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Sensory Processing Assessment of Responses S.P.A.R

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Introduction

Our bodies are wired with a nervous system that has receptors. The receptors pick up the stimuli sensations and transport it to the brain for decoding and comprehension. The time it takes between the stimuli's initial sensation and the body's response to that sensation is called sensory processing time. In cases that the body is receiving too much sensations at one time, the individual may not be able to organize and decode the information. This frequently causes a heightened level of anxiety and frustration, which may lead to avoidance or a tantrum. When stimuli is decoded as a pleasurable experience, it typically calms and/or soothes the individual.

The Sensory Processing Assessment of Responses (SPAR) is a non-standardized screening tool designed to gather information that will support the active and successful engagement in structured physical activity environments (i.e.: physical education, community-based recreation or sport). The tool's purpose is to provide the assessor with information that will foster reflective analysis and further collaboration with stakeholders (classroom teacher, occupational therapist, guidance counselor, school psychologist, parent/guardian, the individual, etc.); that will lead to planning and implementation for greater and more successful active participation in the community of education or sport.

The SPAR can be used to assess any age level beyond 3 years old. It assesses individual responses to stimuli through the seven sensory systems and oral processing (combination of tactile and proprioception). The seven systems include: auditory, interoception, olfactory, proprioception, tactile, vestibular, and visual.

Disclaimer

The tool does not take the place of an occupational therapist, psychologist, or any other professional. It is not to be used to diagnosis individuals with a condition or qualify individuals with special education (or related) services. The tool is a supplement to support becoming more knowledgeable of an individual's characteristics to guide towards creating an environment that is more welcoming and flexible to those individual attributes.

System	Definition
Tactile	Processing sensations related to pressure, temperature, pain, and pleasure, providing a calming or distracted behavioral response, impacting performance and the ability to receive instruction (i.e.: touch).
Auditory	Receptors in the ear that process sounds (levels, distances), rhythms, beats, and frequencies, providing a calming or distracted behavioral response, impacting the ability to receive instruction (i.e.: hearing).
Visual	Receptors in the eyes that process visual sensations of colors, shape, depth, size, etc., providing a varying level of interesting or distractible behaviors, impacting performance (i.e.: sight).
Vestibular	Processing sensations related to movement, balance, orientation in space, and the body position of the head as the center of gravity changes (i.e.: body in movement).
Proprioceptive	Processing the input from the muscles and joints related to the body in space, weight pressure, movement and the changes of position of the body (i.e.: body in space).
Olfactory	Sensations associated with receptors in the nose that detect odors and scents, providing a calming or distracted behavioral response, impacting the ability to receive instruction (i.e.: smell).
Oral	Sensations associated with the mouth that leads to oral fixation or defensiveness, resulting in behavioral responses that impact performance and the ability to receive instruction. It combines tactile and proprioceptive sensations.
Interoception	Processing the sensations related to the physiological/physical state of the body and how it helps understand the impact internal sensations have on the emotional state and performance (i.e.: inside the body).



Glossary of Terms

Term	Definition
Sensory System	A part of the nervous system responsible for processing sensory information. The nervous system is triggered by input that is relayed through neural pathways to the brain for processing. The brain's perception of the input determines how the individual responds. <ul style="list-style-type: none">• Tactile, Auditory, Visual, Vestibular, Proprioceptive, Olfactory, Gustatory, Interoception, Oral (combines tactile and proprioception)
Stimulus (Stimuli)	The input that evokes a specific functional reaction.
Avoids	The individual perceives the input as non-desirable and responds by limiting further input.
Seeks Out	The individual perceives the input as desirable and responds by repeating the input
No Response	The individual accepts the input, but does not display a response to the input

Rationale

“Sensory processing involves reception of a physical stimulus, transduction of the stimulus into a neural impulse, and perception, or, the conscious experience of sensation, which is the foundation to learning, perception, and action” (Ahn, Miller, Milberger, & McIntosh, 2004, p. 287). According to Dunn (2007), “Professionals in education and families need to have a working knowledge about sensory processing so that they can interpret children’s behaviors from a sensory processing perspective” (p. 84). She explains that sensory processing occurs across all age groups and that a study conducted with more than a thousand participants of children with and without disabilities indicates there is a relationship between a person’s nervous system operations and self-regulations strategies. The researchers of the study concluded that “individuals with disabilities have both distinctive and more intense patterns of sensory processing than do their peers without disabilities” (p. 85). Specifically, the physical education environment can be a very stimulating setting that can conflict with the processing of sensory information, causing frustration and uneasiness (Healy, Msetfi, & Gallagher, 2013, p. 225). The Sensory Processing Assessment of Responses (SPAR) is a solution to the recommendation of Healy, Msetfi, & Gallagher (2013), that teachers should consider the sensory processing difficulties that students experience and the teachers should plan and implement supports into their physical education classes. The SPAR guides teachers towards gaining the knowledge through collection of information about the individuals in order to decrease the factors that impede the participation of students experiencing challenges organizing the sensory input.

Given that in the Fall of 2018, there were 50.7 million elementary and secondary students enrolled in the public school systems throughout the United States of America (Institute of Education Services, 2018) and an estimated 130, 400 occupational therapists (OT) in the public schools in 2016 (Bureau of Labor Statistics, June 17, 2019) with each OT averaging 30 – 40 students on their caseload (Oregon State Legislature, 2017); a maximum of 6.5 million (13 percent) students can be serviced in the public school system. This lends to a potentially large number of students whose needs aren’t being recognized or supported. The SPAR was developed to provide stakeholders servicing students with a guide that will help lead to an enhanced understanding for the individuals who are challenged to communicate how their bodies are responding to various sensory stimuli. The goal is to foster collaborative communication between all team members that serve the individual through the reflection and analysis collected.



Directions

When to Assess:

The SPAR will be conducted to gain more information about an individual who is experiencing difficulties in the environment. The tool can be used as a yearly screening to gain more knowledge about each individual in the group.

Assessing Methods:

The assessor can interview the parents/guardians, interview the individual, and/or observe the individual in the environment.

How to Use:

Under each sensory system category lists stimuli or behavior descriptors with boxes next to it. There are three options next to the stimuli descriptors (Avoids (A), No Response (N), Seeks out (S)). Check the box that is most often observed. There are two options next to the behavioral response descriptors (Yes (Y) and No). Check the box that is most often observed.

At the bottom of each sensory system category is a scale for levels of intensity responses to stimuli. This is an over-all zero to four scale of the intensity of the responses to the stimuli. Following the completion of each category, the assessor will consider the individual's intensity response level for that sensory system. The scale is not recording negative or positive behaviors. The scale assesses the individual's heightened intensity level (i.e.: excitement through running and clapping or frustration through crying).

Levels of Intensity Responses to Stimuli (not identifying negative or positive behaviors)

0	No Response	There is consistently no response
1	Very Weak Response	There is a slight response, noticed when the assessor specifically looks for it
2	Weak Responses	There is a clear and noticeable response that doesn't disrupt participation
3	Strong Response	The response is extravagant, but occurs for 30 seconds or less
4	Overly Strong Response	The response is extravagant and occurs for more than 30 seconds

Analyzing and Reflecting on the Result:

Following the collection of the data, it is recommended for the assessor to share the data with other stakeholders for analysis. If in a school setting this would include the physical education teacher, classroom teacher, special education teacher, occupational therapist, parents/guardians, the individual, and other educational team members as appropriate. The educational team should analysis the data and any other data sources available. The team should then collaborate on strategies to support the individual's ability to monitor, control, or redirect their responses to the stimuli to obtain a heightened level of focus and display of desired behaviors.

*If this is used in a community environment, the stakeholders will vary, but the process stays the same.



References

- Ahn, R. R., Miller, L. J., Milberger, S., & McIntosh, D. N. (2004). Prevalence of parents' perceptions of sensory processing disorder among kindergarten children. *American Journal of Occupational Therapy*, 58, 287 – 293.
- Bureau of Labor Statistics, U.S. Department of Labor (2019, June 17). *Occupational Outlook Handbook*, Occupational Therapists, Retrieved from <https://www.bls.gov/ooh/healthcare/occupational-therapists.htm> (visited July 16, 2019).
- Dunn, W. (2007). Supporting children to participate successfully in everyday life by using sensory processing knowledge. *Infants & Young Children*, 20(2), 84 – 101.
- Healy, S., Msetfi, R., & Gallagher, S. (2013). Happy and a bit nervous: The experiences of children with autism in physical education. *British Journal of Learning Disabilities*, 41, 222 – 228.
- Institute of Education Services, The National Center for Education Statistics (NCES) (2018). *Fast Facts*, Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=372> (visited July 16, 2019).
- Oregon State Legislature (2017). *Recommendations for Caseload/Workload for Therapists in School-Based Practice*, Retrieved from <https://olis.leg.state.or.us/liz/2017R1/Downloads/CommitteeMeetingDocument/106242> (visited July 16, 2019)



Student's Name: _____ Date: _____

Age: _____ Grade: _____ Assessor: _____



Directions: Check the appropriate box for each stimuli or behavioral response under the eight sensory systems. The represented letters stand for: **A - Avoids, N - No Response, SA - Seeks out/Accepts Response, Y - it is observed, No - Not observed.**

***Complete the form, share with the educational team (include an Occupational Therapist), and discuss supportive strategies**

Tactile Processing					
A	N	SA	Stimuli		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing in line or close to people		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Engaging in messy play (sand, mud, dirt)		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing on textured surfaces /floors/toys		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Holds hands, high fives, or engages in other types of appropriate touching of people		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Various textured equipment (smooth, bumpy, rough, soft, hard, etc.)		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Weight bearing tasks (body weight exercises, carrying objects, standing, or sitting)		
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Auditory Processing					
A	N	SA	Stimuli		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Environmental sounds that typically aren't noticed or don't bother others		
Y	No	Behavioral Response			
<input type="checkbox"/>	<input type="checkbox"/>	Runs away, cries, and/or covers ears with loud or unexpected sounds			
<input type="checkbox"/>	<input type="checkbox"/>	Turns attention towards sounds of interest			
<input type="checkbox"/>	<input type="checkbox"/>	Makes noise for the sake of hearing noise: vocalizing, hand banging			
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Visual Processing					
A	N	SA	Stimuli		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fluorescent or bright lights		
Y	No	Behavioral Response			
<input type="checkbox"/>	<input type="checkbox"/>	Judging spatial relationships in the environment: bumps into objects			
<input type="checkbox"/>	<input type="checkbox"/>	Easily distracted visually by decorations, toys, windows, movement			
<input type="checkbox"/>	<input type="checkbox"/>	Focuses on small details or patterns, rather than the whole image			
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Proprioception Processing					
A	N	SA	Stimuli		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aggressive play with peers, toys, and self (Crashes or bumps)		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Placing or having body placed in various positions		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Static and dynamic balancing activities		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heavy work (pulling, pushing, lifting, and other force production activities)		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Being upside down (summersault, gymnastic or yoga movements)		
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Vestibular Processing					
A	N	SA	Stimuli		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Moves in a repetitive direction or pattern		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Feet leaving the ground		
Y	No	Behavioral Response			
<input type="checkbox"/>	<input type="checkbox"/>	Self-stimulatory behaviors: hand flapping, spinning, rocking, etc.			
<input type="checkbox"/>	<input type="checkbox"/>	Loses balance easily and may appear clumsy			
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Oral Processing					
A	N	SA	Stimuli		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sucks on or bites wrists, hands, or fingers		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Puts inedible objects into mouth		
Y	No	Behavioral Response			
<input type="checkbox"/>	<input type="checkbox"/>	Excessive drooling			
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Olfactory Processing					
A	N	SA	Stimuli		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Body odors or body sprays		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Smells that do not bother or are not noticed by others		
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Interoception Processing					
Y	No	Stimuli			
<input type="checkbox"/>	<input type="checkbox"/>	Frequent internal discomfort			
<input type="checkbox"/>	<input type="checkbox"/>	Displays severe and several mood swings throughout the day			
<input type="checkbox"/>	<input type="checkbox"/>	Frequently in need of using the toilet			
<input type="checkbox"/>	<input type="checkbox"/>	Limited or lacks recognition for the need to use the toilet			
Level of Intensity Response to Stimuli		0	1	2	3 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Levels of Intensity Response to Stimuli		
(Not identifying negative or positive behaviors)		
0	No Response	There is consistently no response
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Notes: _____

