Sensory Awareness in the Classroom: A Workshop for Preschool Teachers on Sensory Processing Disorder (SPD)

A graduate project submitted in partial fulfillment of the requirements
For the degree of Master of Arts in Education
Educational Psychology

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PREFACE

The journey to developing this thesis project began when I met David, a 4 year-old boy in my class. David’s behaviors sparked my interest in sensory processing patterns particularly due to his unusual need for strong impact on his body; his challenge to join peers in play groups; and his lack of ability to calm himself down. These behaviors seemed unrelated to his otherwise bright, loving, and sensitive disposition. As a preschool teacher, it was definitely outside of the realm of my expertise, yet I found myself intrigued to investigate the nature of David’s behaviors because I was determined to help him fit into my class.

The exploration of sensory processing patterns became the focus of many of my school related assignments for the MA in Early Childhood Education program, at California State University, Northridge. The more information I acquired, the more noticeable sensory related behaviors became. I soon realized that this phenomenon is related to multiple sensory systems and is more common among young children than I realized.

As part of my research, I was introduced by Dr. Rothstein-Fisch, my professor, to the Sensory Processing Disorder (SPD) Foundation, the leading resource for research, therapy, and support for children with sensory challenges. I was also fortunate to be introduced to Marla Roth-Fisch, the author of Sensitive Sam, and the Vice President of the SPD foundation. Subsequently, I attended a SPD conference presenting the leading researcher, Dr. Lucy Jane Miller, and the author of Out-of-Synch Child, Carol Kranowitz, an advocate for children with sensory abnormalities. The urge to share the valuable information gave birth to this thesis project, the teacher’s workshop on Sensory
*Awareness in the Classroom.* Indeed, the more I noticed the struggle of children with atypical sensory patterns to fit in a ‘regular’ classroom; and the more I witnessed the helplessness and confusion of preschool teachers in the presence of these behaviors – the more I was convinced that this valuable information MUST become available to all teachers!
DEDICATION

This thesis project is dedicated to my loving husband, Nahi and our three children, Inbal, Ophir, and Leor. Thank you for supporting me throughout this phenomenal journey. Your love and faith in me were my source of strength.

To my mom, Masha, my brother Gil, and sisters Shuly, Sharon and Chen for envisioning this accomplishment way before I did.

And mostly, to the young children who motivate and teach me something new every day, and to the children with SPD and their families – you are the heroes and my true inspiration!
ACKNOWLEDGEMENTS

The completion of this thesis project would not have been possible without the support of essential people. First, I would like to thank my husband, Nahi, who practically single-parented our 3 children during this journey. I also am grateful to my children, Inbal, Ophir, and Leor, who became experts on SPD as they were listening to endless rehearsals of presentation speeches and editing. Thank you for supporting me and waiting patiently for me to conquer this challenge.

Additionally, I would like to thank the fabulous people at the MA program who assisted me throughout the years of learning. Particularly, Dr. Carrie Rothstein-Fisch for identifying the spark I had for learning and investigating SPD. Thank you for taking me ‘under your wings’, for guiding and supporting me as I was taking my toddler steps on the path of learning; for believing in my ability to share knowledge and guide others on their way; and for continuous reassurance of my capabilities. You are truly my anchor!

Endless thanks also to Sloane Lefkowitz Burt for repeated editing and countless revisions of my work. Thank you for your guidance throughout the thesis project writing, your admirable patience, and for supporting me on the day of my presentation. In addition, I would like to thank Dr. Joannie Busillo-Aguayo for her guidance and support. Thank you for sharing with me your expertise with sensory challenges and special kids.

I also would like to express my deep gratitude to Marla Roth-Fisch for sharing her personal story; for proving me with valuable resources and books about SPD; for arranging my attendance at the SPD conference; and for the support and encouragement throughout this journey. The story of Sensitive Sam was my first introduction to SPD.
Finally, I would like to thank Renee Hutching, my director, and the entire staff at *Gan Israel Preschool and Kindergarten*. Thank you for trusting and allowing me to share my passion, knowledge and expertise with you.
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ABSTRACT

Sensory Awareness in the Classroom: An Early Childhood Teacher’s Workshop on Sensory Processing Disorder (SPD)

By

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Master of Arts in Education

Educational Psychology

This thesis project explores the concept of atypical sensory patterns as displayed in unusual behaviors of young children, particularly, in the case of Sensory Processing Disorder (SPD), defined as the impairments in the neurological process of recognizing, modulating, interpreting, and responding to sensory stimulus (Miller, Coll, & Schoen, 2007). The prevalence of SPD in the U.S child population is 5%-10% (Ahn, Miller, Milberger, & McIntosh, 2004). The current thesis project explores the development, implementation, and evaluation of a 2 hour workshop for early childhood educators in their understanding of SPD and related sensory challenges. Twenty first-semester Early Childhood Education graduate students attended a workshop and evaluated its content and structural components. Overall evaluations indicated that 85% of participants reported that the workshop’s information was ‘very useful’ identifying the content, detailed classroom examples (and pictures), and the resources provided to be the strength of the presentation. The implications for research and continued professional development for early childhood professionals is discussed.
CHAPTER ONE

INTRODUCTION

David is a 4 year old student in a pre-K class. He is excited about learning and especially loves science where he can demonstrate his knowledge and understanding. Despite his respectful behavior and his high cognitive abilities, David has trouble fitting in with his classmates. He is frequently stepping on his friends while making his way across the room, bumping into his peers during outdoor play, and moving continuously during learning centers. He also avoids some activities, such as music and art, and tends to retreat to a quiet corner where he can lay down between two pillows. Additionally, David seems not to respond to injuries the way his peers do. Specifically, minor or even stronger injuries seem to only stop him briefly, responding with a ‘wow’ and moving on to his next activity. As a result of all of these behaviors the other children in David’s class often reject him when he tries to play with them and identify him as an ‘outsider,’ ‘trouble maker’ and the one who tends to hurt his peers.

The teacher in the class is trying to support David with his challenges by facilitating positive social interactions and making sure that classroom behavior expectations are clear. Despite the tools given to him and his sincere efforts, David continuously seems to be unable to control his body. It is almost as if his body has a ‘mind of its own,’ disconnected from him completely. What is happening to David? How is it possible that he cannot calm himself down or control himself?
**Introduction**

Many preschool teachers can be faced with similar challenging behaviors in their typical classrooms. These behaviors can be mistakenly interpreted as defiance or lack of discipline if are not properly understood and carefully examined. Without systematic observation methods, knowledge of possible causes, and tools to help, it is likely that teacher’s will not know how to support these children and they will be marginalized by their classmates. Indeed, behaviors such as David’s, characterized by the inability to calm the body down (regulate) are often displayed in children with Sensory Processing Disorder (SPD). Sensory processing disorders (SPD) are impairments in the neurological process of recognizing, modulating, interpreting, and responding to sensory stimulus, or “the inability to use information received through the senses in order to function smoothly in daily life” (Kranowitz, 2005, p. 9; Miller, Coll, & Schoen, 2007). These impairments impact children’s physical growth, social-emotional development, and academic performance (Miller, et al., 2007).

Not only can SPD hinder a child’s development, behavior in school, and academic performance, but other childhood disorders in which symptoms of SPD are also present (co-morbid) are equally likely to produce the same behaviors and challenges. Specifically, Autism Spectrum Disorder (ASD), and Attention Deficit/Hyperactivity Disorder (ADHD) are also likely to be characterized by atypical sensory processing patters (Ahn, Miller, Milberger, & McIntosh, 2004; Cheung & Siu, 2009; Dunn, 2007). In fact, prevalence of SPD alone was found to be 5%-10% of U.S. child population, but with 40-88% in co-morbidity of symptoms with ASD and ADHD (Ahn et al., 2004; Baranek, David, Poe, Stone, & Watson, 2006; Cheung & Siu, 2009).
Statement of Problem

Despite significant percentages of children with developmental delays, childhood disorders, and other sensory related challenges, preschool teacher’s training in special education is limited. In fact, the required certification for preschool teachers typically includes courses such as, introduction to child development, early childhood philosophies, curricula, health and safety, and home/school relations (Piercecollege.com). Programs for children with special needs are described as “designed for students interested in specializing in or working with children with special needs. Instruction focuses on accommodating and adapting the physical environment, instructional strategies and curriculum to meet the needs of differently abled children preschool aged and younger, and their families” (Pierce College, 2012). In other words, teachers who plan to work with typically developing children will not necessarily choose these courses and therefore will have very restricted ability to recognize behaviors associated with abnormal sensory processing and meeting the needs of these children in their classrooms.

Training early childhood teachers in special needs must match the pervasiveness of special children in the population. Therefore, educating and providing teachers with tools to understand and respond to behavior challenges such as displayed by abnormal sensory patterns must be required. Knowledge of SPD and other sensory dysfunctions as well as the tools to meet the sensory needs of preschool students can increase the success of inclusion for these children in typical preschool settings.

Purpose of Project

The purpose of this thesis project is hence to create a workshop that can provide early childhood educators with information on various topics related to SPD including:
the body’s sensory processing mechanism; behaviors/ red flags of atypical sensory processing and SPD; tools to create an inclusive classroom for children with SPD; and early intervention/therapy resources for children who were diagnosed. The teachers’ training workshop consists of a 120 minutes Power Point presentation. The goal of this thesis project is to provide early childhood educators with information about SPD, techniques for identifying red flags related to atypical sensory processing, as well as equip them with methods for meeting the sensory needs of children in a classroom setting. This can increase the success of children with SPD in typical settings and allow them to be part of regular preschool classroom.

Significance of the Project

The developmental trajectories of children are the main focus of early childhood centers. The goal of such programs is to “offer children environments and experiences that encourage active, playful exploration and experimentation” (California Department of Education, 2008, p. xi). Typically developing children hence are expected to learn specific competencies at particular stages with appropriate support (California Department of Education, 2008). It is then when the signs of atypical sensory patterns start to distinguish children with SPD (and related disorders) from their peers and the classroom environment and learning activities tend not to fit their needs.

For example, typically developing children around 48 months of age are expected, according to the California Preschool Learning Foundations (California Department of Education, 2008), to interact with their peers and actively and intentionally cooperate with one another. Activities such as “invite several children to help dig a hole in the sandbox” or “suggest taking turns riding the tricycle” (California Department of
Education, 2008, p. 12) are among the typical interactions with peers. Children with SPD will be discouraged from such activities due to their abnormal reactions to sensory stimulation. Specifically, children with tactile defensiveness, as listed on the list of characteristics of tactile dysfunction (Koomar, Kranowitz, Szklut, Blazer-Martin, Haber & Sava, 2007) are likely to avoid sand play completely as a result of their over-sensitivity to touch “avoid messy play, such as sand, fingerpaint, paste, glue, mud, and clay...” (p. 36). Similarly, children with vestibular dysfunction will “dislike playground activities, such as swinging, spinning, and sliding” (Koomar, Kranowitz, Szklut, Blazer-Martin, Haber & Sava, 2007, p. 39) and therefore will not display the expected developmental milestone of riding a tricycle with or without peers. Children with such challenges are likely to be resistant to outside play and behave negatively in order to be removed from that environment. The teacher in these cases might to notice the negative behavior without necessarily recognizing its cause.

Acknowledging the need for accommodations and adaptations, the California Department of Education (2008) states that “preschool programs must work to provide appropriate conditions for learning and individually assist each child to move along a pathway of healthy learning and development” (p. xi). Children with SPD and related sensory dysfunctions should indeed be provided with an appropriate environment for learning. Teachers therefore must know how to identify abnormal sensory patterns and interpret related behaviors. Although the goal is NOT to diagnose, it is important for teachers to be able to recognize the specific sensory system challenges and match particular activities to reduce or alleviate the stress associated with an unpleasant sensory
stimulus or the need to provide an additional stimulation. Such methods are provided in this thesis project workshop.

**Terminology**

This section presents terminology used in this thesis project as they are related to the discussions of SPD. The list is organized in alphabetical order:

*Attention Deficit/Hyperactivity Disorder* – An umbrella term for the neurobehavioral disorder. Children with ADHD have trouble paying attention, controlling impulsive behaviors and sometimes are overly active (Centers for Disease Control and Prevention, 2012).

*Autism Spectrum Disorders* - A group of developmental disabilities characterized by “significant social, communication and behavioral challenges” (Centers for Disease Control and Prevention, 2012).

*Proprioceptive system* – the body system that gives the sense of position. Muscles and joints provide information about where each part of the body is and where to move (Kranowitz, 2005).

*Self-regulation* – The ability to manage one’s attention, emotion, feelings, and impulses (California Department of Education, 2008).

*Sensory Processing Disorder* - Dysfunction of the brain’s ability to interpret, organize and react to sensory stimulation (Kranowitz, 2005).

*Tactile defensiveness* – Characterized by over-responsiveness to touch. The child is likely to respond negatively to touch or even to the thought of being touched (Kranowitz, 2005).

*Vestibular system* - The body system in charge of balance and smooth movement. Receptors are located in the inner ear (Kranowitz, 2005).
Preview of the Thesis Project

The next chapters will provide information about Sensory Processing Disorder (SPD) and the workshop developed in order to increase the awareness of teachers to the disorder. Chapter Two provides relevant literature of SPD, its characteristics and types; prevalence and co-morbidity; and treatment methods. This chapter also discusses the advantages, as demonstrated in the literature, of training teachers in special needs.

Chapter Three provides detailed information of the teacher’s workshop on SPD and the instruments formulated to evaluate its effectiveness. Specifically, this chapter describes the methodology and instrumentation used to examine the usefulness of the workshop. Chapter Four presents the findings from the training session. Chapter Five will provide a discussion of the findings in relations to the effectiveness of the teacher’s workshop, potential future modifications, and limitations of this current project.
CHAPTER TWO

LITERATURE REVIEW

“Mom and dad talk late at night. ‘Poor sensitive Sam.’ ‘Something’s not right.’ I’m always upset. I’m always mad. Does this mean I’m really bad? The easiest things are tough for me, day and night. I don’t know what to do to make everything all right”

(Roth-Fisch, 2008, pp. 3-5.)

Introduction

Sam’s story, as described in Roth-Fisch’s (2008) children’s book is a representative description of a child’s experience with Sensory Processing Disorder (SPD). Challenges with routine activities, social interactions, and academic performance are among the difficulties associated with SPD (Ben-Sasson, Carter, & Briggs-Gowan, 2009). Educators, healthcare professionals, and family members are continuously challenged by this growing phenomenon and are in need of additional resources, research, and data to help provide appropriate tools, treatment and environments for children with SPD (Ben-Sasson et al., 2009)

The literature review in this chapter will describe Sensory Processing Disorder, its types and prevalence among young children. The relationship between sensory disorders, other childhood disorders and developmental delays is explained as well as the associated behaviors typically displayed by children in the preschool setting. Specific and effective intervention methods are presented alongside available treatment options. The critical role of early childhood teachers/educators is described along with how they can provide effective inclusion environments and activities for SPD children. As will be demonstrated
in the literature, education and training for teachers that provides knowledge of a disorder along with effective tools for inclusion has been successful as will be showcased in this chapter. The goal of this literature review is to demonstrate the positive relationship between training educators with knowledge of SPD and successful inclusion outcomes, hence explaining the need for the workshop created for this project.

What is Sensory Processing Disorder?

Sensory processing is a neurological function of filtering, storing, and reacting to stimuli from multiple sources (Ben-Sasson et al., 2009; Howe, Brittain, & McCathren, 2004). A productive organization of sensory input is essential for successful adaptive responses and thus to meaningful daily engagements (Engel-Yeger, 2008). Sensory processing patterns affect the everyday experiences of children and consequently impact their physical growth, social-emotional development, and academic performance (Miller, Coll, & Schoen, 2007). Sensory processing disorders (SPD) therefore, are impairments in that neurological process of recognizing, modulating, interpreting, and responding to sensory stimulus (Miller et al., 2007). SPD can “negatively affect development and functional abilities in behavioral, emotional, motoric, and cognitive domains” (Ahn, Miller, Milberger, & McIntosh, 2004, p. 287).

Research indicates that at least 5-10% of children without other known disabilities are affected by SPD (Ahn et al., 2004; Engel-Yeger, 2008; Miller et al., 2007). The prevalence of sensory processing disorder among clinical populations (i.e., children with developmental delay) is estimated to be as high as 40-88% (Ahn et al., 2004). In fact, SPD is often confounded and confused with other childhood disabilities and developmental delays such as Autism Spectrum Disorder (ASD) and Attention Deficit
Hyperactivity Disorder (ADHD) as these children exhibit significantly more abnormal sensory patterns than children without disabilities (Cheung & Siu, 2009).

Sensory Processing Disorder has not yet been included in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) of the American Psychiatric Association as an independent disorder. SPD researchers, nonetheless, established categories and subtypes of SPD to ensure consistent terminology, accurate diagnosis and correct treatment (Kranowitz, 2005). The categories and subtypes of SPD will be discussed later in the chapter.

**Sensory Patterns**

Dunn (2007) portrays four basic patterns of sensory processing: sensation seeking, sensation avoiding, sensory sensitivity, and low registration (see Figure 2.1). These patterns are based on two variables: threshold and self-regulation. Dunn (2007) suggested a relationship between the nervous system functions and self-regulation strategies. In other words, a “threshold,” which is the sufficient amount of input to activate the nervous system, is described as a continuum where low threshold means little sensory stimulus is needed for system activation and high threshold requires stronger stimuli for activation. An individual with high threshold, therefore, is likely to “miss stimuli that others notice easily” (Dunn, 2007, p. 85). The range of thresholds for noticing and responding to stimuli is not only unique to each person, but might also be different within the same individual for each type of sensory input (Dunn, 2007). For example, one can have a low threshold for sound (notices noises easily) and a high threshold for touch.

The second component in Dunn’s (2007) model is self-regulation. Strategies for self-regulation, ranging from passive to active, are the behaviors and techniques used to
cope with sensory stimulation (Dunn, 2007). A passive strategy is described as not taking action despite being uncomfortable (i.e., staying in a noisy area despite being irritable by the noise) (Dunn, 2007). An active strategy, conversely, is characterized by doing “things to control the amount and type of input that is available…” (Dunn, 2007, p. 85). For example, a child might leave a noisy room or a crowded play corner to remove himself from the unpleasant stimulus. The interaction between a person’s threshold and self-regulation, as demonstrated in the figure below, creates the four basic patterns in Dunn’s model: (a) sensation seeking; (b) sensation avoiding; (c) sensory sensitivity; and (d) low registration (Dunn, 2007).

**Figure 2.1. Dunn’s Model of Sensory Processing**

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<th>Threshold</th>
<th>Self-regulation strategies</th>
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<tr>
<td></td>
<td>Passive</td>
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<tr>
<td>High</td>
<td>Low Registration</td>
</tr>
<tr>
<td>Low</td>
<td>Sensory Sensitivity</td>
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**Sensation seeking.** This pattern represents high threshold and an active self-regulation strategy. Children with this pattern are likely to enjoy sensations in their daily lives. Due to their high threshold for sensation, these individuals are less likely to be over-stimulated by sensory input and are therefore seeking sensory experiences to satisfy their need (Dunn, 2007). To further explain, “Children interested in tactile input will touch everything, as if they are mapping the world around them with their hands and
skin” (Dunn, 2007, p. 86). Similarly, children with auditory sensory seeking pattern would be likely to make sounds.

**Sensation avoiding.** A low threshold and active self-regulation strategy creates a sensation avoiding pattern. Individuals with this pattern tend to withdraw from situations very fast. The low threshold is satisfied rapidly and more input can lead to an overstimulation, hence the quick withdrawal. This behavior serves to control the amount of input to avoid being overwhelmed. Children, for example, having this pattern are likely to leave a crowded room to avoid too much touch or noise. Similarly, ‘picky eaters’ are also likely to have sensation avoiding patterns as they eliminate the undesired stimulus (texture of the food) by refusing to eat certain foods (Dunn, 2007).

**Sensory sensitivity.** A low threshold and passive self-regulation strategy creates the condition of sensory sensitivity. Individuals with this pattern tend to have high detection to stimulus but rather than withdrawing from the input, they have a passive approach, and are likely to stay in the situation and react to it. In many cases, they may not have a choice whether they can leave the setting or not, such as in a classroom. For example, children with this pattern tend to cover their ears in a noisy room. Consequently, children having this pattern are likely to be irritable, impatient, and challenging because they cannot control the stimuli in the environment.

**Low registration.** This pattern represents individuals with high threshold and passive self-regulation causing them to fail to notice stimuli others do quickly. Due to their passive strategy of self-regulation, these individuals are not likely to seek sensory input to satisfy their high threshold and therefore, may seem unresponsive, flat or inattentive (Dunn, 2007). Having these patterns in mind, Dunn created the Sensory
Profile and the Short Sensory Profile (discussed later in the chapter) commonly used as a diagnostic tool for sensory processing disorders.

**Subtypes of Sensory Processing Disorders**

In line with Dunn’s model, individuals who display extreme sensory patterns that are chronic and disrupt the everyday lives are perceived to have Sensory Processing Disorder (SPD) (Miller, 2006). Therefore, as described above, SPD “is the inability to use information received through the senses in order to function smoothly in daily life” (Kranowitz, 2005, p.9). According to Miller (2006), SPD has three clusters of sensory disorders: Sensory Modulation Disorder; Sensory-Based Motor Disorder; and Sensory Discrimination Disorder that may “occur independently or in combination with one another and that can range in severity from mild to severe” (pp. 11-12). The following sections will describe the categories and subtypes in detail; they are also graphically illustrated in Figure 2.2.

**Sensory Modulation Disorder.** The first category described by Miller (2007) referrers to the *Sensory Modulation Disorder (SMD)*, the “impairments in regulating the degree, intensity, and nature of responses to sensory input” (Miller et al., 2007, p. 228). Children in this category experience challenges in controlling their response to sensory stimulation and displaying behaviors that match the nature and the intensity of the stimulus (Miller, 2006). Researchers recognize three subtypes of sensory modulation disorders: sensory over-responsivity (SOR), sensory under-responsivity (SUR), and sensory seeking (SS) (Ben-Sasson et al., 2009; Engel-Yeger, 2008; Miller et al., 2007).

**Sensory Over-Responsivity (SOR).** Individuals with SOR tend to respond to a stimulus faster, with more intensity, and for a longer duration than typical children. They
may respond with irritability, moodiness, or poor socialization (Engel-Yeger, 2008). According to Miller (2006), a child may have over-responsivity “in just one of the senses or in a combination of two or more” (p. 22). Examples of red flags of SOR include individuals who are frequently bothered by fuzzy or furry textures, mud or glue on hands, cutting hair or nails, and bright light or sunshine (Miller, 2006).

**Sensory Underresponsivity (SUR).** SUR conversely, refers to not responding to or disregarding a stimulus. Individuals with SUR seem not to detect incoming sensory information and may appear as apathetic or lacking intrinsic motivation and are often “described as withdrawn, inattentive, unmotivated, or self absorbed” (Engel-Yeger, 2008, p. 221). Examples of red flags of SUR include children who do not cry when seriously hurt, children who reject trying new physical activities; and those who often seem unaware of the surrounding (Miller, 2006).

**Sensory Seeking (SS).** SS characterizes individuals who crave an unusual amount of sensation, a continuous seeking of intense stimulus that can negatively influence social interactions (Miller et al., 2007, as cited by Engel-Yeger 2008). Individuals with SS behaviors might move constantly, “like crashing, bashing, bumping, jumping…” experiences (Miller, 2006., p. 29). Similarly, these children are likely to seek opportunities to feel vibrations and prefer food with strong flavors (Miller, 2006).

**Sensory-Based Motor Disorder.** SBMD is characterized by challenges with stabilizing, planning movement, or moving in response to sensory stimulus. Specifically, it is the impairment of one’s vestibular and proprioceptive senses which allow the body to move and sense its position (Miller, 2006). The two subtypes of SBMD are Dyspraxia and Postural Disorder.
**Dyspraxia.** Children with Dyspraxia have trouble “translating sensory information into physical movement, unfamiliar movements, or movements with multiple steps” (Miller, 2006, p. 31). Specifically, these individuals may be clumsy, messy eaters, or display trouble with writing. Dyspraxia can be manifested in gross and fine motor dysfunction (Miller, 2006).

**Postal Disorder.** The difficulty to maintain sufficient control of the body to carry a motor activity is described by Miller (2006) and Kranowitz (2005) as Postal Disorder. Children with this dysfunction are likely to have poor muscle tone, unable to contract muscles against resisting force, or have poor balance and fall easily. Postal disorder, according to Miller (2006) is frequently present in combination with other subtypes of SPD.

**Sensory Discrimination Disorder.** SDD refers to the inability to distinguish between similar sensations in one or more of their sensory systems; touch, vision, hearing, taste, smell and movement (Miller, 2006). Individuals with SDD typically need more time to process sensory information in comparison to their peers. According to Miller (2006), “this difficulty may make them appear cognitively delayed and result in negative stereotyping that handicaps them in the classroom and at play. Self esteem issues can result” (p. 38).

Figure 2.2 below summarizes the categories and subtypes of SPD as described by Miller (2006) and Kranowitz (2005).
Dysfunctions of sensory processing can be apparent as early as infancy but become more evident upon school entry possibly because the school environment provides unfamiliar physical and social stimuli (Ben-Sasson et al., 2009; Ahn et al., 2004). Consequently, SPD may lead to functional impairments such as low social skills, lack of participation in play, impaired self esteem, low self confidence, and weak motor skills (Ahn et al., 2004). Furthermore, SOR in particular, may be a risk factor for social-emotional problems as will be discussed later (Ben-Sasson et al., 2009).
How to Assess Sensory Processing Disorder?

There are multiple methods for assessing the presence of SPD in children. This section will discuss some of the tools that were used in the reviewed literature.

The Sensory Profile. The (SP) is a 125 item parent-report questionnaire that can characterize children’s behaviors and performance in relation to their sensory patterns (Dunn, 1997, as cited by Engel-Yeger, 2008). The children’s responses to sensory experiences in their daily routines, as described by their parents, can indicate over-responsiveness (low threshold) or under-responsiveness (high threshold) to sensory input (Cheung & Siu, 2009).

The Short Sensory Profile (SSP), a short version of the Sensory Profile, is designed to reflect the effect of sensory processing on functional performance in daily life (Engel-Yeger, 2008). Children, according to Engel-Yeger (2008) who display atypical behaviors (as measured by the SSP) are likely to have sensory processing difficulties that affect their daily lives. This instrument is more commonly used than the SP and is comprised of seven sections including: tactile (7 items), taste/smell (4 items), movement (3 items), under responsive/seeks sensation (7 items), auditory filtering (6 items), low energy/weak (6 items), and visual/auditory (5 items). Items are scored on a five-point scale ranging from one to five. Possible raw scores are 38-190 where high score reflect typical performance and low scores indicate difference in performance hence definite atypical sensory processing patterns (Engel-Yeger, 2008; Cheung & Siu, 2009).
Other types of sensory questionnaires are also used to identify other childhood disorders and developmental delays due to the high percentages of co-morbidity of SPD with other disorders (Cheung & Siu, 2009).

**Sensory Experiences Questionnaire.** In a study conducted by Baranek, David, Poe, Stone, and Watson (2006), a Sensory Experiences Questionnaire (SEQ) was used to differentiate between sensory patterns of children with autism and developmental delays from their typically developing counterparts. According to Baranek et al. (2006), the goal of the study was to examine if the SEQ would accurately distinguish between sensory patterns and characteristics of young children with autism and related disorders from their typical counterparts.

The Sensory Experiences Questionnaire (formerly known as the Sensory Supplement questionnaire) is a short (10-minute) caregiver report instrument used to assess behavioral responses (such as avoids texture, sensitive to light, distressed during grooming) in the everyday sensory experiences of children ages 5 months through 6 years (Baranek et al., 2006). The primary purpose of this questionnaire is to identify sensory patterns in young children with autism, and to discriminate those patterns of hypo- and hyperresponsiveness of those with Autism Spectrum Disorder (ASD), developmental delays, or typical development. The SEQ can also indicate whether sensory experiences occur in a social situation (such as a response to physical contact), or a nonsocial context (such as a response to loud sounds) (Baranek et al., 2006).

The SEQ consists of 21 items divided into three parts: (a) asking the caregiver to rate the frequency of incidences of a child’s sensory experience, based on a 5-point Likert scale where 0 is ‘almost never’, 1 is ‘once in a while’, 2 is ‘sometimes’, 3 is
‘frequently’, and 4 is ‘almost always.’ The second part (b) of the SEQ asks the caregiver to indicate if he/she attempts to intervene or change the child’s sensory behavior, and uses a binary scale of ‘yes’ or ‘no’. The final part (c) requires the caregiver to describe specific methods used to modify the behavior (such as giving support, helping them cope, or intervening) (Baranek et al., 2006).

In Baranek et al. (2006) study participants included 258 children ages 5-80 months using a convenience sampling method recruited from public schools, developmental clinics, preschools, early intervention centers, and parent support groups. SEQ were completed by the primary caregivers of the autistic children (n= 56), other Pervasive Developmental Delays (PDD included children with Asperger’s Syndrome) (n= 24), Developmental Disabilities or Mental Retardation (DD/MR) (n=33), other Developmental Delays (other DD such as delays in Receptive Language, Expressive Language, Cognitive/Visual Reception, or Motor Skills delays) (n=35) and typically developing (n=110) (Baranek et al., 2006).

Results indicated that the SEQ was useful in identifying sensory patterns in young children with Autism Spectrum Disorder, and differentiating them from other developmental delays or typical development (Baranek et al., 2006). Specifically, sensory symptoms were highest for the group of children with Autism Spectrum Disorder (ASD), followed by the group characterized as Pervasive Developmental Delays (PDD), the Combined Developmental Delay (DD) group, and was lowest for typically developing children. Furthermore, the SEQ was useful for distinguishing particular sensory patterns, hyporesponsiveness to sensory stimuli in social contexts, discriminating the children with autism from all other groups (including PDD). Hyporesponsiveness to
sensory stimuli in nonsocial situations was also indicative of the Autism group, indicating the distinctiveness of hyporesponsivity pattern regardless of context (Baranek et al., 2006).

According to the researchers, 69% of children with autism had elevated sensory symptoms in comparison to typically developing children. These findings, according to Baranek et al. (2006), “indicate that abnormal sensory features are common but not universal in children with autism” (p. 598). Furthermore, Baranek et al., (2006) note that preschool children with Autism reflect a unique pattern of sensory hyposensitivity which calls for preschool teachers to be sensitive to early signs of this pattern

**SPD, Childhood Disorders, and Developmental Delays**

As discussed earlier, sensory patterns in general and Sensory Processing Disorder, in particular, have a high co-morbidity rate (40-88%) with Autism Spectrum Disorder (ASD) and Attention Deficit Hyperactivity Disorder (ADHD). According to Cheung and Siu (2009), children with ASD and ADHD are clinically assessed for their disabilities through their sensory integrative function (described as the communication between the brain’s sensory input areas). Among the sensory dysfunctions of children with ASD are auditory processing impairments (hypersensitivity and underresponsitivity), visual input impairments, tactile overresponsivity (defensiveness), and taste /smell hypersensitivity (Cheung & Siu, 2009).

Children with ADHD, similarly, are challenged by visual, tactile, and vestibular sensory processing. According to Cheung and Siu (2009), “from a sensory processing perspective, children with ADHD may not be receiving and processing sensory information properly and therefore may have difficulty producing appropriate responses
at both school and home and in the community “(p. 1469). This means that sensory impairments can lead to typical ADHD behaviors characterized as inappropriate responses. Additionally, “… more activity, less adaptability, and lower thresholds for sensory stimuli in infancy are related to a higher rate of diagnosis of ADHD in later stages” (Cheung & Siu, 2009, p. 1469).

Comparison of Sensory Processing Patterns of SPD, ASD, ADHD

To further illustrate, a study by Cheung and Siu (2009) compared sensory processing patterns of children with ASD, ADHD, and children without disabilities in order to examine whether differences in sensory processing exist among these populations. Two groups of children participated in the study: children without disabilities (N=1840), and children with a diagnosis of either ASD or ADHD (N=186). The first group consisted of 925 girls and 915 boys without disabilities, ages 3-10 years, who were randomly selected (using a cluster sampling methods) from seven Hong Kong primary schools and kindergartens (Cheung & Siu, 2009). The second group’s participants were 72 children with ASD, (ages 2.7-11.6 years) and 114 children with ADHD (ages 4.8-12 years) who were recruited from child and adolescent psychiatric units in Hong Kong.

Researchers used the Chinese Sensory Profile (CSP), a translated and culturally modified version of the Sensory Profile (discussed earlier). The CSP is a hundred item questionnaire scoring six sensory systems and two behavioral category subscales using a five-point Likert Scale ranging from 1=always to 5 =never. Scores lower than two standard deviations below the mean indicate definite problems, whereas scores two standard deviations above the mean indicate a likely problem (Cheung & Siu, 2009).
Parents of participants in group one (no developmental disabilities) were given packets of study materials by the researchers through their primary school and kindergarten. These packets consisted of the CSP, a demographic questionnaire, and an explanation letter. Participants in the second group (children with ASD or ADHD) were recruited from child and adolescent psychiatric units in Hong Kong. All participants had a diagnosis of either ASD or ADHD. Parents were contacted and given informed consent prior to participation and then were given the CSP and the demographic questionnaires.

Cheung and Siu (2009) compared the scores on eight sensory processing sections between children without disabilities, children with ASD, and children with ADHD. Results indicated that children with ASD had significantly lower scores on all eight subscales compared to children without disabilities, indicating the distinctive sensory processing patterns of this population in comparison to their typically developing counterparts. However, this study failed to find significant differences in the sensory processing patterns between children with ASD and ADHD using the CSP. In fact, seventeen children with ASD were classified by the CSP as having ADHD; “This implies that in clinical practice, children with ASD and ADHD may appear alike in terms of sensory processing issues.

Other assessment criteria would be needed to highlight the differences in clinical features between the two groups” (Cheung & Siu, 2009, p. 1478). In other words, sensory processing patterns can be identified effectively using the Sensory profile and can be indicative of childhood disabilities and developmental delays but major differences in sensory processing between children with disabilities cannot be determined by sensory instrument alone. Thus, sensory processing impairments of children with
developmental delays strongly resemble SPD characteristics and therefore are likely to be confounded and confused with one another, making diagnosis and treatment particularly challenging.

**Prevalence**

Ahn, Miller, Milberger, and McIntosh, (2004) conducted a study to systematically examine the estimated rates of Sensory Processing Disorder among incoming public school district kindergarteners. Participants were enrolled in 38 public schools in eleven Western, suburban cities in the United States. The Short Sensory Profile (SSP) questionnaire and a brief family demographic page were given to families of incoming kindergarteners along with other beginning-of-the-year materials (Ahn et al., 2004). Seven hundred and ten survey packages (available in English and Spanish) were completed by families, a return rate of 39% of the total kindergarten enrollment. SSP questionnaires and family demographics were returned separately to allow for confidentiality.

Results indicated that 13.7% (n =703) of the participants met the criteria for SPD based on suggested guidelines by McIntosh et al. (1999b, as cited by Ahn et al., 2004). In order to ensure conservative results and because the response rate was low, a more cautious prevalence was calculated considering that all non-respondents did not meet the SPD condition. Results indicated that 5.3% of the sample to meet the SPD criteria. This outcome is in line with the estimated 5-10% prevalence of SPD without co morbidity.

Demographic data revealed that most children in the sample (82.1%) were Caucasian between the ages of four and six with higher-than-average educated parents (Ahn et al., 2004). Due to the small sample and the unrepresentative ethnic background,
generalizability of the results is limited. Furthermore, this study did not evaluate or
excluded other disorders that tend to have co-morbidity with SPD. Children with
different childhood disorders, consequently, might have been included in the prevalence
data leading to estimated rates of SPD that are higher than actual incidence.

The prevalence of SPD as demonstrated (ranging from 5-10% to 16.5%) indicate
a growing need to alert and educate teachers about SPD and its correlation to other
childhood disorders. Due to the high co-morbidity rate of SPD with other disorders and
the similar sensory patterns abnormalities it is important to discuss their prevalence as
well. In fact, according to the Centers for Disease Control and Prevention (CDC)
(http://www.cdc.gov), prevalence of Developmental Delays among United States child
population has grown in recent years indicating the likelihood of teachers encountering
these populations in typical early childhood classrooms. Thus, underscoring the
importance of this thesis project which aims to increase early childhood educators’
knowledge of SPD and related disorders.

Prevalence of Autism Spectrum Disorders. According to the United States
CDC (Rice, 2006), approximately 1% of United States’ child population have ASDs, this
equates to one in 110 children. Although ASD symptoms are present in the first three
years of life, diagnosis typically occurs later, leading researchers to choose age 8 to be
more representative of ASDs incidences. Prevalence data was collected in 2002 via the
Autism and Developmental Disabilities Monitoring (ADDM) Network. A subsequent
data collection in 2006 indicated an increase of 57% of ASD incidences in comparison
with 2002 percentages (Rice, 2006). Data also revealed that boys were more likely to
have ASD than girls with a ratio of 4.5:1.
Prevalence of Attention Deficit Hyperactivity Disorder (ADHD). In 2007, the estimated prevalence of ADHD (reported by parents) among children ages 4 to 17 years was 9.5%, representing 5.4 million children. ADD/ADHD is the most commonly diagnosed neurobehavioral disorder of childhood (Morbidity and Mortality Weekly Repost, 2010). Similar to ASD, boys are more likely than girls to be diagnosed with that disorder. An increase of approximately 21% of ADHD was reported between 2003 and 2007 of children diagnosed with ADD/ADHD.

The alarming statistics of these childhood disorders further reiterates the need to have early childhood professionals become aware of symptoms, behaviors, treatments, and inclusion possibilities for children with SPD, ASD, and ADHD.

Treatment of Sensory Processing Disorder

Therapy for children who display sensory abnormalities is typically done in clinical settings by occupational therapists. The section below describes occupational therapy as the most effective method of treating Sensory Processing Disorder.

Occupational Therapy - Sensory Integration (OT-SI)

Miller, Coll, and Schoen (2007) conducted a pilot study to examine the effectiveness of occupational therapy for children with Sensory Modulation Disorder (SMD). The effectiveness of intervention programs for children with SMD were being evaluated because of their high cost to society (intervention is indicated to cost between $80 to $180 for a 45- to 60- minute session). Therefore, the study examined the effectiveness of occupational therapy using sensory integration approach (OT-SI) in comparison with alternate placebo treatment, and no treatment interventions (Miller et al.,
In particular, the authors intended to examine if OT-SI will improve attention, cognitive and social, sensory, and behavioral problems better than the other intervention alternatives.

Participants included 24 children with Sensory Modulation Disorder (SMD) diagnosis referred to outpatient occupational therapy at the Children’s Hospital of Denver. Participants were randomly assigned to one of the three intervention groups (Miller et al., 2007). For the experimental treatment group, OT-SI was administered twice a week for ten weeks when therapist and child interacted in a room equipped with sensory activities and toys (Miller et al., 2007). The occupational therapist served as role model and a coach working on specific goals with parents, who were active participants in the session. Unlike OT-SI, Activity Protocol (the alternate placebo treatment) included play activities, such as arts and crafts, puzzles, and blocks, and did not include parent education. The no treatment condition was a passive control (Miller et al., 2007).

Instrumentation to measure the results included three parental report instruments: Leiter International Performance Scale-Revised (rating attention and cognitive/social composite); Short Sensory Profile (SSP, report for functional behaviors related to sensory responsiveness); and a Child Behavior Checklist (CBCL, a measure for social and emotional behaviors based on parental report) (Miller et al., 2007). The Vineland Adaptive Behavior Scale (a parent interview focusing on the child’s functional skills), a Goal Attainment Scaling (GAS, which evaluates individual differences related to specific priorities of change), and the Electrodermal reactivity (EDR, measuring sympathetic nervous system activity) were also measuring instruments used in this study (Miller et al., 2007).
Findings, according to Miller et al. (2007), suggest that on the GAS, attention subsets and cognitive/social composites of the Leiter-R parent rating scale, OT-SI was significantly more effective in comparison to the alternate treatment and no treatment options. On other measures, nevertheless, OT-SI indicated greater effectiveness without statistical significance.

The study limitation, as described by Miller et al. (2007), included the small sample size which prevented the researchers from having a definitive conclusion in relation to the effectiveness of the OT-SI treatment (Miller et al., 2007). This study, nevertheless, introduced a solid foundation for future research providing a standard system for participant inclusion, outcome measurement, and testing control to validity threats (Miller et al., 2007).

**Applying Sensory Integration in Classroom Settings**

The techniques used in the OT-SI treatment method, as described by Miller at al.: “Child interacts with the sensory materials in an active, meaningful, and fun manner” (p. 231) can be adopted and implemented in the classroom settings. This section describes useful techniques, as specified in the literature, for creating an inclusive classroom by meeting the sensory needs of children.

**Understanding behaviors.** The *Behavior Solutions for the Inclusive Classroom* by Aune, Burt and Gennaro (2010) provides specific methods to use in response to challenging sensory behaviors in the classroom. Behaviors associated with movement, such as arm and hand flapping, bumping into other students, and taking off shoes are among the behaviors discussed in this book. Teachers are provided with techniques comprised of modifying the environment, proving alternative behavior possibilities for
the child, and addressing classmates that can ultimately assist in handling these behaviors. Ear covering, for example, described by Aune et al. (2010) as auditory defensiveness, has multiple recommendations in this manual. First, the authors recommend giving the student a warning before certain sound are going to occur. Headphones or ear plugs are also suggested as being helpful in avoiding unpleasant sounds as well as having a “Noise Break” to allow the student to be away from the noise (Aune et al., 2010).

**Red flags.** The foundation for supporting children with SPD/sensory challenges is the identification of red flags manifested as behaviors. Koomar, Kranowitz, Szklut, Balzer-Martin, Haber, and Sava (2007) gathered forms, checklists and practical tools for supporting children with Sensory Processing Disorder. This teacher’s guide provides checklists for characterizing behaviors according to the specific sensory deficiency. For example, a checklist for tactile dysfunction includes: “Respond negatively and emotionally to the possibility of light touch. He may appear irritable or fearful when others are close, as when lining up” (Koomar et al., 2007, p. 35). This teacher’s guide includes lists of characteristics for all the specific sensory systems.

Additionally, in order not only to identify red flags but to also offer appropriate solutions, the *Classroom Accommodation Checklist* tool provides teachers with general modification ideas that can assist students with sensory challenges. For example, providing a quiet space for a child to retreat when becoming over-stimulated, or “using a partially inflated air pillow (stadium seat) may help increase postural control by increasing sensory feedback in sitting” (Koomar et al., 2007, p. 15). In line with methods used in occupational therapy sessions, Koomar et al. (2007) provide a list of heavy work...
activities that are naturally occurring in the classroom settings. Activities such as, carrying heavy notebooks/books to the office, placing chairs on desks, or even taking chewy candy or crunchy food breaks can be used to assist in regulating the sensory systems (Koomar et al., 2007).

**Providing a supportive environment.** Understanding and providing a supportive environment for children with SPD is further explained by Howe, Brittain, and McCathren (2004) teacher’s guide focusing on meeting the sensory needs of children with SPD. Howe et al., 2004) encourage teachers to present regular, unthreatening opportunities for touch using beans, rice, or cloth for tactile defensive children. Similarly, providing a toy, such as a stuffed animal is suggested to satisfy the craving for touch for children with hyposensitivity to touch (Howe et al., 2004).

Techniques vary depending on each child’s specific needs, thus modified physical activities, calming deep pressure touch, and secure classroom seating are among the proposed considerations for vestibular dysfunctions. For example, beanbag chairs can provide posture support and secure feeling during circle-time (Howe et al., 2004). Regular movement opportunities, such as swinging or climbing are recommended for vestibular hyposensitivity to satisfy the need for motion. Similarly, pushing a wagon, carrying or building with heavy block, and pushing another child on the swing are examples for goal directed activities to meet the proprioceptive needs (Howe et al., 2004).

Meeting the needs of children with sensory dysfunctions in a typical classroom leads to a successful inclusion. The goal of the OT-SI sessions as described my Miller et al., (2007) as “improving the child’s sensory responsivity, social behavior, motor
competence, and participation…” (p. 231) is hence, a common goal for teachers and educators as well.

**Teacher Training to Ensure Successful Inclusion**

As demonstrated by the above literature review, early childhood professionals are likely to have children with special needs, such as SPD, ASD and ADHD, in their typical classrooms. The ability to integrate this special population in a typical program, as stated above relies on the capability of a program and in particular the lead teachers to meet the needs of these children. Specifically, modified activities and environments are fundamental conditions for successful inclusion, but more importantly, the capacity of a teacher to provide the necessary modifications is above all an essential factor in successful inclusion. The likelihood of teachers to have positive attitudes towards including special populations has been associated with the teachers’ knowledge of special education.

A study by Secer (2010) examined whether preschool teachers in Turkey had specific attitudes towards inclusion that could be changed with increased knowledge. The study also attempted to determine whether teachers saw their competency working in inclusive schools developing as a result of an In-Service Training (INSET). Participants included 66 randomly selected preschool teachers from 33 schools in Konya, Turkey’s Local education Authority (LEA). Participants included 11 male and 55 female teachers (Secer, 2010). A single group pre-post test design was developed to test participants’ attitudes towards inclusion before and after giving an INSET course including 30 hours of presentations over six weeks (one hour a day, five days a week). The INSET training incorporated the areas of: (1) Special Educational Needs (SEN); (2) the meaning of
inclusion; (3) identification and assessment of children in preschools; (4) effective placement; (5) individualized education programs and their preparation; (6) changing attitudes towards children with SEN; (7) the involvement of parents in the education of children with SEN; and (8) the support services (Secer, 2010).

The Opinions Relative to Mainstreaming scale was used to determine teacher attitudes towards integrating handicapped children into normal classes (Secer, 2010). This scale measure: classroom control and opinion about inclusion; perceived competencies of classroom teachers; perceived advantages of inclusion; perceived competencies of Special Educational Needs students (SEN), and perceived advantages of inclusion (Secer, 2010).

Results indicated significant differences between pre- and post-test scores on ‘Advantages of inclusion’ indicating that “beliefs [about inclusion] were not positive before the INSET course, but became positive afterwards” (Secer, 2010, p. 48). Specifically, post-test scores for ‘Student competencies and advantages of inclusion’ and scores for ‘Negative effects of inclusion’ were lower indicating that attitudes improved significantly on these factors. Also, the results showed that the INSET training for teachers resulted in higher approval rate of the benefit of inclusion (Secer, 2010).

Although attitudes about inclusion were changed as a result of training, teachers were not sure that they would be able to practice the knowledge learned due to “inadequate resources, such as teaching and learning materials, unsuitable classroom settings and inappropriate curricula” (Secer, 2010, pp. 50-51). These findings suggest that teacher training alone is not sufficient and additional modifications, such as environment settings, and curricular activities must be included as well as teacher education to ensure
successful inclusive classrooms. Teachers equipped with knowledge can overcome some of the challenges of children with special needs, predominantly those that are sensory related and can be alleviated by simply altering the environment (hence controlling the type and intensity of a sensory input).

Additionally, specific activities can be protective or disruptive to children with sensory processing abnormalities, therefore, curricula modifications should be applied accordingly. Responsive teachers who are equipped with knowledge and tools can ultimately facilitate activities to support sensory challenges as well as provide small but essential modifications in the classroom environment. Furthermore, teachers who become aware of the children’s needs, can advocate for children with special needs and consequently pursue additional resources for positive inclusion.
CHAPTER THREE

METHODOLOGY

Introduction

The current study examines the effectiveness of a teacher training workshop on Sensory Processing Disorder (SPD) and related childhood sensory abnormalities. This chapter describes the workshop formulated for this study and the instrument created to evaluate the workshop’s effectiveness.

Sample

Participants

The participants included 20 first year graduate students at California State University, Northridge in the Department of Educational Psychology. All participants were enrolled in Issues and Theories in Early Childhood, a required core course in the Early Childhood Education Master of Arts program. The workshop was presented to students in this class during regular class time corresponding to the topic of children with special needs.

Demographics. The participants were 20 females between the ages of 20 and 50. The sample consisted of 50% Hispanics, 35% European-American, and 15% identified their ethnicity as ‘other’ (Table 3.1). All participants reported having worked professionally with children in the past, while 60% of participants reported having worked with children of special needs (Table 3.2). Information regarding their experiences working with specific disabilities can be found in Table 3.3.
Table 3.1

Ages and Ethnicity of Workshop Participants

<table>
<thead>
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Table 3.2

Participant Experience with Children with Disabilities

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Table 3.3

Participants’ experiences with specific diagnoses

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<td>Speech and language</td>
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<td>45</td>
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<td>20</td>
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<tr>
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<tr>
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<tr>
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<tr>
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</tr>
<tr>
<td>Selective Mute</td>
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</table>

The Workshop

The workshops consisted of a two-hour session including pre and post workshop questionnaires, and handouts. Details of each component will be described in the following sections.

Room Setup

Prior to the students entering the room the classroom was set up for the workshop by spraying the room with scent (Fabreze®) to enhance olfactory sensations. A snack table was set up with sensory foods which included the flavors of sour, salty, sweet, spicy, creamy, crunchy, soft, and chewy (see Appendix A). Additionally, a table displaying books on SPD, children’s books on sensory, and California Department of Education *Preschool Learning Foundations*, vol. 1. was set in the front of the room.
adjacent to a screen (see Appendix B). Finally, PowerPoint slides were projected from computer to overhead projector (see Appendix C).

**Presentation**

The power point presentation, *Sensory Awareness in the Classroom*, included 34 slides, divided into two parts. The first slide was a picture of a child laying down on the classroom floor covering ears and closing his eyes. This picture was used as a warm up to engage the audience in noticing sensory behaviors. The next slides provided information about the sensory systems and the senses followed by information on sensory patterns. The relationship between sensory processing and developmental trajectories were described emphasizing specific developmental milestones and their relations to sensory processing. Next, Sensory Processing Disorder (SPD) was introduced followed by reading the book *Sensitive Sam*, by Marla Roth-Fisch (2009). The definition of SPD, its prevalence, sub-types, and co-morbidity with autism and ADHD were all included in the first part of the presentation as well.

The participants were then instructed to break into groups of 4-5 students and were given two discussion topics. The three thesis committee members were present in the workshop and spontaneously and unsolicited joined and participated in the discussion groups. A 20-minutes snack break followed the group discussions as participants were invited to taste and explore the sensory foods.

The second part of the power point presentation begun with highlighting a few ideas from the small group discussion. Specific behaviors associated with each sub-type of sensory dysfunction were described along with techniques for an inclusive classroom.
The final slides reiterated the process of identifying sensory abnormalities and modifying for inclusion.

**Handouts**

The handout consisted of a copy of the power point slides (same as above, Appendix C). There were three slides a page with lines to the right of each slide providing a place to write notes corresponding to each slide. The handouts were given to the participants at the beginning of the workshop.

**Small Group Discussion**

At the end of the first part of the presentation participants were asked to break into small groups (slide # 19) and discuss their experiences with SPD children, or children with extreme sensory processing patterns (sensory seeking, sensory avoiding, sensory sensitivity, and low registration). Participants were also asked to discuss the techniques they used to help these children with their challenges.

**Instrumentation**

Pre- and post-presentation questionnaires were developed for the purpose of evaluating the effectiveness of the workshop. To ensure participants’ confidentiality and to allow efficient data management (to match pre and post presentation responses), participants were instructed to provide a four digit number (phone, birthdates, etc.) as their identification for both questionnaires.
Pre-presentation questionnaire

This instrument consisted of eight questions and two scenarios (see Appendix D). Questions 1-6 solicited demographic information such as age, ethnic background, job title, as well as professional experience working with children in general and with special needs children in particular. In addition, an assessment of their knowledge of Sensory Processing Disorder (SPD) was also measured with scenarios.

The scenarios. Two scenarios were provided in order to measure the ability to identify red flags of abnormal sensory patterns. Eight possible responses were provided for each scenario and participants were instructed to circle all that apply.

The first scenario describes a child who plays in the class dramatic play area but retreats to the reading corner after other children join her play in the dramatic play corner. The possible responses a-g indicate red flags such as difficulty sharing or having negative play experience (indicating poor social skills); having trouble with the loudness of the group (indicating sensory challenges); and trouble staying focused in one activity (indicating challenge in attention and/or sensory integration). Other possible answers include environmental limitations such as small place. Option “h” was ‘other’ inviting participants to provide their own interpretation to the scenario.

The second scenario was designed not only to measure the ability to identify red flag but also to recognize possible judgmental opinions and negative attitudes. Statements such as “Adam is disrespectful to materials” or “Adam likes stepping on toys because it makes people upset” are therefore designed to reveal negative attitudes that were perceived to be associated with the lack of knowledge of special needs children’s
behaviors. Other possible responses included red flags and typical developmental milestones.

**Post-presentation Questionnaire**

In the post presentation questionnaire (Appendix E) participants were asked to list three valuable things they have learned from the presentation. They were also asked what population can benefit from the information provided in the workshop. Additionally, participants were asked to evaluate the usefulness of the information; the strength of the presentation and presenter; as well as areas that need to be improved.

Two scenarios identical to the ones provided at the pre-presentation questionnaires were provided again to compare pre and post presentation responses. The purpose was to measure the influences of the new acquired knowledge on participants’ ability to identify red flags and to assess their attitudes.

The next chapter will describe the results of the workshop, including the participants’ responses on the post workshop questionnaires (i.e., the three most valuable things learned, usefulness of the information provided, and a comparison between pre and post workshop responses to the scenarios).
CHAPTER FOUR

RESULTS

Results from the workshop yielded some surprising outcomes! In this chapter, participants’ responses as recorded on their post workshop questionnaires are reported along with the comparison between their pre- and post- workshop responses for the scenarios. The thrilling and unexpected testimony of one participant, recognizing her own Sensory Processing Disorder (SPD) for the first time is described in the section below.

Three Most Valuable Things

Responses for the three most valuable things learned from the workshop were divided into six categories in order to identify patterns in responses. With 20 respondents (N=20) 59 responses were offered: 4 participants replied with only two items on their list, 1 participant replied with one item, 11 provided three responses as requested, 3 participants gave four responses and 1 participant gave five responses. The six categories included: types and characteristics of SPD; teacher’s techniques; co-morbidity; prevalence; books or other resources; and implications for early intervention. Specific information for each classification will be provided in the next sections.

Types and Characteristics of Sensory Processing Disorder (SPD)

This classification included responses that were specific to the sensory processing mechanisms, the characteristics of SPD, sub-types of SPD, and terminology/vocabulary related to SPD. Twenty-five responses were received in this classification (42% of all responses). Responses included information such as: “That it really is an umbrella term, in that children can have SPD, but their sensitivities and hardships are 100% unique to
that individual” (participant # 8041). Another participant replied: “The different types of SPD ranging from low to high because I usually only thought of the low range” (participant # 3687). One participant indicated recognizing sensory challenging behaviors with a child in her class: “sensory under-responsivity (it sounds like one of my students)” (participant # 8081). A list of all responses can be found in Appendix C.

**Teacher’s Techniques**

Responses in this classification included useful methods for teachers to identify SPD behaviors, red flags, and techniques to use in their inclusive classrooms. A total of 22 responses (37% of all responses) were given by participants as newly gained techniques for teachers to use in their classroom. For example, as indicated by participant # 4134, “I really enjoyed learning about strategies in which to work with children with these challenges.” Another participant yet included “Tools to help ‘buffer’ behaviors” (participant # 8776). Learning how to carefully observe children in their natural environment was also listed as valuable information learned during the training. Responses such as: “Learning about how to observe so that you aren’t being biased or judging certain behaviors this allows for patterns to be seen and monitored in the classroom. Also I enjoyed learning about what are good ways to redirect SPD behavior as it clams the children down as well as the teacher” (participant # 2615). The full list of responses can be found in Appendix C.

**Co-Morbidity**

Responses in this classification were related to recognizing that SPD sometimes coexist with other disorders (such as autism and Attention Deficit Hyperactivity Disorder
(ADHD) as discussed in the workshop). Five participants (8%) responded that this information was valuable to them. Participants # 9413, for example, replied: “Co-morbidity – I didn’t realize children can be diagnosed with both”. Another response was: “I learned the co-morbidity of SPD and autism and ADHD. Wondering if it also connected to OCD” (participant # 4134).

Books and other Resources

Responses in this category included recognizing being introduced to books and other materials about SPD. Five participants (8%) replied that they have learned about SPD resources through the workshop. One participant replied: “that there are resources like books about sensory processing disorder” (participant # 6871). Another responded: “The different literature available to read to children…” (participant #0589).

Prevalence of SPD

Two responses (2.5%) indicated that SPD prevalence was valuable information gain from the workshop.

Early Intervention

Implications for early intervention were identified in 2 responses (2.5 %) as valuable information gained from the workshop. Both responses recognized the potential for early intervention when early identification and diagnosis are provided.
Table 4.1

Classification of Responses to Question # 1

<table>
<thead>
<tr>
<th>Types/characteristics of SPD</th>
<th># of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher’s techniques</td>
<td>22</td>
</tr>
<tr>
<td>Co-morbidity</td>
<td>5</td>
</tr>
<tr>
<td>Books and resources</td>
<td>5</td>
</tr>
<tr>
<td>prevalence</td>
<td>2</td>
</tr>
<tr>
<td>Implications for early intervention</td>
<td>2</td>
</tr>
</tbody>
</table>

Total n= 59

Populations Best Served by the Workshop

The second item in the questionnaire asked participants what populations would be best served by the workshop. Many participants listed more than one targeted populations that could benefit. The total responses were 37 (although 2 participants left this question blank). Among the most frequent answers were *educators* (directors, early childhood teachers, grade school teachers, teachers in private and public schools) with 19 responses and *parents* (and first time mothers - pregnant) with 9 responses. Doctors and nurses were also listed as targeted audiences with 2 and 1 responses respectively. Early intervention teachers and special education were also identified to possibly benefit from the workshop information. Finally, 2 responses of ‘all’ were provided as well.
Usefulness of the Information

The third question required participants to rate the usefulness of the information on a four point scale when 1 is ‘not useful’; 2 is ‘somewhat useful’; 3 is ‘useful’; and 4 is ‘very useful.’ Seventeen participants responded that the information was ‘very useful’ (85%). The other 3 participants responded with ‘useful.’ Participants were also asked to provide explanation for their answers. Their responses were classified into three categories to identify patterns: increasing SPD awareness and understanding; gaining strategies and tools to support children with SPD; and information may be used in the future. Among the participants who responded that the information was ‘very useful’ (n=17) 8 identified increasing awareness and understanding of SPD as their reason and 4 others responded that they gained strategies and tools to support children with sensory issues. The last 5 responses indicated that this information may be used in the future.

Two of the participants responded ‘useful’ wrote that they have a child with sensory issues in their classrooms. Specially, one stated, “I was able to identify what one of the children in the class has” (participant # 5934) and “I have a student in my class who has sensory issues” (participant # 2893). The third participant to rate ‘useful’ acknowledged that “there was some strategies and ideas of how to approach the situation” (participant # 8041).

Quality of the Presentation

Strengths of the Presentation

Question number 4 required participants to state the strength of the presentation. All participants responded (N=20) although some gave multiple answers; overall 25
answers were recorded. Eight responses identified that pictures and visuals were the strength of the presentation. Five stated that the examples were the strength of the presentation. Four replies referred to the quality of the presentation or presenter, such as “Clear, spoke in at an appropriate pace…” (Participant # 2323) or “Speed, it was not too fast/slow. I was able to absorb the info presented” (Participant # 8041). Three responses stated that tools and strategies provided by the presentation were the strength and 2 others identified ‘books’ as their response. Responses categorizes as ‘other’ included: 1 response addressed that the topic is of interest; 1 stated that the group discussion was what the strength of the presentation was. Finally, 1 participant responded with “The strength of the presentation was about sensory [processing and] how [it] affect[s] the child.”

Table 4.2

Participant responses to the strength of the presentation

<table>
<thead>
<tr>
<th></th>
<th>Pictures/ visuals</th>
<th>Examples</th>
<th>Quality of presentation</th>
<th>Tools/ Techniques</th>
<th>Books</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td># of responses</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Areas for Improvement

For the open-ended question ‘what areas could be improved?’ 20 responses were recorded. Nine participants responded with suggestion regarding the presenter’s performance such as, “slow down a little in the beginning to speak more about the brain physiology how it effects the child” (participant # 4131); or “Explain the Dunn’s model
in a different way, I didn’t really understand” (participant # 2893). Other responses addressed the tone of voice and audience participation. A complete copy of all responses can be found in Appendix F.

Three participants replied that adding videos could improve the presentation while two other participants responded that they would have liked to have handouts. Four left the line blank, 1 commented about the scenarios and finally 1 replied that “everything was great” (participant # 2637).

**Strengths of the Presenter**

To the question about the strengths of the presenter 20 responses were provided. 12 participants replied that the presenter’s strength was in the personal experience and knowledgeable about SPD. Four replies indicated that the presenter was clear: “spoke slowly and clearly” (participant # 4134) and “clear, concise, organized…” (participant # 8081). The complete answers for question #6 can be found in Appendix F.

**Areas for Improvement (Presenter)**

To the question what the presenter can do to improve 16 answers from 20 participants were provided (4 participants left blank). Among the responses, 10 participants suggested that presenter should speak louder, slower, and walk between rows while reading the book. Six participants replied that everything was great.

**Changes in Pre- and Post-Presentation Responses to the Scenarios**

**Scenario # 1**

In this scenario, depicting a girl in a classroom’s dramatic play area who plays when alone but retreats to the library corner upon the arrival of her peers, participants
were asked to choose statements to explain the girl’s behavior. All the 8 possible choices provide explanation for the behavior in relation to abnormal sensory patterns and its effect on social interactions. Environmental influences are also provided to indicate the effects on children with extreme sensory patterns. Last, 1 choice of ‘other’ invited participants to provide their own answer. All 20 participants responded with both red flags and environmental explanations for the girl’s behavior in the pre workshop questionnaire, indicating their knowledge of children with special needs. In comparison with the post workshop responses, 5 participants (25%) chose the exact responses to explain the behavior described indicating no change in their perspectives as a result of the workshop. The other 15 participants (75%) responded with different explanations. Among them 1 participant provided more explanations to the behavior (hence, increasing the amount of possible answers) while all other 14 participants chose less possibilities to explain the behavior, hence indicating a more careful consideration of explanation. Two participants responded “SPD” to explain the behavior on the ‘other’ optional answer, indicating that they acquired the knowledge provided in the workshop.

Scenario # 2

This scenario describes a child in a preschool setting who steps on toys and breaks crayons. Eight options are provided for participants to explain the reasons for this behavior. Among the options 3 provide answers that indicate negative attitudes towards behavior and setting, 3 measure the knowledge of childhood developmental milestone, and 1 provides an indication if participants recognize a red flag for abnormal sensory processing. In the pre workshop questionnaire, 10 (50%) participants did not include judgmental statements to explain the child’s behavior. They rather provided the red flag
and child development explanations. Two participants also provided an alternative answer to account for the behavior indicating the possibility of child’s exploration as the explanation for the behavior. The other 50% marked all the possible options to account for the behaviors. Further, one participant offered the exploration possibility along with all the other explanations.

In comparison with the pre workshop responses, the post workshop responses provided different results. Thirteen participants (65%) replied with non-judgmental answers to explain the behavior. This increase in 15% (compared to 50% in pre workshop replies) is indicating a possible change in attitudes as a result of the information provided by the presenter. Among the other responses, 4 responded with all the options, and 3 provided the red flag explanation along with the judgmental attitude possibility. Further, 2 among these responses also included along all the options, the possibility of SPD. Another participant also wrote “all the options are possibilities it depends on context individual history so on…” (participant # 8041).

**Overall Rating of the Presentation**

To the question of the overall rating of the presentation 19 responses were given. Participants (n =15, 75 %) rated the presentation ‘excellent’ and 4 rated it ‘good.’ Twelve responses described that the presentation was informative; providing vital, new, and detailed information. Others acknowledged the value of the handouts, small group activity, and reading the book ‘Sensitive Sam.’ The complete log of answers, as noted above, can be found in appendix F.
**Additional Data Points**

During the small group discussion which followed the reading of the children’s book, *Sensitive Sam* (Roth-Fisch, 2009), one participant stated to her group that she is like ‘Sam’ (have SPD) indicating that she has always been challenged by sensory input that has disrupted her daily life. The participant reported to her group that she has trouble wearing shoes and therefore wears shoes that are a size bigger. She also shared with her group that as a child her parents had to install shades over the windows to shelter her from the outside light as well as change the light bulbs in their home to decrease the exposure to light.

The participant allowed the presenter to share her story with the rest of the participants when the second part of the presentation as conducted. She explained to the crowed that she felt “awkward” and different. The presenter used this momentum to further stress the importance of educators’ knowledge of sensory processing abnormalities and the absolute necessity of including these children in the classroom. This unexpected revelation by the participant will be discussed further in the discussion chapter next.
CHAPTER FIVE

DISCUSSION AND CONCLUSION

The purpose of this study was to evaluate the effectiveness of a preschool teachers’ workshop on Sensory Processing Disorder (SPD). As discussed in previous chapters, abnormal sensory processing patterns can lead to behaviors that can hinder a child’s social emotional development, accessing the curriculum, and completing everyday tasks (Miller, Coll, & Schoen, 2007). Children with Sensory Processing Disorder (SPD) or other related disorders that have co-morbidity, such as autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD), have challenges in controlling their responses to sensory stimulation (Miller, Coll, & Schoen, 2007). These children consequently, are likely to display behaviors that can be considered disruptive to a typical preschool classroom, and it is important to acknowledge,

For learning to take place, children need predictable environments and tasks that are hard but at which they can succeed. The consequences of poor attention, abnormal arousal, and emotional regulation problems negatively affect learning, not just for the individual child manifesting the difficulty, but also for the whole class (Bailer & Miller, 2011, p. 13).

Providing preschool educators with information on how to understand abnormal sensory patterns and preparing them with tools to create an inclusive environment are therefore the foundations to ensure the success of these children. As noted in Chapter Two, a study by Secer (2010) examined whether increased knowledge can change the attitudes towards inclusion for preschool teachers in Turkey. The study also attempted to determine whether teachers see their competency working in inclusive schools
developing as a result of an In-Service Training (INSET). Results indicated that attitudes towards inclusion became more positive as a result of the teacher’s training (Secer, 2010). Furthermore, the results showed that the INSET training for teachers resulted in higher approval rate of the benefit of inclusion (Secer, 2010).

However, the Secer study nevertheless also demonstrated that the teachers were not confident with their ability to help meet the needs of these children which indicates that teacher training alone cannot be sufficient but additional tools to help modify the environment and the curriculum must be included. Teachers equipped with knowledge can overcome some of the challenges of children with special needs, predominantly those that are sensory related and can be alleviate, by simply altering the environment (hence controlling the type and intensity of a sensory input). The goal of the current workshop was therefore, to increase teacher’ awareness of abnormal sensory patterns and provide techniques to use in the classroom (such as altering the environment to accommodate sensory sensitivities as well as activities to assist with sensory regulation).

The workshop was provided to 20 first year graduate students in the Early Childhood Education program at California State University, Northridge. The workshop included a two-hour PowerPoint presentation (provided by the researcher), reading of *Sensitive Sam* (Roth-Fisch, 2009), and a small group discussion. The power point presentation provided information on typical sensory processing, abnormal patterns of sensory processing (characteristics and definition of SPD), information on red flags (adopted from the SPD foundation) and a teachers’ checklist (Kumar, Kranowitz, Szklut, Blazer-Martin, Haber, & Sava, 2001) to identify abnormal patterns, and inclusion methods that can be implemented in a typical classroom (see Appendix G). The small
group discussion provided participants with the opportunity to share their personal experiences with SPD children or other related sensory processing challenges. The three thesis project professors were each in a small group to help facilitate and direct the discussions.

Pre- and post-presentation questionnaires were used to determine demographic information and to evaluate the effectiveness of the workshop. Effectiveness was measured by the ability of the participants to recall new vocabulary related to SPD and by the ability to list new information gained from the workshop.

Results indicated that many participants (42%) gained new information about types and characteristics of SPD and acquired new teaching techniques to deal with sensory challenges in the classroom (37%). The strength of the presentation, as stated by the participants included the use of pictures and visuals (such as tables and charts) and the experience and knowledge of the presenter (40% and 60% respectively). Indeed, using real testimonies from the classroom to demonstrate the challenges of children with Sensory Processing Disorder strengthened the understanding and enhanced the connection of the participants to the subject. The use of one child’s story, told via real classroom pictures, created a meaningful context for the participants mainly because most participants (60%) reported having experience with children with special needs. Hence, participants were able to reflect on situations from their own experiences and apply the new information into their previously existing schemas. The presenter’s knowledge and practice were therefore valuable in demonstrating the information of SPD (behaviors linked to red flags) and to the future application of the new information and tools (modification of environment and curriculum).
Although visual aids and pictures were the strength of the presentation, participants (15%) recommended including videos in the presentation. Future workshops audiences can therefore benefit from watching a short video of a child displaying red flags behaviors. This can ultimately enhance the understanding of sensory processing challenges as they appear in real situations. Additionally, a video can replace the pre and post presentation scenarios that intended to measure pre-existing knowledge of red flags. The scenarios used in the pre and post questionnaires were found not useful in measuring knowledge and attitudes as well. Measuring attitudes towards children with special needs can rather be done by showing a shot clip demonstrating behaviors associated with sensory challenges followed by a set of questions.

Future workshops can also be modified in order to include audience that has little or no information about sensory processing. Modification of content and the length of the presentation should therefore be applied in order to fit a more diverse audience. Specifically, the information in this workshop which included academic language and terminology must be tailored to fit a diverse audience suggesting simplifying the language and adding visual aids. A future workshop could also include handouts with information about the sensory processing systems, red flags check list, literature, and community resources for future references.

Similarly, a series of workshop sessions providing systematic and gradual introduction of the knowledge can add to the usefulness of the workshop. Hence, leading to an increase in early detection, early intervention, and positive child outcomes. For educators in particular, the series of consecutive workshops can be tailored specifically to meet the challenges presented at their school and ultimately provide tools to
accommodate their children with sensory needs. The later can therefore assist with the challenge raised by the teachers in Secer’s study (2010) who were not confident with their ability to meet the needs of children subsequent to their teacher training.

Nevertheless, as demonstrated by the prevalence of SPD (5%) (Ahn, Miller, Milberger, & McIntosh, 2004), ASD (1%) and ADHD (5.5%) the percentages are alarming! (United States Center of Disease Control and Prevention) Teachers are therefore highly likely to encounter children with sensory challenges in their classrooms and must be provided with this information and tools. The information in this workshop should be integrated into the Child Development teaching as a fundamental component of Special Needs Children curricula.

This workshop on SPD and related sensory abnormalities is essential not only for educators but in fact is crucial to many other fields dealing with children. As suggested by participants, educators, parents, and medical professionals can also benefit from this information. The likelihood of individuals in other professions to encounter children with sensory challenges are also high, hence this workshop information is relevant to all. Sharing the knowledge of abnormal sensory patterns and providing tools for identification and modification can ultimately increase early intervention, inclusion, and positive child outcome. Furthermore, an increase of knowledge and awareness in the general population can lead to an overall more tolerant environment for these children.
References


Appendix A: Sensational foods snack list

**Crunchy foods**

Bissli® - Crunchy snack barbeque flavor.

Carrots

Celery sticks

Pretzels

Cheerios®

**Chewy foods**

Fruit rolls

Pickles

**Creamy foods**

Peanut-free peanut butter

Cream cheese

Humus

**Salty foods**

Olives

**Spicy foods**

Hot Cheetos®

Hot salsa

**Soft foods**

Bread
Appendix B: List of Books Displayed in Room during Workshop

The Out-of-Synch Child, by Carol Stock Kranowitz

Sensational Kids, by Lucy Jane Miller

Behavior Solutions for the Inclusive Classroom, Beth Aune, Beth Burt, & Peter Gennaro
1001 Great Ideas for Teaching and Raising Children with Autism or Asperger’s by, Ellen Notbohm & Veronica Zysk

California Preschool Learning Foundations, Volume 1, by California Department of Education
Sensory Awareness in the Classroom

Hadas Mizrahi
November 9, 2011
Making sense of the world: Processing of sensory input

Sensory processing refers to how the nervous system and the brain receive, organize and interpret sensory input.

Sensory processing makes the person aware of what is going on
- **around the body** (e.g., from auditory and visual input)
- **within the person’s body** (e.g., from touch, joint receptors).

Retrieved from:
The Senses

- Vision
- Auditory
- Smell
- Hearing
- Touch
- Taste
- Movement
- Brain
- Nervous system

How Sensory Processing Works

Input: From senses, joints, muscles
Processing: Nervous system and brain
Response: Execute reaction

Adapted from: http://thehandwritingdoctor.com/the_handwriting_doctor/HW_Sensory_Integration_2.html
### Dunn’s Model of Sensory Processing

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Self Regulation</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Low Registration</td>
<td>Sensation seeking</td>
</tr>
<tr>
<td>Low</td>
<td>Sensory Sensitivity</td>
<td>Sensory Avoiding</td>
</tr>
</tbody>
</table>

Dunn, 2007

### Senses are Directly Associated With:
- Social-emotional development
- Motor development
- Language and speech development
- Attention and self-regulation
Typical Developmental Expectations

Social Emotional Development Foundation 2.1: Interaction With Peers:

“At around 48 months of age – interact easily with peers in shared activities that occasionally become cooperative efforts”

(California Department of Education, 2008, p. 12)

Writing Strategies

Standard 1.1:

“Experiment with grasp and body position using a variety of drawing and writing tools.”

(California Department of Education, 2008, p. 70)
Foundation: Understanding of Personal Care Routines

- “At around 36 months of age, children initiate and follow through with some personal care routines”

- (California Department of Education, 2009, p. 82)

Listening and Speaking Foundation 1.1:

- “use language to communicate with others in familiar social situations for a variety of basic purposes…”

- (California Department of Education, 2008, p. 56)
What happens when sensory patterns are not typical?

The disorders of sensory processing

Sensory Processing Disorder: SPD

“A person with SPD finds it difficult to process and act upon information received through the senses, which creates challenges in performing countless everyday tasks. Motor clumsiness, behavioral problems, anxiety, depression, school failure, and other impacts…”

www.spdfoundation.net
SPD Prevalence

5% of U.S Child Population entering kindergarten

Miller, Milberger & McIntosh, 2004

SPD Subtypes

www.Spdfoundation.net

Miller, 2006
Co-morbidity of SPD with Autism and ADHD

- **Autism**
  - 1% of population
  - 75% co-morbidity

- **ADHD**
  - 5.5-9.3% of population
  - 40-60% co-morbidity


---

**So…what should we do?**

- Discuss your experiences with SPD children, or children with extreme sensory processing patterns
  - Sensory seeking
  - Sensory avoiding
  - Sensory sensitivity
  - Low registration
- What techniques did you use to help them with their challenges? Meet their needs?
Sensory Over-Responsivity (SOR): Sensory sensitivity & Sensory avoiding

<table>
<thead>
<tr>
<th>Sense</th>
<th>Behavior</th>
<th>Techniques for the inclusive classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touch</td>
<td>*avoid group social interactions and group play</td>
<td>*identify play area</td>
</tr>
<tr>
<td></td>
<td>*avoid touching materials</td>
<td>*assign private sitting spot for group time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*utilize child’s favorite toys to promote exploration</td>
</tr>
<tr>
<td>Sense</td>
<td>Behavior</td>
<td>Techniques for the inclusive classroom</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Movement</td>
<td>*difficult with transitions</td>
<td>*predictable routines</td>
</tr>
<tr>
<td></td>
<td>*Poor motor planning (falling, clumsy, bumping against objects)</td>
<td>*cue before transitions *specific activities during transition</td>
</tr>
<tr>
<td>Visual</td>
<td>*avoid busy areas *avoid eye contact</td>
<td>*one toy at a time *esthetics of environment</td>
</tr>
<tr>
<td>Sense</td>
<td>Behavior</td>
<td>Techniques for the inclusive classroom</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>----------------------------------------</td>
</tr>
</tbody>
</table>
| Auditory| *covering ears  
* Making noises and humming | *honor quiet play  
*provide headphones to buffer the noise  
*play even tempo music |

Sensory Under-Responsivity: Sensory seeking behaviors

- High threshold for pain
- Poor fine/gross motor skills
- Have short attention span
- Excessive climbing, swinging, and jumping
- Chewing on shirt or inappropriate items
- Difficulty with task completion; gets distracted with new sensory experiences
- Excessive hugging, bumping, leaning against, or pushing people
- Breaking pencils or crayons
Movement
Breaks

Heavy Work Activities

- Carry books
- Carry buckets full of water/sand
- Place chairs on tables
- Stack chairs
- Paint while on hands and knees
- Sharpen pencils with manual sharpener
Take Crunchy/Chewy Breaks

Low Registration

Observed behaviors:
- Have short attention span
- Poor motor skills
- Might appear uninterested

Technique:
- Place toys in harder-to-get places
- Mirrors at floor level
- Add texture to handles and surfaces
- Clean toys with scented cleaners
- Speak and touch to get attention
Steps to Inclusion

- Step 1: Observe

Step 2: Identify Red Flags
Step 3: Alert

• Talking to Parents
• Getting Professional Help

Step 4: Modify for Inclusion

- Environment
- Curriculum
- Activities
Thank you for your participation

References

- Sensory Processing in Everyday Life, [http://classes.kumc.edu/sah/resources/sensory_processing/](http://classes.kumc.edu/sah/resources/sensory_processing/)
- SPDfoundation.org, [http://www.spd foundation.net/library.html](http://www.spdfoundation.net/library.html)
- Trott, M. C., SenseAbilities, understanding sensory integration. Therapy Skill Builders 1993.
Appendix D: Pre-presentation Questionnaire

Participant #________

Understanding Sensory Processing Disorder Pretest

Thank you for your input in both this pretest and in the subsequent posttest of today’s workshop on Sensory Processing Disorder. This will become important data for my thesis and with that in mind, your thoughtful and well-considered answers throughout the pre and posttests today will be greatly appreciated. You may skip any question you wish but the more detailed your responses, the better I will learn from your experiences.

1. What is your age?

1) 20-29  
2) 30-39  
3) 40-49  
4) 50 or older

2. What is your ethnic/cultural background? ____________________

3. How many years have you worked professionally with young children?

1) 1-2 years  
2) 3-5 years  
3) 6-9 years  
4) 10 or more years

4. What is your current job title?

1) Teacher: age group_______ population__________  
2) Teacher assistant: age group_______ population__________  
3) Administrator: job title__________  
4) Other (please specify)______________ population

5. How many children with disabilities have you worked with?
6. What have been their diagnoses? Circle all that apply

1) Autism spectrum
2) Speech and/or language delays
3) Physical disabilities
4) Sensory Processing Disorder
5) Attention Deficit Disorder
6) Non-specific, under study, not yet diagnosed
7) Other __________________________

7. Your knowledge of sensory processing systems (input, processing, integration)

1) I know nothing
2) I know a little
3) I know a lot

8. Your knowledge of Sensory Processing Disorder specifically

1) I know nothing
2) I know a little
3) I know a lot

Read the following scenarios and circle all possible options:

#1 Alex is the first to arrive to class in the morning. She walks to the dramatic play area and seems eager to engage in “cooking” and “setting a dinner table.” After a few minutes, a group of three children join her in the play area. The children get around the table and help her set the table for dinner. Alex stops, distances herself from the group and eventually retreats from the dramatic play corner to the quiet reading area. She sits by herself in the library with a book for the rest of the free play period.

a. Alex may have difficulty sharing toys or props with other
b. The play area is too small to accommodate all the children
c. Alex has had a negative experience playing with this group
d. Alex prefers the play area all to herself
e. The group is too loud
f. Alex cannot stay focused on one activity for a long time
The teacher in a pre-k class noticed that Adam was stepping on toys while making his way across the room. Adam also frequently breaks crayons and pencils during center activities.

- Adam is disrespectful to materials
- The classroom is too messy
- Pre-k children frequently break crayons and pencils
- Adam doesn’t know how to use writing tools properly
- Adam likes stepping on toys because it makes people upset
- Adam doesn’t notice when materials are in his way
- Teacher should provide thicker crayons and pencils for Adam
- Other….

What would you like to learn about Sensory Processing Disorder?

Thank you for your help
Appendix E: Post-presentation Questionnaire

Understanding Sensory Processing Disorder – Posttest

1. What were the three most valuable things you learned and why?
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

2. What populations would best be served by this presentation?
_______________________________________________________________________

3. How useful was the information in this workshop?
   1) Not useful because_____________________________________________________
   2) Somewhat useful because_____________________________________________
   3) Useful because_______________________________________________________
   4) Very useful because___________________________________________________

4. What were the strengths of the presentation? Please be very specific
_______________________________________________________________________
5. What areas could be improved? Please be very specific

______________________________________________________________

6. What were the strengths of the presenter?

______________________________________________________________

7. What can she do to improve?

______________________________________________________________

8. Reflecting back on the information provided, please re-read scenarios 1 and 2 and answer the following:

**Read the following scenarios and circle all possible options:**

#1 Alex is the first to arrive to class in the morning. She walks to the dramatic play area and seems eager to engage in “cooking” and “setting a dinner table.” After a few minutes, a group of three children join her in the play area. The children get around the table and help her set the table for dinner. Alex stops, distances herself from the group and eventually retreats from the dramatic play corner to the quiet reading area. She sits by herself in the library with a book for the rest of the free play period.

a. Alex may have difficulty sharing toys or props with other
b. The play area is too small to accommodate all the children
c. Alex has had a negative experience playing with this group  
d. Alex prefers the play area all to herself  
e. The group is too loud  
f. Alex cannot stay focused on one activity for a long time  
g. Alex may have challenges in cooperating with others  
h. Other….  

#2 The teacher in a pre-k class noticed that Adam was stepping on toys while making his way across the room. Adam also frequently breaks crayons and pencils during center activities.  

a. Adam is disrespectful to materials  
b. The classroom is too messy  
c. Pre-k children frequently break crayons and pencils  
d. Adam doesn’t know how to use writing tools properly  
e. Adam likes stepping on toys because it makes people upset  
f. Adam doesn’t notice when materials are in his way  
g. Teacher should provide thicker crayons and pencils for Adam  
h. Other….  

9. What is your overall rating of the presentation?  

1) Poor because_______________________________________________________  
2) Adequate because___________________________________________________  
3) Good because_______________________________________________________  
4) Excellent because___________________________________________________  

Thank you for your help
Appendix F: Participants’ Responses on Post-test

1. Three valuable things:
   - “the it really is an umbrella term, in that children can have SPD, but their sensitivities & hardships are 100% unique to that individual” (#8041)
   - “Different level of SPD and the % of children that are dealing w/ this disorder (subtypes); co-morbidity- didn’t realize children can be diagnosed with both; foods that help children to deal w/ the disorder” (#9413)
   - “1) That there are resources- like books about sensory processing disorder. 2) Teachers have to be sensitive towards families when addressing issues. 3) Techniques that can be implemented by teachers in the classroom to help children with sensory processing disorder” (#6871)
   - "How to identify the red flags; the resources (books) which are awesome; how sensory processing works” (#1224)
   - “1) the different types of SPD ranging from low sensory to high because I usually only thought of the low range. 2) the co-morbidity w/ ADHD and autism spectrum disorders because it usually showcases the potential for early intervention and 3) the intervention strategies” (#3687)
   - “co-morbidity w/other disorders; different areas affected by SPD; SPD subtypes” (#2323)
   - “1) the “symptoms” of SPD from Sensitive Sam book; 2) SPD prevalence and co-morbidity; 3) sensory under-responsivity (it sounds like one of my students)” (#8081)
   - “1. The differences between the thresholds and how children react to these. Beneficial red flags things to look for. 2. I really enjoyed learning about strategies in which to work with children with these challenges. – great. 3. I learn the co-morbidity of SPD and autism and ADHD. Wondering if also connected to OCD.” (#4134)
   - “How to identify Sensory Processing Disorder; techniques you can use w/ children that have Sensory Processing Disorder; I now have an idea of the meaning of SPD” (#1515)
   - “The different characteristics of detecting SPD because now I can recognize them myself, the different literature available to read to children and techniques for inclusion”. (#0589)
   - “How we can approach children with SPD and how important is to identify the child the early the better.” (#2637)
   - “1. That there are different levels of sensory processing D/O. I did not know this and after hearing examples I might now identify a child w/ SPD. 2. Tools to help “buffer” behaviors. 3. Symptoms of SPD and the checklist.” (#8776)
   - “It is ok that a child is identify with SPD. That there are books available for teacher to read out SPD.” (#5934)
• “How to be sensitive to children’s feelings. How to be more proactive in the class when we have a child with some of these symptoms.” (#2552)
• “Sensory Processing – threshold + regulation. The various senses not just 5 senses. Sensory patterns are on a continuum.” (#0730)
• “1) Different levels of sensory processing issues. 2) importance of how to observe. 3) learning about behaviors to deal w/ SPD. (#8247)
• “What a child looks like if they have a high or low threshold. What are some strategies. The red flags.” (#2893)
• “Learning about how to observe so that you aren’t being biased or judging certain behaviors this allows for patterns to be seen & monitored in the classroom. Also I enjoyed learning about what are good ways to redirect SPD behavior as it calms the children down as well as the teacher” (#2615)
• “Sensory processing refers to how the nervous system and the brain receive sensory input. How sensory processing works. Dunn’s model of sensory processing.” (#7709)
• “1) Thresholds. 2) Seeking vs. avoidance (I never thought about this part). 3) Steps for inclusion.” (#6005)

2. What populations would be best served by this presentation?
• “ECE peeps, DR’s, nurses, parents of course, special education credential students” (#8041)
• “Anyone working in the field of early childhood education” (#9413)
• “teachers, parents, school directors” (#6871)
• “Educators, parents, and first time mothers (pregnant)” (#1224)
• “Early childhood centers, but any school. in our group discussions we acknowledged the pervasiveness of sensations throughout the lifespan” (#3687)
• “All early childhood, as students may not have SPD but have sensory concerns” (#2323)
• “Educators, pediatricians, parents” (#8081)
• “I believe teachers in public and private school. Great to present to open eyes for early intervention teachers and parents” (#4134).
• Blank (#1515)
• “Early childhood educators, in preschools mostly but in all grades it can be useful” (#0589)
• Blank (#2637)
• “Anyone who works with children would do well to have this knowledge.” (#8776)
• “Hispanic” (#5934)
• “All parents of all ages” (#2552)
• “teachers in ECE” (#0730)
• “parents and early childhood educators or those who work w/ ages 5-10” (#8247)
• “teachers – preschool & elementary school” (#2893)
• “all parents & teachers with young children” (#2615)
• “Every population that are in need” (#7709)
• “All” (#6005)

3. How useful was the information
• Useful because “there was some strategies and ideas of how to approach the situation” (#8041)
• Very useful because “it makes us aware of this disorder and you gave us the necessary information to begin to identify a possible red flag” (#9413)
• Very useful because “I have a child with sensory issues and I want to include him/ help him” (#6871)
• Very useful because “it is a great way of educating future teachers and parents” (#1224)
• Very useful because “I learned a lot of valuable information that can be useful to a number of children/ families, etc.” (#3687)
• Very useful because “It makes teachers aware of the different sensory sensitivities” (#2323)
• Very useful because “I now have a better understanding of SPD and how I can help children” (#1515)
• Very useful because “It was informative and put together thoughtfully explained clearly – well done.” (#4134)
• Very useful because “I may end up having a child in my classroom, family w/ SPD” (#1515)
• Very useful because “I can identify the disorder if I need to”. (#0589)
• Very useful because – blank (#2637)
• Very useful because “I will add your presentation + most importantly the checklist to my special needs resources binder for teachers & parents/ families.” (#8776)
• Useful because “I was able to identify what one of children in the class has. Thank for proving me with this info.” (#5934)
• Very useful because “I work with preschool children” (#2552)
• Very useful because “SPD is more prevalent” (#0730)
• Very useful because “I learned a lot more about what SPD is” (#8247)
• Useful because “I have a student in my class who has sensory issues” (#2893)
• Very useful because “it touches on key words people don’t know the definition of. Many people don’t know a lot about SPD…more info is good.” (2615)
• Very useful because “Helped me to learn more about sensory processing disorder” (#7709)
• Very useful because “So many children & adults have sensory issues” (#6005)

4. What were the strengths of the presentation?
• “Speed, it was not too fast/slow. I was able to absorb the info presented”. (#8041)
• “I appreciate the visuals and the detailed examples used throughout the presentation” (#9413)
• “The chart about all the sensory processing disorders” (#6871)
• “I loved the way it was presented” (#1224)
• “Your depth of knowledge. It is obvious that you have taken many steps to fully understand SPD” (#3687)
• “Clear, spoke at an appropriate pace, books” (#2323)
• “The power point was great. Easy to understand and lots of great examples (like GPS).” (#8081)
• “I really enjoyed the strategies things that teachers can do in classroom” (#4134)
• “The stories because that is what I will remember years from now & the stories provided meaning to what is SPD. They help provide a visual in my mind.” (#1515)
• “The red flags and screening checklists as well as children’s literature.” (#0589)
• “the strength of this presentation was about sensory how affect the child” (#2637)
• “Your many examples and pictures for the visual learner.” (#8776)
• “Visual aid” (#5934)
• “The pictures / power point.” (#2552)
• “Slides and pictures” (#0730)
• “Clear, concise points, short and brief sentences on slides” (8247)
• “A topic that people want to know about” (#2893)
• “Tips on how to help and modify the environment for children w/ SPD. It was helpful to see certain characteristics of children with SPD.” (#2615)
• “Real pictures, graphs, visual references” (#7709)
• “Lots of examples used; group discussion; book reading” (#6005)

5. What areas could be improved?
• “A specific handout to the literature you found helpful. Also maybe a list of strategies you used/heard that was helpful for diff. situations”. (#8041)
• N/A (#9413)
• “Maybe having/ adding video – more stimulation” (#6871)
• “I would of loved to see videos” (#1224)
• “Maybe a video to see SPD in action” (#3687)
• “be more animated, ask audience what they’ve implemented” (#2323)
• “more ideas to help children be a part of an inclusive classroom” (#8081)
• “Slow down a little in the beginning to speak more about the brain physiologically how effects the child” (#4134)
• Blank (#1515)
• “Using more specific or detailed examples of inclusion practices. Also using success stories of children.” (#0589)
• “I think everything was great” (#2637)
• “When doing your presentation always provide the handout of slides because it’s a lot of information to take in. thank you.” (#8776)
• “Tone of voice – soft” (#5934)
• “When reading have your audience be able to see the book.” (#2552)
• Blank (#0730)
• “Slide 17, go slower and explain a bit more, a bit confusing” (#8247)
• “Explain the Dunn’s model in different way, I didn’t really understand” (#2893)
• “Slow down when talking and explaining think about the best way to say what you need to. Also go more in depth in the areas that most commonly not known by the general public. Topics were over rushed.” (#2615)
• Black (#7709)
• “The scenarios presented in the post test are confusing. I know your presentation is about SPD so it makes me think I should answer that way but really it could also be other factors causing the child to behave the way they did.” (#6005)

6. What were the strengths of the presenter?
• “your personal experience w/ the situation” (#8041)
• “Hadas, your passion is so visible and the fact that you used your own experiences makes the presentation much more interesting” (#9413)
• “Talked like she new what she was talking about” (#6871)
• “She new what she was presenting” (#1224)
• “Confidence in the subject and a clear goal to increase the awareness of SPD” (#3687)
• “clear” (#2323)
• “Clear, concise, organized, knowledgeable.” (#8081)
• “Personable, spoke slowly and clearly, great examples.” (#4134)
• “Clear explanations!” (#1515)
• “Her personable attitude and personal stories and experiences because they make the presentation much stronger and relatable.” (#0589)
• Blank (#2637)
• “Your knowledge is obvious and the way you addressed questions & comments.” (#8776)
• “Participation activities” (#5934)
• “Knowledge/ experience working with children whose have SPD” (#2552)
• “Utilizing personal information/ experience to further research” (#0730)
• “energetic, warm tone” (#8247)
• “she gave a lot of examples & asked others for their experience” (#2893)
• “She has experience from her own classroom & offers suggestions that she would also do in her own classroom” (#2615)
• “everything, stories from personal experiences” (#7709)
• “very relaxed and personal” (#6005)

7. What can she do to improve?
• “She is good but #5 to add additional info would be great” (#8041)
• N/A (#9413)
• “Talk a little louder please” (#6871)
• “she did everything great” (# 1224)
• N/A (# 3687)
• “Maybe discuss de-sentizing students as well” (#2323)
• “Hadas, your presentation was very informative; I thoroughly enjoyed it. Thank you.” (#8081)
• Blank (#4134)
• Blank (#1515)
• “Maybe practice the presentation a little more beforehand” (#0589)
• “Nothing everything was great” (#2637)
• “When reading a story walk around the room so your audience can see the pictures. Even if you need to go up & down rows…” (#8776)
• N/A (#5934)
• “keep observations on the go” (#2552)
• Blank (#0730)
• “Slow down a bit on some slides and make sure viewers are understanding the breakdown of ideas” (#8247)
• “Explain the Dunn’s model differently everything else was really great” (#2893)
• ‘same as 5’ (#2615)
• Blank (#7709)
• “Speak a little louder” (#6005)
9. What is your overall rating of the presentation?
• Excellent because “Good info, good way of presenting & personal experience” (#8041)
• Excellent because “This is so important and not many people are aware of SPD. So inspiring” (#9413)
• Excellent because “It was really informative and made me reflect on my own classroom” (#6871)
• Excellent because – blank (# 1224)
• Excellent because “of the knowledge gained. The handout is specially valuable” (# 3687)
• Excellent because “it informs the audience of the various areas that may be of concern in SPD” (#2323)
• Excellent because “informative, organized, knowledgeable, clear-spoken.” (#8081)
• Excellent because “Well presented” (#4134)
• Excellent because “The presentation was well organized & explained w/ clarity!” (#1515)
• Excellent because “I learned new information that can be of great use to me and my career as a teacher.” (#0589)
• Excellent because “It was great information thank you” (#2637)
• Excellent because “A lot of information in a very organized easy to understand way. Thank you for bringing up culture and reminding your audience that these are symptoms of SPD but does not always mean the child has SPD!” (#8776)
• Good because “it was very informative” (#5934)
• Good because “it was informative” (#2552)
• Excellent because “It was a wonderful review on the disorder. Small group activity was insightful, reading the book Sensitive Sam.” (#0730)
• Good because “it is has lots of vital information and is easy to follow, could use a little more detail but otherwise very good” (#8247)
• Excellent because “You were extremely prepared + new the information + topic you were presenting on” (#2893)
• Good because “they was really good explanations did a good job helping the audience understand SPD.” (#2615)
• Excellent because “Provides detail information and techniques about sensory awareness and sensory processing disorder. Many good examples and references.” (#7709)
• Blank (#6005)
Appendix G: Teacher’s Checklist and Information on Red Flags

Balzer-Martin Preschool Screening—Teachers Checklist

When concerned about an individual child, make several copies of this checklist and distribute it to school professionals acquainted with the child. Use the completed forms as the basis for a conversation about how to best serve the needs of a child.

As with the other checklists in this booklet, this screening tool quickly helps the reader gain an understanding of common signs and symptoms. Sensory integrative challenges can further be assessed through standardized methods, but screening tools such as this one are a good place to begin. Consult your school occupational or physical therapist for more information on standardized assessment, or call the American Occupational Therapy Association (see “organizations” in the resources section of this booklet for contact information).

Child’s Name: ___________________________ Age (yrs & mos): ________

Teachers: __________ Date: __________

Compared to his/her peers, is this child ADEQUATE in:

1. Ability to tolerate light and/or unexpected touch?
   - Yes □ No □
   - Comments: ___________________________

2. Willing participation in messy activities (e.g., sand, fingerpaints, etc.)?
   - Yes □ No □
   - Comments: ___________________________

3. Ability to sit upright in a chair without slouching or sprawling over the table?
   - Yes □ No □
   - Comments: ___________________________

4. Ability to enjoy or participate in intense movement experiences such as swinging high, bouncing vigorously, or spinning around?
   - Yes □ No □
   - Use s/he avoid such experiences?
   - Yes □ No □
   - Does s/he crave such experiences, possibly not getting dizzy?
   - Yes □ No □
   - Comments: ___________________________

5. Ability to get outer clothing on and off?
   - Yes □ No □
   - Comments: ___________________________

6. Ability to move body in smooth, coordinated manner (i.e., not moving in an awkward or unusual way)?
   - Yes □ No □
   - Comments: ___________________________

7. Use of both hands together when necessary (e.g., catching a ball, beating rhythm sticks, or holding a cup while pouring juice)?
   - Yes □ No □
   - Comments: ___________________________

8. Consistent preference for using one hand when working with markers, crayons, or pencils? (age four and up) Left □ Right □
   - Yes □ No □
   - Comments: ___________________________

Answers to Questions Teachers Ask About Sensory Integration.
9. Ability to work with a marker, crayon or pencil?
   Comments:

10. Ability to work with scissors?
    Comments:

11. Ability to maintain sufficient attention span for things s/he enjoys?
    Comments:

12. Ability to remain calm during routine classroom activities without becoming restless or fidgety?
    Comments:

13. Ability to eat and chew normally, without noticeable difficulties such as being excessively messy, refusing certain textures, or cramming food in mouth?
    Comments:

In comparing this child with his/her peers, do you see PROBLEMS such as:

14. Overflow of movement in body parts not directly involved in an activity (e.g., tongue protrusion, jaw motion, movements in non-dominant hand, etc.)?
    Comments:

15. Over-sensitivity to noises (e.g., putting hands over ears or complaining about sounds when others are not bothered)?
    Comments:

16. Vision stress (e.g., inattentiveness when drawing or doing puzzles; insistence on "sameness" in day-to-day activities; lack of good, consistent eye contact; excessive shyness; unusual awkwardness)?
    Comments:

17. Auditory language difficulties (e.g., when following directions, looks to others for cues before responding; has difficulty changing or rephrasing verbalizations when s/he is not understood; gives short or very limited verbal responses: cannot recall names of people or objects)?
    Comments:

18. Other behaviors that you feel may be atypical for his/her stage of development (e.g., drooling, stuttering, unusual postures or movements)?
    Comments:
Sensory Processing Disorder Checklist


Many of the symptoms listed in the following categories are common to that particular age group. Where more than a few symptoms are found in a child, we recommend you talk to your doctor or check the SPD Foundation's Treatment Directory for a professional experienced with treating Sensory Processing Disorder.*

Infant/ Toddler Checklist:
____ My infant/toddler has problems eating.
____ My infant/toddler refused to go to anyone but me.
____ My infant/toddler has trouble falling asleep or staying asleep
____ My infant/toddler is extremely irritable when I dress him/her; seems to be uncomfortable in clothes.
____ My infant/toddler rarely plays with toys, especially those requiring dexterity.
____ My infant/toddler has difficulty shifting focus from one object/activity to another.
____ My infant/toddler does not notice pain or is slow to respond when hurt.
____ My infant/toddler resists cuddling, arches back away from the person holding him.
____ My infant/toddler cannot calm self by sucking on a pacifier, looking at toys, or listening to my voice.
____ My infant/toddler has a "floppy" body, bumps into things and has poor balance.
____ My infant/toddler does little or no babbling, vocalizing.
____ My infant/toddler is easily startled.
____ My infant/toddler is extremely active and is constantly moving body/limbs or runs endlessly.
____ My infant/toddler seems to be delayed in crawling, standing, walking or running.

Pre-School Checklist:
____ My child has difficulty being toilet trained.
____ My child is overly sensitive to stimulation, overreacts to or does not like touch, noise, smells, etc.
____ My child is unaware of being touched/bumped unless done with extreme force/intensity.
____ My child has difficulty learning and/or avoids performing fine motor tasks such as using crayons and fasteners on clothing.
____ My child seems unsure how to move his/her body in space, is clumsy and awkward.
____ My child has difficulty learning new motor tasks.
____ My child is in constant motion.
____ My child gets in everyone else's space and/or touches everything around him.
____ My child has difficulty making friends (overly aggressive or passive/ withdrawn).
____ My child is intense, demanding or hard to calm and has difficulty with transitions.
___ My child has sudden mood changes and temper tantrums that are unexpected.
___ My child seems weak, slumps when sitting/standing; prefers sedentary activities.
___ It is hard to understand my child's speech.
___ My child does not seem to understand verbal instructions.

School Age:
___ My child is overly sensitive to stimulation, overreacts to or does not like touch, noise, smells, etc.
   ___ My child is easily distracted in the classroom, often out of his/her seat, fidgety.
   ___ My child is easily overwhelmed at the playground, during recess and in class.
   ___ My child is slow to perform tasks.
   ___ My child has difficulty performing or avoids fine motor tasks such as handwriting.
   ___ My child appears clumsy and stumbles often, slouches in chair.
   ___ My child craves rough housing, tackling/wrestling games.
   ___ My child is slow to learn new activities.
   ___ My child is in constant motion.
   ___ My child has difficulty learning new motor tasks and prefers sedentary activities.
   ___ My child has difficulty making friends (overly aggressive or passive/withdrawn).
   ___ My child gets stuck' on tasks and has difficulty changing to another task.
   ___ My child confuses similar sounding words, misinterprets questions or requests.
   ___ My child has difficulty reading, especially aloud.
   ___ My child stumbles over words; speech lacks fluency, and rhythm is hesitant.

Adolescent/Adult:
___ I am over-sensitive to environmental stimulation: I do not like being touched.
   ___ I avoid visually stimulating environments and/or I am sensitive to sounds.
   ___ I often feel lethargic and slow in starting my day.
   ___ I often begin new tasks simultaneously and leave many of them uncompleted.
   ___ I use an inappropriate amount of force when handling objects.
   ___ I often bump into things or develop bruises that I cannot recall.
   ___ I have difficulty learning new motor tasks, or sequencing steps of a task.
   ___ I need physical activities to help me maintain my focus throughout the day.
   ___ I have difficulty staying focused at work and in meetings.
   ___ I misinterpret questions and requests, requiring more clarification than usual.
   ___ I have difficulty reading, especially aloud.
   ___ My speech lacks fluency, I stumble over words.
   ___ I must read material several times to absorb the content.
   ___ I have trouble forming thoughts and ideas in oral presentations.

*While this checklist can't diagnose a child with SPD, it can be a helpful guide to see if additional testing should be done. When filling out this checklist, think about the child's behavior during the past six months.

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