ESSENTIAL ELEMENTS OF ASI Facilitating the Adaptive Response

ADAPTIVE RESPONSES VARY

- Complexity (Ayres)
- Efficiency
- Appropriateness
- Initiative
- Type



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2.2 ESSENTIAL ELEMENTS OF ASI Facilitating the Adaptive Response

•Therapist Role

- artful vigilance
- modify sensory qualities
- change challenge or context
- increase effort through play
- modify frequency, duration, and complexity of activity

•Child's Role

- interpret external stimuli
- interpret body sensations
- plan and execute
- sustain interaction
- accept challenge
- generalize

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2.2 ESSENTIAL ELEMENTS OF ASI Facilitating the Adaptive Response

LONG TERM ADAPTIVE RESPONSES



Repertoire of activities that provide balance and promote health through sensory experiences

Healthy personalities resist stress and remain healthy

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Middle Minutes and Flow

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The purpose of this study was to describe the management of challenge during therapist-child interaction in sensory integration treatment.

Two patterns emerged from the correlations of ratings: work and playfulness.

Work for the child involved trying hard, cooperating and seeking assistance, whereas work for the therapist involved assisting and guiding the child.

Play for the child included enjoying the activity, being successful and confident, and trying hard.

For the therapist, play involved being creative and behaving playfully.

- Dunkerley, E., Tickle-Degnen, L., & Coster, W. J. (1991). Therapist-Child Interaction in the Middle Minutes of Sensory Integration Treatment *American Journal of Occupational Therapy*, 51(10), 799-805.

- Patterns of work and play were different across different levels of challenge to the child.

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2.2 ESSENTIAL ELEMENTS OF ASI Facilitating the Adaptive Response – Therapy Flow

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Typical Session (45 to 60 minutes)

Beginning - Take off shoes

What do you want to do today?

Wander about and try a few things

Middle

Therapist seizes the opportunity to build in the area of interest relative to just right challenge

Play together (suspension of reality)

End - Wrap up

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2.2 ESSENTIAL ELEMENTS OF ASI

Facilitating the Adaptive Response –
Therapy Flow

RE: OCCUPATIONAL THERAPY USING ASI

ASK YOURSELF

- Does my client...
 - Look forward to going to OT?
 - Not want to leave therapy right away?
 - Better able to meet the usual demands of a typical day?
 - Learn new skills?
 - Engage more efficiently in what and how they do things?
- Is there less stress during the family routines?
- Is life easier?

References

See attached list

Also see:

<https://www.siglobalnetwork.org/research-and-literature>



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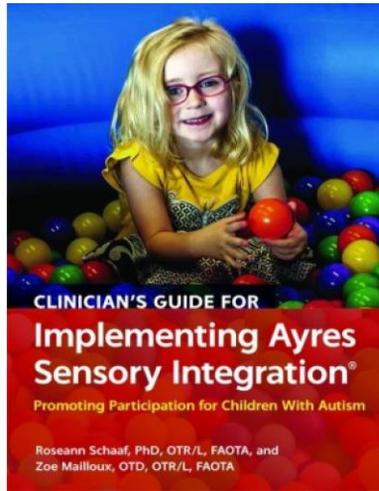
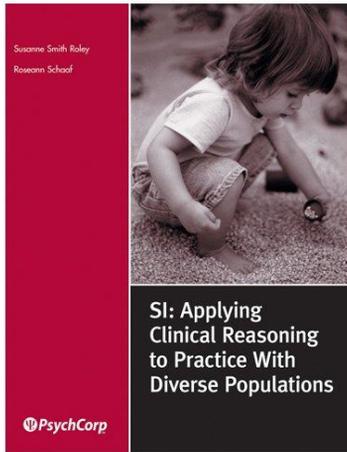
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ASI is a Manualized Evidence-Based Intervention

(Schaaf & Smith Roley, 2016; Schaaf & Mailloux, 2015)
Practiced with Fidelity (Parham 2011)



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Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post - Tx

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ASIFM Process Elements (Parham et al., 2011)

1. Physical safety
2. Sensory opportunities (vestibular, tactile and proprioceptive)
3. Supports sensory modulation to attain/maintain a regulated state
4. Supports postural/ ocular/ oral/ or bilateral motor coordination
5. Challenges praxis and organization of behavior
6. Collaborate in activity choice
7. Just Right Challenge
8. Ensures Success
9. Supports motivation to play
10. Establishes therapeutic alliance



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Clinical Questions Requiring Systematic Clinical Reasoning

What will you do to facilitate adaptive responses?

What informs your moment-to-moment clinical decision-making in the use of sensory integrative strategies?

How do you decide when to stop an activity and move onto the next one?

How do you measure the effectiveness of your intervention?

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SCAFFOLDING (Spitzer & Smith Roley, 2001, p. 20) ELICITING ADAPTIVE RESPONSES THROUGH THE APPLICATION OF SENSORY INTEGRATION THEORY		
Area of Focus	Therapeutic Adjustments	Outcomes
AROUSAL	Begin interactions with analysis of the child's status here. Decide if interactions need to be excitatory or inhibitory	Improved attention to relevant aspects of people and things in the environment Readiness to interact
SENSORY REACTIVITY	Adjust intensity, duration and variety of environmental stimuli	Improved self-regulation of behaviors, emotions and interactions
SENSORY DISCRIMINATION	Alter temporal/spatial sensory qualities	Enhanced perception of broader perceptual field
SKILL	Grade challenge in fine and gross motor areas	Ease of challenging gravity Refinement of learned interactions with objects and people
PRAXIS	Alter demand relative to creative ideas, sequence of steps, and adjustments based on novelty	More automatic and dynamic planning of adaptive and complex interactions with objects and people
ORGANIZATION OF BEHAVIOR	Adjust responsibility for increasingly complex tasks in time and space	Organizing sequences of multiple interactions both under current circumstances and in the ⁷ future

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Review Handout in M6 Appendix

Clinical Reasoning in Designing ASI Intervention Strategies

Adapted from Smith Roley, Table 32.2. in press Eds. Watling & Spitzer

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2. ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

- 2.E.1. Multisensory Effects
- 2.E.2. Tactile
- 2.E.3. Vestibular
- 2.E.4. Proprioception



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Analysis of Sensory Integrative Functions

Visual-Praxis	Vestibular Bilateral Integration	Proprioception	Tactile Somato- dyspraxia	Sensory Reactivity (Modulation)
Visual motor	Postural control	Gross motor skills	Praxis	Arousal Affect Activity Level Attention
Visual construction	Bilateral coordination Sequencing	Fine motor skills	Auditory - Language Organization of behavior	State/Self Regulation

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Establish Proximal Goals				
Predicting Performance from Sensorimotor Foundations				
Visual	Vestibular	Proprioception	Tactile	Interoception
Visual motor	Postural control	Fine motor skills	Praxis	Reactivity to Sensation
Visual construction	Bilateral coordination Sequencing	Gross motor skills	Verbal and Nonverbal Language Organization of behavior	Sustain optimal range of arousal; change arousal state as needed
Visual guidance Construction Anticipation of future actions and distance Feedback via visual detail	Self in space Activating & maintaining antigravity postural control Movement	Body scheme Finely graded movements	Awareness of self relative to objects, people, space Location, distance, time	Maintain homeostasis Self-Regulation Attention Effortful control

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SENSORY INTEGRATION ASSESSMENT INTERPRETATION TOOL					
Problems in Vestibular Bilateral Integration					
Problems in Somatopraxis		Problems in Visuopraxis		Problems in Sensory Reactivity	
<p>Sensory Perception</p> <p>Vestibular Processing ___ VN ★ (low score is a sign of vestibular based problem) ___ SPM ● ___ signs of typical dizziness following movement ___ orientation in space (e.g., navigation, spatial orientation scores on VPr:D, VPr:C ★)</p> <p>Proprioception ___ Prop:JT ★ ___ Prop: F ★ ___ position awareness ___ use of force ___ SPM ●</p> <p>Tactile Perception ___ TP: L ★ ___ TP: D ★ ___ TP: S ★ ___ TP: O ★ ___ SPM ● ___ poor ability to find or manipulate objects w/o vision</p> <p>Visual Perception ___ VP: S ★ ___ SPM ● ___ other visual perception tests (e.g., DTVP, TVPS) □ ___ visual perception abilities (e.g. puzzles, hidden figure games)</p> <p>Sensory Reactivity</p> <p>Sensory Hyper-Reactivity Signs of over or heightened responses: ___ SR: Overall (Hyper) ___ SPM Bal & Mov't. ● ___ PC ★ ___ SR-Motion/Gravity prolonged VN* ★</p> <p>Sensory Hypo Reactivity Signs of under or delayed responses: Observations of lack of awareness of motion ___ SPM Touch ● ___ Hypo tactile reactivity TP tests ★</p>					
<p>Praxis & Motor Related Functions</p> <p>Postural/Ocular ___ Bal ★ ___ PC ★ ___ O: M & Pr ★ ___ other (e.g., BOT-2, SOSI, COP) □ ___ SPM ● ___ extensor tone ___ righting reactions</p> <p>Postural Mechanisms ___ PC ★ ___ Bal ★ ___ other balance tests (e.g., BOT-2) □ ___ posture in sitting & standing</p> <p>Somatosensory-based Praxis ___ Pr:P ★ ___ Pr: S ★ ___ SPM ● Language-based Praxis ___ Pr:FD ★ Ideation-based Praxis ___ Pr:I ★ ___ other (e.g. TIP) ● ___ SPM ● ___ ability to plan novel actions ___ ability to learn new skills/ coordination in tasks</p> <p>Visuopraxis ___ VPr: D ★ ___ VPr: C ★ ___ other visual motor tests (e.g. Beery VMI-Motor Coordination) □ ___ SPM ● ___ ability to draw, write, build, fold, etc.</p> <p>Sensory Reactivity</p> <p>Sensory Hyper-Reactivity ___ SPM Hearing ★ ___ SR-Auditory ● ___ SPM Taste & Smell ● ___ SR-Olfactory ★ ___ SPM Vision ● ___ other observations or caregiver report on over reactions to sensory input (e.g. temperature, pain, or other sensation) *Hyper reactive responses during or following rotation may be observed, particularly in conjunction with high VN</p> <p>Sensory Hypo Reactivity ___ SPM Hearing ● ___ Hypo auditory reactivity A:L ★ ___ SPM Smell ● H-45; P-44 ___ SPM Vision ● ___ other observations or caregiver report on under reactions to sensory input (e.g. temperature, pain or other sensation)</p>					
<p>Bilateral Integration--Midline ___ BI ★ ___ ability to coordinate both sides of the body ___ crossing midline/laterality ___ jumping jacks, skipping, etc.</p> <p>Non-SI Scores/Data Suggesting patterns other than sensory integration ___ High VN or PRN with low PrFD or PRVC and no other signs of dyspraxia ___ signs of neuromotor problems (e.g. high tone, tremor, ataxia, etc.) ___ without other signs of sensory or praxis problems ___ other</p> <p>Auditory: Localization ★ New test-not yet classified</p>					

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Know your sensory systems (revisit ASI theory)

- Receptors
- Various types of sensations within the system e.g.
 - touch - light touch, deep pressure, transient touch
 - vestibular - linear vertical and horizontal, rotary
 - proprioception - force and direction
- Contribution to functional performance
- Impact on the Autonomic Nervous System
- Interactions with other Sensory Systems
- Relationship to learning and behavior



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Multisensory Effects are the most powerful e.g.

- Vestibular + Vision = stability of visual field
- Proprioception + Touch = body awareness
- Vestibular + Proprioception = equilibrium
- Vestibular + Auditory = spatial orientation
- Vibration can be added to any combination to increase the multisensory effect

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Multisensory Effects are the most powerful e.g.

- Vestibular + Vision + Proprioception = Active Movement
- Vestibular + Proprioception + Touch = Refined Social Interactions
- Vision + Auditory + Vestibular = Learning in classroom

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Qualities of Sensations

- Inhibitory
 - Deep pressure, neutral warmth, slow rhythmic vestibular, slow vibration, soft music
- Excitatory
 - Light intermittent touch, cold, arrhythmic or fast vestibular, loud sounds
- Organizing
 - Heavy work, resistive exercise, push, pull, weight bearing, climbing
 - Oral motor, chewing, blowing
 - Regular tempos



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Assumption

1. If a child is seeking certain types of sensations excessively, one hypothesis is that they need more of that sensation to make sense of the world.
2. If a child is avoiding certain types of sensations, one hypothesis is that it is uncomfortable or disorganizing to their nervous system.



2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Specific Sensory Systems



2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Tactile Reactivity

Engage the child in fun, novel, and varied tactile media

Coupled with multisensory experience including Active proprioception, vestibular, visual and auditory information



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Tactile Discrimination

- Social Touch
 - Attachment to others, places, and objects
 - Nurturing touch vs Instrumental touch
- Body Recognition
 - Body scheme
 - Self-nonsel
 - Use of body
- Object Recognition
 - Feeling of familiar people/things
 - Feeling of comfort vs excitement
 - Attaches emotions to things and places



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2. ESSENTIAL PROCESS ELEMENTS OF ASI
2.E. Addressing Sensory Motor Strengths and Challenges

• **Tactile Discrimination**

- Size, shape, weight, texture, temperature
- Familiar/unfamiliar
- Differences in objects/people/self
- Informs and refines actions



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VARIABLES RELATED TO TACTILE SENSATIONS

<u>Client Factors</u>	<u>Tactile Sensations</u>	<u>Environmental condition</u>
Face Mouth Tongue Cheeks Ears Hands Feet Limbs Front Back	Vibration Light – 2 pt discrimin Deep pressure Temperature –hot/cold Texture – hard/soft wet/dry Haptic - stereognosis sharp/dull/pain/numbness	Social Environment Familiar Unfamiliar
In control Passive Active	Sustained/transient Spatial/temporal Speed/Intensity Duration. Rhythmicity	Physical Environment Safe Unsafe

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2. ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

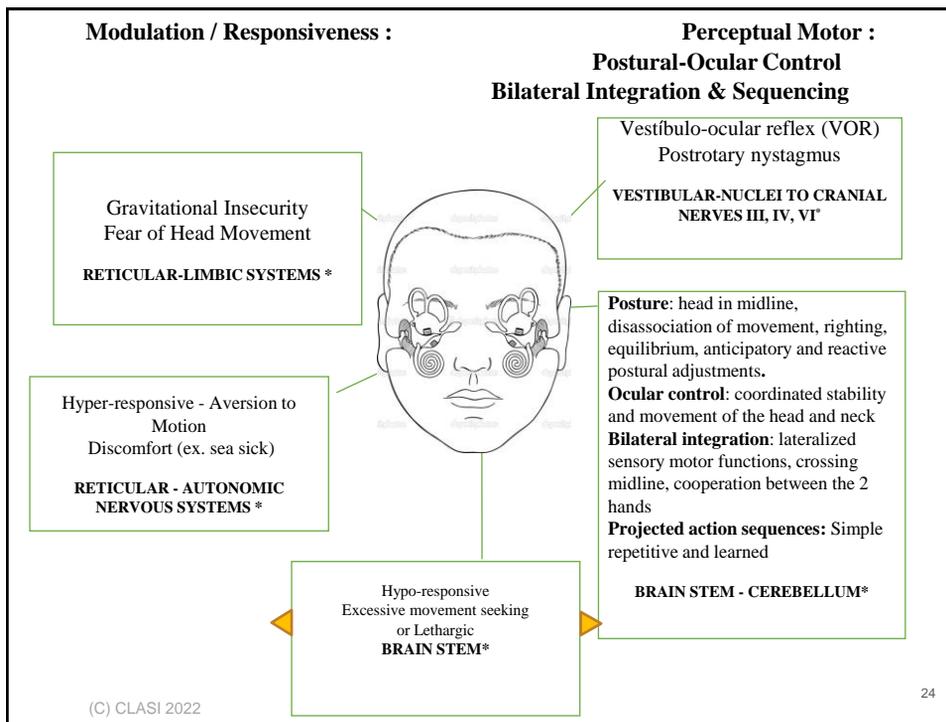
Different Types of Vestibular Issues

- 1 Gravitational Insecurity
- 2 Hyper-responsiveness to Movement
- 3 Hypo-responsiveness to Movement
- 4 Vestibulo-Ocular Responses
- 5 Postural Control

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2. ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Vestibular Reactivity

Engage the child in fun, novel, and varied movement activities

Coupled with multisensory experience including Active proprioception, tactile, visual & auditory information



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2. ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

• Gravitational Insecurity:

- In a playful fashion, assist in overcoming fear of moving through space
- Move up and down in vertical linear activities
- Jump down from various heights
- Fall into pillows, forward, sideways, backwards
- Navigate obstacles where there are heights or visual cliffs
- Climb onto elevated equipment



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Vestibular-Proprioceptive Discrimination

- Arousal and Attention
 - increases eye contact
 - increases vocalizations
 - increases postural tone
- Vestibular-ocular control
 - stabilization of visual field
 - Coordinating head and eye mo
- Postural and Motor Control
 - head and body righting reactions
 - head/neck/eye control
 - head/neck/trunk/limb control
 - equilibrium reactions
 - rhythmic and bilateral movements



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

Precautions

- Stop movement activities when individual appears to be uncomfortable, ill, pale, or going to sleep
- Active participation with proprioceptive engagement helps to inhibit the vestibular effect
- Use of vision for targets supports inhibition of vestibular effect
- Avoid optokinetic effect as in light/dark pattern in room while spinning with person at risk for seizures
- There is no evidence that vestibular activities by themselves increases the possibility of seizures

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Variables Related to Vestibular Sensation

Client Factors	Type of Sensation	Environment
Head position <ul style="list-style-type: none"> ■ Upright ■ Prone ■ Supine ■ Side ■ Inverted ■ Transient 	<ul style="list-style-type: none"> ■ Linear ■ Rotary/Axial ■ Orbital ■ Arc ■ Coreolis 	Visual Field <ul style="list-style-type: none"> ■ Stable ■ Moving
Body <ul style="list-style-type: none"> ■ Static ■ Moving <ul style="list-style-type: none"> -Passive -Active 	Speed, Intensity Duration, Rhythmicity Stop and start Changes in direction	Physical Environment <ul style="list-style-type: none"> ■ Stable ■ Moving

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VARIABLES RELATED TO PROPRIOCEPTIVE SENSATIONS

Client Factors	Proprioceptive Sensations	Environmental condition
Body position Body scheme/image/concept Grading Muscles used/combinations of muscles used Strength Endurance Part of body taking the input FATIGUE AROUSAL LEVEL	Traction – pull Compression – push – weight-bearing Coactivation – cocontraction Isometric/isotonic Vibration ??? COMBINATION WITH OTHER INPUT	Weight/Load Size dimension distance Force GRAVITY
Active/passive Static/dynamic Experience	RESISTANCE Alternating Speed, Intensity Duration. Rhythmicity Stop and start	Physical Environment Stable Moving

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Motor Control Theory

Shumway-Cook and Woollacott, 2017

Individual **constraints to movement may be divided into three categories: action, perception, and cognition.**

Constraints related to *action* involve the motor system and include primary impairments, such as muscle tone and muscle strength, and secondary impairments, such as ROM deficits.

Constraints related to *perception* involve factors that affect or limit the internal registration or integration of sensory information. Examples of potential perceptual constraints include difficulties interpreting key environmental stimuli and decreased awareness of body position in space.

Constraints in the *cognitive* realm relate to attention, emotions, and motivation and include factors such as fear of falling and the ability to attend to environmental stimuli during the execution of functional activities.

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

- SYMMETRY/ASYMMETRY
- Head in midline
- Neck extension
- Back extension
- Rotational Patterns



- STABILITY/MOBILITY
- Coordinated head/neck/eye/trunk/arms/legs
- Sitting up
- Pulling to stand
- Walking



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Righting and Equilibrium Reactions

- (Ayres, 1972, p. 82) help maintain all postural background movements and often involve muscle contractions without limb movement.
- Many postural reactions are tonic in nature are geared to be prolonged and maintained use proximal muscles and must stabilize proximal joints for prolonged periods. This afferent sensory flow is significant for both inhibition and integration. The control system is virtually inhibitory; it is an off switch for the electrical pattern impulse generation system.

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.E. Addressing Sensory Motor Strengths and Challenges

- Use vestibular-proprioceptive activities
- to improve
 - Static Postural Control
 - Active Postural Control
 - Anticipatory-Berthoz (2002):
Anticipation of environmental conditions & results of action, combined with intention and planning
 - Reactive Postural Control
 - Bilateral Motor Control
 - Rhythmic bilateral movements – drumming on table
 - Bilateral - Motor accuracy tracing with postural adjustments
 - Bilateral - Crossing midline
 - Bilateral cooperative hand use - Pulling apart Velcro



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Stability and Mobility

- Rood (as cited by Ayres) views phasic and tonic muscle contractions as mobilizing and stabilizing.
- The stabilizing function is maintained by a constant flow of sense stimuli from skin, muscle, joints, and develops before cocontraction.
- Muscle spindles in deep extensor muscles provide the feed-back necessary to activate cocontraction.

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2. ESSENTIAL PROCESS ELEMENTS OF ASI 2.E. Addressing Sensory Motor Strengths and Challenges

Static Postural Control

- Head position in midline
 - no head lag
- Mouth closure
- Trunk in midline position in sitting
 - floor, chair, swing
- Floor sitting
 - tailor sit with well-aligned pelvis
 - without W-sit, anterior or posterior tilt
- Prone extension:
 - passive placement, active placement,
 - time held, head position, arm extension, scapula position, hip extension
 - leg position extended off ground
- Static – Balance (SWB)



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Postural Mechanisms and the Role of Gravity

- **"Sensory integration treatment will focus the client's attention on something other than the task at hand when trying to elicit or strengthen deep postural responses" (Ayres, 1972, p.79)**
- Most postural responses are anti-gravity responses, automatic, reflexive, and gross motor-based.
- Most prolonged and static muscle responses are anti-gravity postural responses.
- Many postural mechanisms operate independent of volition, and are maintained by cortical-subcortical circuits of the brainstem and midbrain.
- Postural adjustments involved with locomotion (arms and legs) have major integrating mechanisms below the cortex and are, in a sense, "taken for granted" even in remedial situations (p. 77).
- Although postural response is unconscious, automatic, and inherent, they are also adaptive, that is to say they can be evoked. They represent a body's most elementary, primary and essential adaptive responses (p. 78).
- Postural responses display an "inherent design" or predisposition toward a given (built in pattern) of motor response that is neither cortically nor cognitively planned (pp. 78).

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2. ESSENTIAL PROCESS ELEMENTS OF ASI 2.E. Addressing Sensory Motor Strengths and Challenges

Dynamic Postural Control

- Gravitational responses -
Adjusting posture to change in head position
- Head/Neck/Eye control
- Oral motor control including smooth coordinated tongue, lip, and jaw movements
- Log Rolling, left and right – directionality
- Postural adjustments in trunk
- Prone on scooter board on ramp
- Head position change with balance – recovers in midline
- Trunk position change with balance – recovers in midline
- Protective extension in prone and in sitting
- Dynamic balance with eyes open and eyes closed
- Disassociation between eye/head/trunk/limb
- Sustaining midline posture with head and trunk on swing – linear, rotary, orbital



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Principle 4: Postural and Bilateral Motor Control

- “Sensory information (proprioception + other sensations arising from the body) assumes an important, albeit subserving, role in sensory integration.
- The function of the proprioceptors is critical to the motor action by which reflexes, automatic responses, and planned action occur (i.e. praxic system).
- Movement in all of these categories is the means by which man adapts himself to and acts on the environment. Without those actions integration of sensory impulses would not be optimum. Furthermore, the **proprioceptive flow towards the brain is believed to aid in sensory perception, especially of visual impulses.**” (Ayres, 1972, p. 67)

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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.E. Addressing Sensory Motor Strengths and Challenges

Bilateral Integration

- Rhythmicity during bilateral movements
- Crossing midline
- Lateralized hand use
 - Preferred hand use for skilled tasks
 - Non-preferred hand use
 - Cooperative hand use
- Bilateral motor control
 - Motor coordination and sequencing tasks
 - jumping jacks
 - skipping



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Principle 4: Postural and Bilateral Motor Control

- Ayres “The receptors from muscles, joints and bodies are believed not to contribute appreciably to the ascending reticular activating system, although a possible means by which proprioception can influence the general excitatory state of an individual has been proposed by Gellhorn (1964)
- Proprioceptive flow, determined by muscle contractions of the body, helps set the hypothalamic balance which, in turn, acts on the ANS and exerts a tonic excitatory influence on the cortex. Through this route, according to Gellhorn, **increased proprioception can enhance a positive emotional state**” (SI+LD p69)
- One of the major contributors to proprioception that does make a large contribution to sensory integration is the fusiform’s specialized spindles, and gamma efferent neurons, which are more easily conditioned than alpha afferents.

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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.F. Addressing Praxis

Principle 5: Praxis



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

- **“It’s impossible to understand anything about how the brain works without conceding that its main problem is to put mass into motion.”** The forces created involve angular accelerations in several planes and studying the geometry of movement makes it easier to see nature’s solutions.
- For example, pre-wired motor synergies simplify neuro computations and simple kinematic relationships connect the geometry of movement dynamics.” (p. 6)
- Berthoz describes the brain as a biological simulator. **The built in way brains as a whole work is through prediction of what’s coming next every millisecond.** Predictive anticipation taps the contents each brains interior memory storage (hippocampal system) , the system generating assumptions inside everybody. (Berthoz, 2000, p.6)

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

- **Ideation**, motor planning and execution
- Primary sensory basis for praxis (exteroception)
 - Touch
 - Vision
 - Auditory-language
- Perceptual motor experiences including vestibular proprioceptive postural control, essential foundation for complex movements



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

- Praxis Factors

- Somatodyspraxia
- Visuo-praxis
 - Constructional skills
- Praxis on verbal command



- Cluster Analysis

- Visuo-somatodyspraxia
- Dyspraxia on verbal command
- Generalized dysfunction (severity rather than type)

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

1. Somatopraxia
2. Visual praxis
3. Language-based praxis
4. Ideational praxis

Not included in Ayres Research

(May-Benson & Cermak, 2007; Mailloux et al., 2018)



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2. ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

Essential Components of Treating Praxis

- discovery
- novelty
- possibility
- trial and error
- taking chances
- allowing ideas that might not work
- celebrating the plans even when they don't quite work –
- try again – persistence toward mastery



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2. ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

Somatopraxis

- Gain awareness of the body relative to objects, space, people, and during the activity
- Break down activities into simple steps
- Present a variety of activities rather than doing the same activities over and over
- Start with simple motor planning activities e.g. pumping swing, walking up a ramp, climbing, getting in and out of equipment, kicking a balloon while swinging, rolling, etc.
- Anticipate where child will need assistance and then scaffold

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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.F. Addressing Praxis

Visual-praxis

- Orient to physical space and change one or more things about the space regularly
- Orient to things and people within the space
- Encourage child to climb and touch boundaries of the physical space including walls, ceiling, windows
- Build with large blocks and bolsters vertically, not just horizontally (lining up).
- Allow the child to knock into structures and rebuild
- Encourage child to find things to stand on to build higher
- Draw maps and patterns of interesting equipment e.g. pirate map of buried treasure and then bury and find the treasure

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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.F. Addressing Praxis

Visual praxis

ask the child...

- Where is it?
- Where are you going?
- How high/far/big/small/ is it?
- Where can we build it?
- Where could we hide it?
- Can you draw it?



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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.F. Addressing Praxis

Language-Based Praxis

- Start with simple, single step instructions
- May need to begin with visuals, icons/words/symbols
- Begin with single-step familiar requests
- Move to two-step related requests
- Eventually can play games such as Simon Says
- Single unfamiliar instructions
- Multiple unfamiliar instructions
- Also, taking turns so that the child is the one creating language/instructions in the game for others to follow
- Use time concepts during activities

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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.F. Addressing Praxis

Language Based Praxis

ask/tell the child...

- Where did that sound come from?
- What's next on the list?
- Simon Says, put one hand on your head.
- Can you name 5 things we did today?
- You're the boss. Give me 3 instructions to make the game.
- Ready, set, GO!



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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.F. Addressing Praxis

Enhance Ideational Skills

- Show child the possibilities available to him/her
- Ask what they will like to do
- Scaffold child's ability to come up with additional ideas
- Model novel activities
- Start by giving one idea to a multi-layered activity
- Present a variety of activities rather than doing repetitions
- Change the objects and equipment
- Use familiar stories as a launch pad for child's own creativity-act out story
- Practice mental rehearsal of activities prior to completing them
- Encourage previous organization of the task and ideation by asking the child to Verbalize what he/she is going to do and how

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2.ESSENTIAL PROCESS ELEMENTS OF ASI 2.F. Addressing Praxis

Enhance Ideational Skills

- Use familiar stories to stimulate child's creativity
- Practice mental rehearsal of activities prior to completing them
- Encourage more independence in planning and organizing tasks done before including set-up, clean-up and storage
- Invite child to draw a picture of various activities
- Make a picture or word list of things to do the next day
- Ask the child to say what he/she is going to do and how, but if this is too difficult, don't insist, rather draw it or say it for the child
- Encourage child to show/tell people about what he/she did and what he/she will like to do in the future

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

Ideational praxis

ask the child...

- What would you like to do?
- If anything is possible, what would you create?
- Where, how long, and how many things?
- What should I do?
- What will you do next time?
- Imagine yourself next year when you're taller, what will you do then?



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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing **Praxis**

Suggestion for Caregivers and Therapists

- Provide child information about the Plan
 - Visual, auditory and kinesthetic
- Check for understanding
- Ensure a sense of safety/comfort
- Break down task into manageable chunks
- Practice necessary skills in each step
- Find motivation to do task
- Put into action – try it out
- Change it slightly each time
- Ask child to think about/write/draw next time

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing **Praxis**

Example Therapeutic Interaction

1. The Plan – what should we do?
2. Understanding – what do we need?
3. Safety/comfort – are you ok with this?
4. Break down task - what comes first?
5. Practice skills – try this again
6. Motivation – what should we do?
7. Put into action – let's go!
8. Change it – let's go the other way!
9. Future planning - let's draw what we're going to do next

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2.ESSENTIAL PROCESS ELEMENTS OF ASI

2.F. Addressing Praxis

Ayres Basic Principles of Intervention for Developmental Dyspraxia Summary *Ayres Dyspraxia Monograph (2011) pg. 137*

1. Begin treating the child at as young an age as possible, preferably before three years. The inner drive to develop praxis appears to wane after age seven or eight years of age.
2. Intervention requires large quantities and a great variety of therapeutic equipment and an area specific to its use.
3. Activities provide needed sensory input from the body and eyes. Sometimes the sensory input is provided directly by the therapist.
4. Available therapeutic activities fit the child's ideation and action planning ability; the occupational therapist helps the child's performance and development in both areas.
5. Therapeutic activities require a challenge of the child but also enable success with the therapist's help. The child must exert effort. Success is the best reward.
6. Treating children with dyspraxia requires a highly educated, skilled, and creative occupational therapist.

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References

See attached list

Also see:

<https://www.siglobalnetwork.org/research-and-literature>

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M6

Providing ASI Intervention with Fidelity

Dr. Susanne Smith Roley
OTD, OTR/L, FAOTA

*Acknowledgement to the original SI
Intervention designed by Dr. A. Jean
Ayes and to all who have contributed
to SI intervention research and practice
since that time.*



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Module 6 (M6)

Providing ASI Intervention with Fidelity

- Lesson 1: Updates in evidence-based ASI Intervention
- Lesson 2: ASI Patterns, M4 Review
- Lesson 3: Goal Setting & Measuring Outcomes
- Lesson 4: Structure for Providing ASI with Fidelity
- Lesson 5: Facilitating the Adaptive Response
- Lesson 6: Process of Providing ASI with Fidelity
- Lesson 7: Consultation, Sensory Strategies & Environmental Modifications

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CAREGIVER-FOCUSED EDUCATION



It takes a village...

Family, Related professionals,
Education staff, Community, Peers

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Setting the Stage for Intervention	Conducting the Intervention	Displaying Outcomes Post -Tx

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CAREGIVER-FOCUSED EDUCATION

Carrying Therapy Concepts into Home and Community

Sensory Motor Play

Builds Brain Functions



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CAREGIVER-FOCUSED EDUCATION

Consistent with Priorities for Family-Centered Care

Evidence shows parent training improves parental well being,
mental health, self-efficacy, and parent child interactions
Parents request information to better understand their child and
to know what to do

Coaching and training assists the generalizability of
approaches across settings

See evidence summary Watling et al., 2018, Chapter 5, Interventions that
provide education or coaching of parents or teachers.

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Caregivers' perspectives on the sensory environment and participation in daily activities of children with ASD

Pfeiffer, B., Coster, W., Snethen, G., Derstine, M., Piller, A., & Tucker, C. (2017). Caregivers' perspectives on the sensory environment and participation in daily activities of children with autism spectrum disorder. *American Journal of Occupational Therapy*, 71, 7104220020. <https://doi.org/10.5014/ajot.2017.021360>

Purpose: Phenomenological study to obtain caregivers' perspectives on the impact of the sensory environment on participation in daily activities of their young children with autism spectrum disorders (ASD).

Methods: Interviews were completed with 34 caregivers of children with ASD ages 3–7 yr.

Results: Strongly suggest that parents and caregivers were pivotal in enabling participation for their children through the implementation of specific strategies and a parental decision-making process.

Implications: The decision-making process considered amount of effort necessary to support participation and whether participation in a given activity was perceived as essential or nonessential. Strategies enabled participation and reduced the effort required to support the child's participation. Strategies either directly related to the sensory factors of the environment or focused on reducing behavioral responses associated with sensory factors. In this study, they identified important considerations to enhance participation in the home and community environments for children with ASD.

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CAREGIVER-FOCUSED EDUCATION

- Take into consideration family dynamics, routines, learning styles
 - Existing caregiver supports
 - Work schedule
 - Day Care
 - Siblings
- Optimal methods to disseminate and share information

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Waiting Room Experiences for Families

Cohn, E. S. (2001). From waiting to relating: Parents' experiences in the waiting room of an occupational therapy clinic. *American Journal of Occupational Therapy*, 55, 167–174.

- **Method:** Interviews with parents regarding their children's participation in occupational therapy were analyzed using grounded theory.
- **Results:** The parents' experiences of sitting in the waiting room while their children received occupational therapy emerged as a powerful outcome theme. Through their interactions with other parents: **parents gave and received naturally occurring support for parenting children with sensory integrative dysfunction.** Additionally, by virtue of repeated experiences of waiting, parents moved to positions of liminality, **shared weekly rituals**, engaged in downward social comparison, and **reframed their views of their children.**
- **Conclusion:** **Need to expand the definition of family-centered intervention and attend to the meaning of the cultural world of practice**
Direct future research related to how a physical setting, such as a waiting room, might shape naturally occurring support and social interaction.

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Experiences of Siblings of Individuals with Autism Spectrum Disorders

Angell, M. E., Meadan, H., & Stoner, J. B. (2012). Experiences of siblings of individuals with autism spectrum disorders. *Autism research and treatment*, 2012. DOI: 10.1155/2012/949586

Purpose: To explore the experiences of siblings of individuals with autism spectrum disorder (ASD) and identify their self-reported support needs.

Methods: In-person semi-structured interviews with 12 siblings aged 7 to 15 of children aged 6 to 15 with ASDs. Employing a qualitative collective case study research method, we conducted cross-case analyses to address our research questions.

Findings: **Three major themes emerged: (1) descriptions of the sibling subsystem (2) cohesion between and among the siblings, and (3) adaptability of the participant siblings to having family members with ASD.**

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ASD Effects on Siblings

Ormond, G. I. & Seltzer, M. M. (2009). Adolescent siblings of individuals with an autism spectrum disorder: testing a diathesis-stress model of sibling well-being. *Journal of Autism and Developmental Disorders*, 39(7), 1053–1065. doi:10.1007/s10803-009-0722-7

Purpose: To test a diathesis-stress model of well-being for siblings who have a brother or sister with an autism spectrum disorder (ASD).

Methods: Data were collected from 57 adolescents and their mothers.

Findings: Sisters reported higher levels of depressive and anxiety symptoms than brothers. Having a family history of ASD was associated with depressive, but not anxiety, symptoms. A high level of maternal depression was also associated with more depressive and anxiety symptoms.

Implications: A diathesis-stress model was partially supported, primarily through the findings that **sibling sub-threshold autism characteristics were associated with depressive and anxiety symptoms in siblings, but only in the presence of a high number of stressful life events.**

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CAREGIVER-FOCUSED EDUCATION

Healthy Habits and Routines

Everyone Needs to Play

“When the **sensory integrative** capacity of the brain is sufficient to meet the demands of the environment, **the child's response is efficient, creative, and satisfying.**”

When the child experiences challenges to which (she) he can respond effectively, (she) he “has fun.”

Fun is the child's word for sensory integration”.

(Ayres, 2005, p.8)



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Play Spaces are Everywhere - First world versus third world...



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CAREGIVER-FOCUSED EDUCATION

Play is Changing

"Since about 1955... children's free play (play a child undertakes him- or her-self and which is self-directed and an end in itself, rather than part of some organized activity) has been continually declining, at least partly because adults have exerted ever-increasing control over children's activities."

"Play is nature's means of ensuring that young mammals, including young human beings, acquire the skills that they need to develop successfully into adulthood."

Peter Gray, 2014, TEDxNavesink
Retrieved from <https://www.youtube.com/watch?v=Bg-GEzM7iTk>

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CAREGIVER-FOCUSED EDUCATION

Types of Play (see Parham & Fazio, 2008)

- Body Play including exploration and rough & tumble play (body awareness, motor skills)
- Object Play (investigation, problem solving)
- Social play (connection, social rules, limits)
- Imaginative Play (inventing, pretending, creating)



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CAREGIVER FOCUSED EDUCATION

- Infuse fun into the way in which children do their everyday life activities such as dressing, eating and bathing
- Take breaks as a family to do things together including bike riding, board games, and playing charades

How do we fit active physical play into our busy daily routine?



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CAREGIVER FOCUSED EDUCATION

- Help your child learn to enjoy life while accomplishing necessary tasks
- Enlist the help of other caregivers including older children to engage the children in fun activities outside of therapy and school.



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CAREGIVER FOCUSED EDUCATION

Passportto**FUN**ction.com

Blog for parents:

Activities that support your child's optimal development
Perfect park activities for you and your child



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Passport to the Park Kit

Getting quality time outdoors can do wonders. Fresh air, sunshine, 'unplugged' fun, and active exploration can have dramatic effects on the quality of your mood and how your body functions! OT's around the globe LOVE hearing about their clients adventures outside. Sensory experiences are everywhere and something new is around every bend. This allows our L.I

[Read more](#)



Summer Olympic Games

A time when the world unites in energy, efforts and friendly competition, the Olympic Games seem to be a two-week period when everyone 'speaks the same language'. Replays of an exciting race, a courageous finish, the athlete to watch and the tally of gold medals are conversations echoed between people and countries. That doesn't happen L.I

[Read more](#)



Theme Play at the Park: Star Wars

Star Wars has been loved for generations. Starting with the movies, branching out to toys, and even DIY light sabers and masks. Adults and children alike go crazy for all things Star Wars, so why wouldn't you use its magnetizing powers for good (at the park)? Theme Play at the Park: Star Wars November 5th, L.I

[Read more](#)

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Reframing perceptions of risk in outdoor free play

Niehues et al., (2013). <http://dx.doi.org/10.1080/14729679.2013.798588>

Purpose: Explore the results of risk reframing, an intervention to offer parents and educators a context for building new and complex perceptions of risk in children's outdoor free play. Study objective was to alter these adults' perceptions of risk to increase the sustainability of an innovative child-centered playground intervention.

Results: Suggest that educators and parents benefit from opportunities to share risk perceptions and discuss the costs and benefits for offering outdoor free play to children to achieve their common goals for children: health, happiness and resilience.

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS



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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

Supplement but do not replace the provision of occupational therapy using an ASI approach

Evidence shows the following:

Specific Sensory Techniques - moderate evidence of benefits of Qigong massage

Limited evidence of sensory tools such as weighted vest or linear swinging, embedding sensory activities into preschool routines

See evidence summary Watling et al., (2018) Chapter 4 for interventions that address specific sensory techniques and environmental modifications.

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

Evidence shows the following:
Sensory Environmental Modifications

Moderate evidence in Level 1 study on adapting dental office environment that reduced distress, pain and sensory discomfort

See evidence summary Watling et al., (2018) Chapter 4 for interventions that address specific sensory techniques and environmental modifications.

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

COGNITIVE ASPECTS OF INTERVENTION

- Links helpful strategies with sensations
- Self-awareness of regulation problems
- Anticipating and preparing for problematic situations – planning ahead
- Example: Alert Program for Self-Regulation or Zones of Regulation



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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

COGNITIVE ASPECTS OF INTERVENTION

Evidence shows the following:

- Moderate evidence in Level 1 showing the Alert Program improved executive function among children with fetal alcohol spectrum
- Limited evidence of Social Stories with ASD
- Moderate evidence of horseback riding
- Limited evidence on yoga

See evidence summary Watling et al. (2018) Chapter 6 for interventions that address cognitive and occupation-based interventions

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Exploding

Boiling

Angry

Upset

Frustrated

Irritated

Nervous

COOL

CALM

RELAXED

Sleepy

Tired

Sick

Blah

1. I will immediately ask a teacher to cool down in a different space or take a walk

1. I will use my self-talk strategies:
- "It's no biggie"
- "problems are made to be solved"
2. I will go to the cool down area
3. In the cool down area, I can:
- take deep breaths
- count to 10
- look at calming books
4. I will stay in the cool down area until I am calm and then I can return to the activity by myself

I KNOW I AM DOING A GOOD JOB!
-I am doing my work
-I am using whole body listening with my teachers and peers
-I am using a quiet voice
-I am cooperating with peers
-I am using expected school behaviors

1. Ask to go to the bathroom
2. Ask to get a drink of water from the drinking fountain
3. Do brain exercises

zonesofregulation.com

Kuypers, L. M. (2011). The zones of regulation: A curriculum designed to foster self-regulation and emotional control. San Jose, CA: Think Social Publishing.

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<https://www.socialthinking.com/Research/How-You-Can-Help/Superflex>

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

CONSIDER SENSORY ENVIRONMENT

(create calm, pleasant, and beautiful ambiance)

- Color
- Sound
- Smells
- Textures



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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

See also (references compiled by ASI-Wise UK):

- Autism-friendly design: Information taken from a 2015 interview with Dr Magda Mostafa a world leading expert on designing built environments for autism (*Your Autism Magazine*)
- Autism-friendly environments and architecture: A 2011 review of autism-friendly architecture by Architect Maria Luigia Assirelli.
- Creating autism-friendly spaces: Architect Simon Humphreys explains how to adapt your environment for autistic people. Read his advice on clarity, proportion, senses and materials.
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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

DANGER: PROLONGED SITTING

- Wilmot, et al., (2012) in *Diabetologia*, the journal of the European Association for the Study of Diabetes, confirmed the danger by comparing those who spent the most time sitting versus those who sat the least.
 - Sitting resulted in 112 percent increase in diabetes
 - 147 percent increase in death from cardiovascular events
 - 90 percent increase in death from cardiovascular causes
 - 49 percent increase in death from all causes.

<https://www.ncbi.nlm.nih.gov/pubmed/22890825>

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

DANGER: PROLONGED SITTING

- Studies have found excessive sitting to be so widespread, and to have such a negative impact on health, that comparisons with smoking are becoming increasingly common.
- It is a problem that is increasingly being recognized, and research is underway to incorporate healthier habits into office layouts.
- In 2013, the American Medical Association (US Burden of Disease Collaborators) adopted a new policy: encouraging employers to offer standing workstations.

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

CONSIDER THE SCHEDULE

BUILD IN SENSORY BREAKS

Active physical breaks are recommended for all people a minimum of once per hour and with more for children

(see Jarrett, 2013; Pelligrini & Bohn, 2005)

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

The Role of Recess in Children's Cognitive Performance and School Adjustment

The authors suggest that the recess period serves a positive purpose in the primary school curriculum, counter to the practice of minimizing recess in many schools across North America and the United Kingdom.

The authors' position is embedded in the larger debate about school accountability; they argue that school policy should be based on the best theory and empirical evidence available.

They support their argument for the importance of recess with theory and with **experimental and longitudinal data showing how recess breaks maximize children's cognitive performance and adjustment to school.**

Pelligrini & Bohn (2005) <https://doi.org/10.3102/0013189X034001013>

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

A 2009 American Academy of Pediatrics study found that 8- and 9-year-old children who had **at least one daily recess period of more than 15 minutes had better classroom behavior.**

The study also found that **black students and students from low-income families were more likely to be given no recess or minimal recess.**

That report reinforced the results of Jarrett's 1998 study, which found that **when 43 fourth-grade students were given recess, they worked more or fidgeted less** than when they were not given recess

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

Recess is at the heart of a vigorous debate over the role of schools in promoting the optimal development of the whole child.

- Recess serves as a necessary ~~break~~ break from the rigors of concentrated, academic challenges in the classroom.
- Safe and well-supervised recess offers cognitive, social, emotional, and physical benefits that may not be fully appreciated when a decision is made to diminish it.
- Recess is unique from, and a complement to, physical education—not a substitute for it.

The American Academy of Pediatrics (2013) believes that recess is a crucial and necessary component of a child's development and, as such, it should not be withheld for punitive or academic reasons

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

When recess is eliminated or reduced, it is often to allocate more time to subjects covered on standardized tests, aiming to improve student achievement

BUT

A 2010 report by the Centers for Disease Control and Prevention found positive associations between recess and academic performance.

“There is substantial evidence that physical activity can help improve academic achievement, including grades and standardized test scores”

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4. SENSORY TECHNIQUES AND ENVIRONMENTAL MODIFICATIONS

A 2017 study (Haapala et al.) found that **young boys who spent more time sitting** and less time playing **progressed less quickly** in reading and math.

A 2014 Preventive Medicine study (Price et al.) found that holding recess before lunch increased students' fruit and vegetable consumption by 54%.

Recess can improve student nutrition when held before lunchtime.



SticKids <http://www.stickids.com/>

Monthly Planner		child's name	Alex Alibabun	date	September 22, 2014																															
		therapist/teacher/parent	Rosann Hamauchi	role																																
		location	SENDSOURCE																																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Motor	happy ball																																			
	be safe																																			
Pressure in Touch	pressure brushing																																			
	blow-ho-ho																																			
Heavy Work	office duty																																			
	blowing																																			
Stic One in Breathing	blowing																																			
	blowing																																			



Sensory Tools Reduce Sound



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Sensory Tools Tactile Deep Pressure



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Sensory Tools Tactile Textures



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Sensory Tools Oral Motor



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Sensory Tools Vestibular



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Sensory Tools Proprioception



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References

See attached list

Also see:

<https://www.siglobalnetwork.org/research-and-literature>

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Module 6 ASI Intervention in Therapeutic Practice

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Collaborative for Leadership in Ayres Sensory Integration® (ASI) Certificate Program

2020-2021 Requirements and Assignments



The 2020-2021 revised requirements apply to participants completing the CLASI CASI program with emphasis on the EASI as the primary assessment tool, starting in October 2020. Participants who began the CLASI CASI program with emphasis on using the SIPT, will be provided the ASI Certificate under the prior requirements. Please confirm with your local host or info@cl-asi.org if you have questions.



**Collaborative for Leadership in Ayres Sensory Integration (CLASI)
Certificate in Ayres Sensory Integration (CASI)**

REQUIREMENTS

1. The CLASI-CASI program requires completion of 6 Modules plus additional activities and assignments. Each module requires approximately 30 hours (3.0 CEU's), for a total of 180 hours (18 CEU's).
 - Module 1 is offered by asynchronous virtual format but may be offered onsite, when possible, upon request.
 - Modules 2, 4, and 5 are completed via an asynchronous virtual format.
 - Modules 3 & 6 are completed onsite or by synchronous virtual format, when holding onsite courses is not feasible.

2. Complete assignments per module and submit assignments per instructions as follows:

Module 1: ASI Theory	
Onsite or Asynchronous Virtual Module, 3.0 CEU's	
Module 1 is a research-based series of lessons that provide a foundation in ASI theory.	
ASYNCHRONOUS VIRTUAL MODULE 1	ONSITE MODULE 1
Asynchronous Virtual Format Assignments: 6 hours	Onsite Module: 24 hours (4 days) Assignments: 6 hours
Assignments	
Find and post a reputable media resource (e.g., a You-tube video, podcast, or website) that exemplifies the relationship between neuroscience and ASI. Post on online discussion board with a short commentary on the reasoning for choice.	Neuro presentation-participants prepare and present on neurological structures and functions in small groups (described in more detail during the onsite course).
Recommended but not required: Following M1, create and present an introductory 30-60-minute presentation e.g., in-service or lecture on ASI to a self-selected audience e.g., parents, teachers, community groups, etc.; share slide(s) on discussion board and post comments on the presentation.	

Module 2: Introduction to Comprehensive Assessment in ASI Asynchronous Virtual Module, 3.0 CEU's
Module 2 introduces the learner to information on direct and indirect assessments including the Evaluation in Ayres Sensory Integration (EASI), the Sensory Integration and Praxis Tests (SIPT), and the Sensory Processing Measure (SPM).
Asynchronous Virtual Module 2: 20 hours Assignments: 10 hours
Assignments
Practice test administration for all tests. Practice with video clips, then practice administration and scoring with adults and with typically developing children.

Module 3: Comprehensive Assessment in ASI Hands-on Practice and Review Onsite Module, 3.0 CEU's (M3 may be offered via synchronous virtual format if onsite courses are not feasible)
Module 3 provides hands-on practice and review of all aspects of sensory integration including perception, reactivity, postural ocular and bilateral control and praxis, with a assessments that were introduced in Module 2. During the onsite Module 3, participants will have an opportunity to clarify any questions they have about the information presented in the asynchronous virtual instruction, and to practice assessment administration and scoring with peers.
Onsite Module 3: 24 hours (4 Days) Assignments: 6 hours
Assignments
<p>The following assignments are to be completed after onsite Module 3:</p> <ol style="list-style-type: none"> 1) After completing the asynchronous virtual preparation for Module 2 and attending the M3 practice course for assessment, continued practice is needed to develop competence in test administration and scoring skills; participants are expected to review asynchronous virtual lessons and notes; learning test mechanics takes time-continue practice with adults, along with the videos in the asynchronous virtual program. 2) Following practice, participants will complete the TEST ADMINISTRATION & SCORING CHECK-TASC. (see attached form for details of this assignment) 3) Practice the tests, as possible, with typically developing children to have the chance to see how children without SI concerns perform on the tests. 4) Complete the EASI on two typically developing children ages 3-12. Following attendance at M3 and completion of the TASC, test two typically developing children on all EASI tests and enter the data on the designated data entry platform. Note the subject ID#s and record those on the Testing Verification Form. 5) Identify and test at least one child with suspected difficulties.* Complete the EASI (or the SIPT, including computerized scoring and SIPT test report), and the SPM; estimate performance on qualitative or non-standardized measures. <p><i>*If testing a child with suspected SI concerns is not feasible (e.g., due to pandemic restrictions, normative data not yet available, etc.) participants may be provided with a "case" that includes EASI and SPM scores, in order to practice to the interpretation process.</i></p>

To apply clinical reasoning and learn the interpretation process, we will rely on research based on the SIPT to identify core ASI constructs. As research is available on the EASI, this data will be included to further support the interpretation of test data.

To complete the assignments for the CLASI CASI, all tests of the EASI should be administered to two typically developing children and test* and interpret scores for one child with suspected sensory integration concerns (see criteria for selection of case). In addition. (The SIPT may be substituted for the EASI, if the learner has access to a SIPT kit, SIPT test forms and SIPT scoring.)

Module 4: Clinical Reasoning in ASI Asynchronous Virtual Module, 3.0 CEU's
Module 4 builds on Modules 1-3 with content and skills needed for interpreting assessment data in a systematic way, so that intervention can be planned and implemented in a focused, appropriate, and effective way.
Asynchronous Virtual Module 4: 24 hours Assignments: 6 hours
Assignments
Prior to/during completion of asynchronous virtual Module 4: 1) Complete all lessons and assignments for Modules 1-3. 2) Review test scores (either on case provided by CLASI or on child tested) and think about the scores while completing lessons in M4; Independently complete first draft of "case summary.

**If testing a child with suspected SI concerns is not feasible (e.g., due to pandemic restrictions, normative data not yet available, etc.) participants may be provided with a "case" that includes EASI and SPM scores, in order to practice to the interpretation process.*

Module 5: Intervention Planning Asynchronous Virtual Module, 3.0 CEU's
Module 5 introduces the research and manualized methods of ASI intervention as an evidence-based intervention, including the core principles of ASI that assist practitioners in planning intervention as defined in the Fidelity to ASI Intervention Measure that assists researchers and clinicians to distinguish between interventions that are faithful to the principles of ASI and those that do not meet the criteria.
Asynchronous Virtual Module 5: 24 hours Assignments: 6 hours
Assignments
<ol style="list-style-type: none"> 1) During the asynchronous virtual lessons for Module 5, participants will complete an exercise that involves rating intervention video clips using the ASI Fidelity Measure. A passing score on the ASI Fidelity Measure ratings is required to complete the module. Complete all lessons and assignments for Modules 1-3. 2) Finalize first draft of independently developed case summary (for a child for whom you have test scores (e.g., if you were able to obtain standard scores on the EASI or if you administered and scored the SIPT) OR for the case provided to you by the instructor. Following completion of Module 4 & 5 asynchronous virtual lessons, exchange draft of case summary with a peer (DASC) 3) Revise your case summary based on feedback you receive from the DASC and bring it with you to Module 6. 4) Video-record and rate your own intervention session using the ASI Fidelity Measure (see attached video assignment).*

**If it is not possible to provide in-person intervention using ASI (e.g., due to pandemic restrictions or other local situations), the video recording requirement may be waived.*

**Module 6: ASI Intervention
Hands-on Practice and Review**

Onsite Module, 3.0 CEU's

(M6 may be offered via synchronous virtual format if onsite courses are not feasible)

Module 6 provides hands-on experience in designing and implementing evidence based ASI intervention with fidelity to the method. Through case analyses, participants are guided to design the intervention program and activities based on analyses of the assessment data and conduct dynamic assessment while providing those intervention strategies. Emphasis is placed on clinical reasoning using all steps of DDDM, from hypothesis generation to working on proximal goals to meet relevant distal outcomes. A master clinician will demonstrate using an ASI approach with children who demonstrate sensory integration deficits.

Onsite Module: 24 hours (4 Days)

Assignments: 6 hours

Assignments

Participants will work in small groups to analyze and discuss cases and participate in a group presentation of selected cases from each group. Throughout M6, participants are expected to refine their case summaries, based on the information presented each day. Participants should plan for 1-2 hours after the course on days 1-3 to work on the case refinement.

Participants must bring the following to M6:

- Case Summary-developed independently and revised following DASC
- Remaining questions about test administration/scoring
- *Video of an ASI intervention session and an ASI Fidelity Measure Rating Form for that session.

**If it is not possible to provide in-person intervention using ASI (e.g., due to pandemic restrictions or other local situations), the video recording requirement may be waived.*



**Collaborative for Leadership in Ayres Sensory Integration (CLASI)
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Test Administration and Scoring Check (TASC)

The *Test Administration and Scoring Check* with a peer(s) or previously SI certified therapist aims to assist learners in refining test administration and scoring competency, following training and practice. The TASC may be conducted in person or virtually. The following process is followed:

- Learner administers at least a portion of all required tests to another adult or child (adult is recommended) while peer who is familiar with tests (either fellow learner or someone who has been trained in the tests) observes.
- Peers may choose to work in small groups (2-4 people works well), alternating the role of tester and “child” if in-person; if virtual, then learner may test another adult, while observer reviews virtually- preferably in real time.
- Learner and observers discuss test administration and scoring, using notes and other course resources to clarify and resolve any points of confusion.
- Learner must exchange one scored form for Visual Praxis: Designs (VPr:D); Praxis Ideation (Pr:I) based on videoclip; Proprioception Joint Position (Prop:JP); and Tactile Perception: Design (TP:D) (or KIN, MAc and GRA if using the SIPT (administered to a child prior to the observation) and a scoring check must be completed (see below).

Learner Information:

Name: _____ Email address: _____

M3 attended (city and dates): _____

Observer Information:

Name: _____ Email address: _____

____peer in same onsite course, OR

____trained in required tests (list program, city and dates)

Please list at least 3 things that were clarified, corrected, or which made testing more efficient based on discussion from the TASC:

1)

2)

3)

Scoring Check:

Learner and observer verify that they have scored, compared, and discussed their results on VPr:D, Pr:I, Prop:JP, and TP:D (or on KIN, MAc and GRA, if using the SIPT).

I verify that all information recorded here is true and accurate:

Signature of learner: _____ Date: _____

Signature of observer: _____ Date: _____

Optional:

Comments related to participation in a virtual or in-person meeting with CLASI or a local course organizer:



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Data Analysis and Synthesis Test Check (DASC)**

The *Data Analysis and Synthesis Test Check* with a peer or small group aims to assist learners in clinical reasoning by refining data analysis for completion of the next steps of DDDM. The DASC may be conducted in person or virtually. The following process is followed:

- Learner completes at least one Case Summary (either from child tested or from case provided by the instructor) following the assigned format, following steps of DDDM.
- Learners may choose to work in pairs or in small groups to exchange their Case Summaries (pairs or groups compare their findings in person, by phone or via a virtual meeting, such as Skype or Zoom); based on discussions, the learners revise their Case Summaries.
- Learners are encouraged to bring any questions or interesting points of discussion to a CLASI webinar (or to meetings with local host organization if provided).

Learner Information:

Name: _____ Email address: _____

Partner or Group Information (if case discussion involved more than one peer, list all):

Name: _____ Email address: _____

Please list at least 3 things that were clarified, or areas identified as needing clarification during the DASC:

1)

2)

3)

I verify that all information recorded here is true and accurate:

Signature of learner: _____ Date: _____

Optional:

Comments related to participation in a virtual or in-person meeting with CLASI or a local course organizer:



**Collaborative for Leadership in Ayres Sensory Integration (CLASI)
Certificate in Ayres Sensory Integration (CASI)**

Verification of Testing of Typically Developing Children on the EASI

Name: _____ Date: _____

I verify that I tested two typically developing children on all tests of the EASI, as follows:

Typically Developing Child #1 – Subject ID: _____

Age in years _____ months _____

Gender: _____ male _____ female _____ other

City and Country of child's residence _____

Typically Developing Child #2 – Subject ID: _____

Age in years _____ months _____

Gender: _____ male _____ female _____ other

City and Country of child's residence _____

I verify that I administered and scored all EASI tests (or noted any tests or items that could not be administered and scored) on the children described above and have entered the scores into the REDCap platform _____ (enter your initials)

Email address used for REDCap data entry: _____

I verify that a parent of each child tested signed a consent form _____ (initial)

Child Demographic Information

This is the information you will need to enter in the scoring system for the children you test as part of your certificate requirements. You only need to submit this information in the scoring platform; the form is provided here so that you know which information you will need to gather about the children you test.

The following information is used for sample description purposes only and will not be associated with any identifying information for the child being tested.

Child's gender:

Male
 Female
 Other

Child's race/ethnicity:

Native American
 Asian
 Black Non-Hispanic
 White Non-Hispanic
 Hispanic
 Other/Unknown

If other race/ethnicity categories are used in your country, please indicate the category that best describes this child:

Child's country of birth:

Child's country of residence:

Child's age on first day of testing:

_____ (years)

_____ (months)

Parent/guardian information (only identify one person here):

Mother
 Father
 Grandmother
 Grandfather
 Other

If other, please list:

Parent/guardian education (answer only for the one person checked above- either ask the parent or estimate).

Note: "College" refers to "University degree" and "post-college" refers to "post basic University degree". Please ask parent, if possible or if not, estimate

- Less than High School
 High School (or equivalent)
 College
 Post-College (graduate school, medical school, etc.)

Second parent/guardian information (indicate one other primary parent or guardian, if applicable):

- Mother
 Father
 Grandmother
 Grandfather
 Other

If other, please list:

Second parent/guardian education (answer only for the second person, checked above, if applicable). (Ask the parent or estimate)

- Less than High School
 High School or GED
 College
 Post-College (graduate school, medical school, etc.)

Which best describes the area in which the child lives: (Ask the parent or estimate)

- Urban area (includes places with 50,000 or more people)
 Urban cluster (includes places with 2,500 to 49,999 people)
 Includes countryside or a place with fewer than 2,500 people

Mark the box corresponding to socioeconomic level based on an estimate of the child's family income level: (Ask the parent or estimate)

- low range income
 middle-range income
 upper range income

Primary language used at home:

If more than one, please list languages:

PLEASE READ AND ANSWER THE FOLLOWING QUESTIONS CAREFULLY:

Does this child show signs of or has this child been diagnosed with developmental delays?

- Yes No

Has this child been identified as having sensory integration concerns by a SI trained occupational therapist (OT), physical therapist (PT) or speech/language pathologist (SLP) and/or has received therapy for this concern?

- Yes No

Has this child ever been diagnosed, referred for, or have received therapy services for any of the following, or similar conditions:

Yes No

- learning disorders
- autism or attention deficit hyperactivity disorder
- speech and language delays or regulatory issues
- hypotonia or developmental coordination disorder

List:

Does this child have any disabilities, such as:

Yes No

- neurological disorders, including traumatic brain injury
- cerebral palsy or spina bifida or spinal cord injuries or significant cognitive deficits (defined as IQ score less than 70 or diagnosed with a developmental delay or cognitive disability)
- visual or hearing impairments, or other conditions which include symptoms of sensory or motor impairments

List:

Does subject have siblings who meet any of the above conditions? If yes, list:

Yes No

List:

Tester Information

Profession of tester:

- Occupational therapist
 Physical therapist
 Speech and language therapist
 Psychologist
 Medical doctor

If you are a student in one of the above fields, check here:

Yes

Highest professional degree

- Bachelor's degree
 Master's degree
 Doctoral degree

Years of clinical experience in pediatrics:

- 0-2
 3-5
 5-9
 10+

Current location of residence of tester:

Parent Consent

Before you begin testing, ask parent/guardian to sign and date the consent form

Has consent form been signed and dated? Yes No N/A

Notes



**Collaborative for Leadership in Ayres Sensory Integration (CLASI)
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Parent Consent for Testing of Children for the CLASI CASI Program

As part of advanced training in Ayres Sensory Integration, professionals who are participating in the program are required to test children using a set of tests that measure sensory and motor functions. These tests include items which involve activities such as:

- Copying designs
- Imitating positions and actions
- Balancing
- Tracking a moving pencil with the eyes
- Demonstrating ideas about possible actions (these items are videotaped for scoring purposes only and after scoring the video clip is deleted)
- Folding, tearing, and building tasks with child sized furniture and objects
- Indicating where light touch is applied to the hands and arms
- Matching shapes to similar shapes
- Being turned on a rotation board
- Indicating a reaction to touch, sound, smells, and motion

I, (name of parent): _____ Date: _____

give permission for my child (name of child): _____

to participate in these tests. I understand that:

- If my child is uncomfortable during any of the tests or test items, those items will be discontinued, and I will be notified of my child's response.
- The tester agrees to follow established guidelines to ensure safety, cleanliness, and illness prevention during the testing.
- The tester will not store or share any identifying information about my child (e.g., name, parent's name, address, phone number, or any diagnoses, if applicable).
- My child's de-identified test scores may be discussed in the program to assist participants in mastering test administration, scoring and interpretation.
- My child's de-identified test scores will be stored in a confidential and secure data base and may be accessed for research purposes.

Please list any precautions, allergies, or other information the tester should know about your child prior to or during testing:

I have read the description of the tests and the conditions of testing, have been offered a copy of this form, and agree that my child may be tested for the purpose of this program:

Signature of parent:

Date:



**Collaborative for Leadership in Ayres Sensory Integration (CLASI)
Certificate in Ayres Sensory Integration (CASI)**

**SELECTION CRITERIA
FOR CHILDREN TESTED AND CASE PREPARATION**

1. Required: Administer the EASI on 2 Typically Developing Children

- Administer and score all tests of the EASI on 2 typically developing children who are between 3 and 12 years of age.
- Follow ethics guidelines provided by course instructor.
- Provide EASI raw scores to the EASI lead for the country where the children are tested. Details to be provided during Module 3.
- Bring scores to Module 6.

2. Administer the EASI (or SIPT) and the SPM on one child with suspected difficulties:

- Age 3-12 years (if using the EASI; 4-9 years if using the SIPT).
- Child has some challenges in participation (e.g. trouble playing with peers; difficulty mastering skills such as dressing or bathing; struggling at school, etc.).
- Suspected problems with sensory integration-some indication that the participation challenges could be related to problems in sensory integration; diagnoses such as autism, attention deficit disorder, speech and language delays or learning disabilities are often good candidates.
- No other complicating diagnosis, such as cerebral palsy, Down syndrome, visual impairment, etc.
- No or little intervention, especially intervention that has used an Ayres Sensory Integration approach.
- Tester believes that test scores are valid and reliable.
- Prepare short video clip that shows the sensory, motor or praxis challenges.
- On this child (or on another child who has full assessment data) prepare a video segment of intervention applying the ASI approach.
- Rate the intervention segment on the Ayres Sensory Integration Fidelity Measure.

NOTE: Participants may bring additional cases to Module 6 including children for whom standardized testing is not feasible e.g. children under age 3 or children with challenges that make it impossible for them to comply with standardized test procedures. We will discuss the application of the sensory integration concepts and intervention planning to these cases as time allows.



Collaborative for Leadership in Ayres Sensory Integration (CLASI) Certificate in Ayres Sensory Integration (CASI)

Video Assignment

- Using the ASI Fidelity Measure provided in Module 5, complete a self-assessment of your use of ASI process elements during your session.
- The session should strive to meet the structural elements for fidelity including a complete assessment (including the SIPT or the EASI) and provided in an environment with adequate sensory motor affordances.
NOTE: If you do not have access to a clinic setting, you can use another setting, as long as you are providing ASI intervention.
- Obtain the signed permission form for videotaping and viewing the video for educational purposes (attached below). This form is required for the final CLASI CASI application.
- Bring the video and the rating of the intervention to M6.
- During M6, the instructor will review the case studies, including intervention. This is an excellent opportunity to gain feedback on your case.
- There will not be enough time to review every participant's case; for those selected, we will have time to review approximately 5-10 minutes of the video, so preparing an edited version is preferred. In some cases, we may wish to scan the whole session to view the flow of therapy, so if you do edit, please bring the unedited version as well.



**Collaborative for Leadership in Ayres Sensory Integration (CLASI)
Certificate in ASI: CHECKLIST**

CASI Requirement	Date Completed	Comments/Questions
Module 1		
Module 2		
Practice with video clips and course notebook		
Attend CLASI webinar or local meeting, if possible		
Module 3		
Practice with adults and typically developing children		
Selection and testing of two typically developing children (on EASI) and on one child with suspected problems in sensory integration*		
Enter EASI Test Scores		
Testing Verification Form		
Module 4		
TASC		
Module 5		
Complete Case Summary Form		
DASC process		
Attend CLASI webinar or local meeting, if possible		
Revise Case Summary		
Prepare intervention video		
Rate video using ASIFM		
Module 6-bring at least Case Summary, video of intervention, and rating of video on ASIFM		

*during pandemic, CLASI will provide a case for interpretation if participant is unable to test a child



APPLICATION:
Collaborative for Leadership in Ayres Sensory Integration (CLASI)
Certificate in Ayres Sensory Integration (CASI)

Name (as you would like it to appear on your certificate): _____

Email: _____ Phone: _____

Please check the appropriate boxes and attach the required documentation.
 Please submit application form and all attachments to clasicasiapplication@gmail.com

ONLINE DIRECTORY

Would you like your name and email to be listed on the CLASI Online Directory?

- Yes, please include my name and email on the online directory.
 If yes, please include what country you would like set as your location. _____
- No, please do not include me on the online directory.

PROFESSIONAL LICENSE VERIFICATION

Please attach the following.

- Current active occupational therapy, physical therapy or speech and language pathology license or other documentation which verifies ability to practice in one of these fields in your country.

ATTENDANCE

MODULE	Please attach certificates of completion for each module.
MODULE 1	<input type="checkbox"/> asynchronous virtual <input type="checkbox"/> onsite If onsite, date and location of M1:
MODULE 2	<input type="checkbox"/> asynchronous virtual
MODULE 3	<input type="checkbox"/> onsite <input type="checkbox"/> synchronous virtual If onsite, date and location of M3:
MODULE 4	<input type="checkbox"/> asynchronous virtual
MODULE 5	<input type="checkbox"/> asynchronous virtual
MODULE 6	<input type="checkbox"/> onsite <input type="checkbox"/> synchronous virtual If onsite, date and location of M6:

ASSIGNMENTS

Please attach the following assignments.

- Test Administration and Scoring Check (TASC)
- Data Analysis and Synthesis Test Check (DASC)
- Testing Verification Form
- Case Summary
- ASI Fidelity Measure Rating Form
- Video Permission Form

Please submit application form and all attachments to clasicasiapplication@gmail.com