Sensory Processing Disorders in Elementary School: Identification and
Management Strategies for Teachers in Inclusive Classrooms

By

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Abstract

Sensory Processing Disorder (SPD) is a neurological disorder that causes complications in processing information from the 5 senses (taste, touch, sight, hearing, and smell). Unlike blindness or deafness, which is characterized as not receiving sensory information at all, an individual with SPD perceives senses abnormally (Sicile-Kira, 2010). The purpose of this research study was to determine how occupational therapists (OT) aid elementary teachers in becoming responsive to specific cases of SPD in ways that do not infringe upon the general education class environment. The study was guided by the question ‘How are occupational therapists able to assist teachers in making situation-based accommodations for students with SPD, while both accommodating their needs and not hindering the needs of the other students in the room?’ Data was collected through face-to-face interviews with three occupational therapists. Findings showed that sensory processing disorder manifests itself in three main ways; on a spectrum, through over-responsive behaviours, and through under-responsive behaviours. Additionally, it was found that using a whole class approach is often beneficial in order to motivate a student with SPD.

Key Words: Sensory Processing Disorder, SPD, Autism, ASD, Special Education, Elementary, Inclusion, Teaching, Sensory Diet, Occupational Therapist
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Chapter 1: INTRODUCTION

Introduction to the Research Study

“Imagine yourself making a spaghetti dinner... Now imagine that your senses aren’t working efficiently. The fluorescent light gives you a headache and you can’t find the tomato sauce in your crowded pantry. The lettuce in your hands feels slimy and repulsive. The smell of garlic makes you queasy. You don’t hear the boiling water on the stove, and it bubbles over, flooding your pilot light so the stove won’t relight. You bump your head on a cabinet, trip over the cat and spill the salad. By the time dinner is on the table, you’re a nervous wreck and you’ve yelled at everyone. All you want to do is crawl into bed and sleep” (Biel & Peske, 2009; 17).

Autism Spectrum Disorder (ASD) is a complex group of disorders having to do with brain development affecting individuals to varying degrees, and can be categorized in terms of social interaction, verbal and nonverbal communication, as well as repetitive behaviours (Autism Speaks, 2013). The United States Center for Disease Control and Prevention (CDC) estimated that ASD affects 1 in 88 children (2012), while a Canadian study shows that 1 in 100 children are affected (Favaro, 2014). However, this does not account for all cases of ASD. BBC News (2009) released a statement saying, “for every three known cases of autism spectrum, there may be a further two cases that are undiagnosed.” Therefore, it is not clear how many undiagnosed cases of ASD that are actually in existence all over the world. ASD covers an extremely broad range of individuals, cases, and case-specific problems. An aspect that presents itself in many cases of individuals with ASD is Sensory Processing Disorder (SPD). Although it is not clinically considered a qualifying characteristic of ASD, Sicile-Kira (2010) states that she has never met an individual on the spectrum who did not have a problem in the sensory area.
Sensory Processing Disorder is a neurological disorder that causes complications in processing information from the 5 senses (taste, touch, sight, hearing, smell). Unlike blindness or deafness, which is characterized as not receiving sensory information at all, an individual with SPD perceives senses abnormally (Sicile-Kira, 2010). SPD causes the brain to process sensory information in a distressing, confusing, and abnormal way (Sicile-Kira, 2010). Anywhere from 5 to 15% of the general population is estimated to have SPD that is severe enough to impact day-to-day living. This statistic has an increased incidence of 78% for those with autism spectrum disorder (Dobbins, Sunder & Soltys, 2007).

Children with SPD not only struggle in the classroom (SPD Foundation, 2014), but it is likely they will struggle in other aspects of their daily lives at school. They may struggle on the playground in terms of becoming fearful of equipment or sounds that may occur or in the cafeteria, where the sounds and visual stimulations may cause emotional distress. SPD may impact an art class, where a student may struggle to engage in messy play or in gym class, where a student may exhibit clumsy behaviour, or may appear uncoordinated and bang into peers as well as objects. In some cases, students may even exhibit difficulty walking down the hallway (SPD Foundation, 2014). Therefore, it is important for teachers, as well as support workers, to take into consideration aspects of school that may not involve class time. Prior research has identified information that teachers (or parents) may use to help children cope with sensory overload. Some of the suggestions for teachers include having the child take walking breaks, brushing (touch pressure technique), listening to calming music, fidgeting with objects, chewing on objects, push-ups and jumping jacks, stretching, increased play opportunities, demand in
eye contact, preparation for intense sensory experience (wearing ear plugs), having a special place in line, or a special seat in class (Biel & Peske, 2009). However, it is important to note that many of these aids are directed at parents rather than suggestions for teachers. Little research has been conducted to instruct teachers how to incorporate SPD accommodations, or what is known as a “Sensory Diet” into a pre-existing classroom in order to foster inclusive space.

A Sensory Diet is a term coined by occupational therapist Patricia Wilbarger (Peske, 2014). It is defined as “a planned and scheduled activity program designed to meet a child’s specific sensory needs” (Reinson, 2012: 64). Thus, incorporating a sensory diet into the curriculum, or an IEP for a child on the spectrum with SPD could potentially enhance learning for that child without detracting from the larger classroom. With the addition of a sensory diet, a child may have specific accommodations granted to them that are unrelated to the function and flow of the larger classroom. These accommodations may be situation-based, meaning that each accommodation must be looked at from a unique vantage point based on the individual student’s current situation or problem.

Teaching children with Sensory Processing Disorder (related to autism spectrum disorder) in a general classroom environment should be the primary goal. The prevalence among Canadian youth with SPD is unknown. It has yet to be classified as a disease, and Statistics Canada does not collect information regarding how many individuals are affected with SPD. However, the Center for Disease Control and Prevention in the United States (2012) has stated that both Autism Spectrum Disorder and Sensory Processing disorder are on the rise. Thus it is important for teachers to learn instructional
mechanisms in order to help children with SPD, which may or may not be related to autism, to thrive in the classroom while feeling included. As these issues are not specific to classroom related activities, it would be extremely helpful to allow children to remain in a general education classroom in order to build skills and coping strategies that they can take into the real world.

**Purpose of the Study**

The purpose of the study will be to determine how occupational therapists (OT) aid elementary teachers in becoming responsive to specific cases of SPD in ways that do not infringe upon the general education class environment. It is vital to look into early education as early detection is the key to any and all health related diseases and disorders (both mental and physical). Early detection and intervention make the difference in an individual’s life. Additionally, it is of equal importance to place focus on OTs, as they are equipped with a toolbox full of strategies and information that can be used within the classroom.

**Research Questions**

The following research questions will guide the study: How are occupational therapists able to assist teachers in making situation-based accommodations for students with SPD, while both accommodating their needs and not hindering the needs of the other students in the room? What challenges do these occupational therapists confront in fostering an inclusive classroom for all? What perceived impact do these OTs observe on inclusion and classroom learning?
Background of the Researcher

This research is important to me for two main reasons. Firstly, as a child, I began having problems processing sensory information in a tactile way. I had trouble with the feeling of sock seams as well as labels on clothes. This is something that continues today. These sensations bother me to the point of tears. My parents and teachers did not understand why I was being so difficult or why I had trouble concentrating if something was touching my skin in the wrong way. Now I handle my problems privately, not allowing these things to interfere with daily life. I turn my socks inside out and I cut the labels off my clothes. However, when I was a child, I did not realize these were options for me, and the adults in my life were unaware of how to help me. If I had accommodations related to my sensory sensitivities I would have felt safer, and a greater sense of normalcy. I feel that bringing a heightened awareness of the strategies that can be used to help children with Sensory Processing Disorder will alleviate their distress and help them to fit into a larger classroom with greater ease. The second reason this research is important to me is that I have noticed sensory sensitivity occurring with my nephew as well. He struggles, like I do, with the seams of socks, as well as at times with physical proximity to other individuals. When he was an infant, he was unable to sit close to, or be hugged tightly by individuals without looking physically uncomfortable. I hope to gain insight into the way that teachers, including myself, can help to reduce this stress so that students like my nephew can feel as normal as possible and focus on learning.

Overview

Chapter 1 of this research paper includes an introduction to Autism Spectrum Disorder as well as the prevalence of Sensory Processing Disorder both related and
unrelated to ASD. It additionally includes the purpose of the study, its relevance and importance, the research questions that will guide the study in its entirety and lastly how I came to be involved in this topic and study. Chapter 2 contains an extensive review of the literature on SPD both in a broad sense as well as the specific elements that are encountered when discussing SPD. Many terms were defined upon completion of the literature review including Sensory Diet and Sensory Processing Disorder. The different types of processing problems individuals may encounter were additionally taken into account. Chapter 3 provides the methodology and procedure used in this study including information about the sample participants and data collection instruments. Chapter 4 identifies the participants in the study and provides an analysis of the data as it addresses the research question. Chapter 5 includes limitations of the study, conclusions, recommendations for practice, and further reading and study. References and a list of appendixes follow at the end.
Chapter 2: LITERATURE REVIEW

Sensory Processing Disorder

Sensory Processing Disorder, as its own disease, is a fairly new concept. It came to fruition in the late 1970’s when an occupational therapist by the name of Dr. A. Jean Ayres laid the groundwork for sensory integration dysfunction (Biel & Peske, 2009). Since then, it is a term that has been defined and redefined by many different professionals. Gallagher and Weigel (2005) define Sensory Processing Disorder (SPD) as the inability to “interpret sensations and organize a purposeful response.” However, Biel and Peske (2009) see SPD as an umbrella term that encompasses many different patterns and subtypes, such as under responsive or over responsive sensory reactions of sensory integrative problems that other authors on the subject clump together as an overarching SPD problem. They break down SPD into Sensory modulation disorder (SMD) which is how the central nervous system organizes and responds to sensory stimuli, sensory-based motor disorder which causes clumsiness, which is awkwardness and accident prone behaviour and lastly, sensory discrimination disorder which causes problems with sensory input and sensory stimuli (Biel & Penske, 2009). This may be the reason that there is little insight into exactly how many individuals are affected with SPD. Professionals may be unable to develop a cohesive definition, as SPD has not been added to the list of mental disorders leaving professionals unable to pinpoint a specific definition or a specific number of individuals affected by this particular, and fairly new disorder.
**Common Behaviours**

Throughout the literature, there are common behaviours that researchers have brought to the forefront when discussing SPD. Almost all of the behaviours that individuals with SPD exhibit fall under two categories: over-responsive and under-responsive. It is important to note that many individuals with SPD present with a combination of both over-responsive (sensory avoidance) and under-responsive (sensory seeking) behaviour (Biel & Peske, 2009). An example of this is when a child with ASD may love to touch others yet dislikes the feeling of any type of touch from others (Ashburner, Zivani, Rodger, 2008). However, there are several other behaviour commonalities that present with individuals who have SPD that authors did not agree on. They include: unusually high or low activity levels, which interestingly did not present in the case of Cosbey, Johnston, Dunn & Bauman (2012) in looking at playground behaviours within elementary schools as well as coordination problems, oral motor problems (Gallagher & Weigel, 2005), tantrums, avoidance and low social skills, leaving children less sensitive to the needs of their peers as well as social skills (Cosbey, Johnston, Dunn & Bauman, 2012). Additionally, Biel and Peske (2009) identified that children may often have intense; out of proportion reactions to situations they find challenging or unfamiliar which may lead to feelings of weirdness or stupidity. The extensive and wide reaching nature of this disorder makes it hard to define and hard to pinpoint in children, specifically in elementary children who may naturally exhibit abnormal sensory behaviour related to age rather than to a specific disorder. It may be hard for a teacher to get a diagnosis for a child in his/her class, or identify the specific needs of the child on a daily basis.
**Over-responsive**

Over-responsive behaviours produce sensory avoidance, causing individuals to avoid certain sensory experiences that may be unpleasant, or that an individual may not be able to process (Gallagher & Weigel, 2005). These over-responsive behaviours may present as an oversensitivity to touch, smell, sights and sounds (Gallager & Weigel, 2005; Biel & Peske, 2009; Ashburner, Zivani & Rodger, 2008). More specifically, these may be viewed as hypersensitivities, which means that children are not only over-responsive but may additionally be oversensitive to certain sensory inputs (Biel & Peske, 2009). However, not all the literature is consistent in saying that over-sensitivity causes avoidance. Biel & Peske (2009) delve into tactile oversensitivity, which causes difficulties in many areas that may not relate to avoidance. Individuals may experience difficulty with sensory exploration, causing them to avoid eye contact or be uncomfortable with unwarranted touch. Additionally, it may cause children to avoid emotional and social norms, which may cause isolation or aggression towards other children or motor activities. This may leave a child unwilling to try new fine and gross motor activities leading to isolation or trouble grasping the ability to do physical activities (Biel & Peske, 2009). These children may experience problems in cognition as well as speech and language, causing poor communication skills. Children may find certain foods repulsive or refuse to groom and dress themselves appropriately, choosing to wear clothing that is comfortable rather than clothing that is appropriate (Biel & Peske, 2009).

Most literature highlights a child’s difficulty in processing stimuli, regardless of the type, however, Ashburner, Zivani and Rodger (2008) highlight that individuals with
SENSORY PROCESSING DISORDER

SPD have various strengths when processing simple sensory stimuli. This may be a stimulus that is static, repetitive and predictable. Individuals may actually excel at processing this type of stimuli or process it as anyone else might. Problems occur when stimuli is unpredictable or volatile. Since children cannot rely on their senses to gain an appropriate and accurate picture of the world, they tend to have trouble behaving properly or learning (Biel & Peske, 2009). It is important for teachers to consider all current literature and highlight the strengths a student may have while being sensitive to their needs.

Under-responsive

Under-responsive behaviours cause abnormal input in sensory areas of touch, smell, taste, sight and hearing which leads children to seek out more behaviour and crave stimuli, known to professionals as sensory seeking behaviour (Gallagher & Weigel, 2005). This may also be known as hyposensitivity (Biel & Peske, 2009), which causes children to attempt to generate an increase in input in order to meet a high response threshold related to sensory input. Sensory seeking behaviour may also be caused by children attempting to gain more information from their surroundings and the environment (Ashburner, Zivani, Rodger, 2008). Biel & Penske (2009) describe this differently, as a need for more intense stimulation from the environment. They highlight this under sensitivity in terms of tactile stimulation. Children may express difficulties in sensory exploration, causing excessive physical contact that may, at times, be inappropriate. Also emotional and social abnormalities as well as motor problems in registering tactile input may be exhibited (Biel & Penske, 2009). This may come across as a child needing to have more skin surface in contact with an object or using a marker
with a fist rather than fingers. Cognitive and Speech/Language problems may surface in addition to problems in grooming, dressing and eating. Clothing may be too tight or too loose due to an under sensitivity, or teeth brushing may cause injury due to tactile needs (Biel & Penske, 2009).

**Autism Spectrum Disorder**

A great deal of the research confirms that Sensory Processing Disorder most commonly presents alongside Autism Spectrum Disorder (Gallagher & Weigel, 2005; Reinson, 2012, Dobbins, Sunder & Soltys, 2007; Ashburner, Zivani, Rodger, 2008). It is extremely important to recognize that if a child has SPD this does not mean they are autistic or on the spectrum (Biel & Peske, 2009), however, many individuals with ASD do have sensory related problems. This may be why research suggests the two are always connected. Still, separating the two is important both for teachers as well as other professionals giving a diagnosis and trying to make modifications. Nevertheless, research suggests that individuals present with ASD when they have SPD (Dobbins, Sunder & Soltys, 2007).

As the majority of cases of ASD present with sensory processing difficulties, there is a need for intervention to meet needs of the growing population for those diagnosed with ASD related to processing and integrating sensory information (Reinson, 2012). In order to cope with sensory difficulties, many children with autism turn to rationalization of behaviour, idealization, sublimation, tuning others out, acting out against others as well as engaging in self-stimulatory behaviours (Biel & Peske, 2012). Teachers and service providers concede that Sensory Processing Disorders have become a large part of many neurological disorders, including autism, which is why it must be
part of the mental health conversation. The more knowledge and resources that teachers have, the better equipped they will be when, and if a child with SPD comes into their classroom.

**Sensory Diet**

Although many researchers are quick to define and interpret SPD and its components, not many solutions have been offered to parents or teachers in order to combat difficulties in dealing with SPD on a daily basis. One solution that has been offered is a “sensory diet” which can be implemented following the diagnoses of SPD (Gallagher & Weigel, 2005). Another name for a sensory diet is a treatment plan which delivers sensory information organizing the central nervous system, assists a child in modulating sensory information and helps the child gain a more organized response to sensory stimuli (Gallagher & Weigel, 2005). Although many professionals, including psychiatrists, occupational therapists, teachers and parents advocate for a sensory diet, not everyone agrees that it is the best option. Reinson (2012) states that a sensory diet lacks a cohesive framework for implementation and use, specifically within the public school system. This may be problematic in trying to regulate a child’s sensory processing. A sensory diet is based upon engaging a child in sensory experience on a regular basis in order to help them focus, and attentively interact (Reinson, 2012, Gallagher & Weigel, 2005) in a planned and scheduled way. However, not every child will require the same type of attention or ingredients within their diet. The sensory diet works only when the appropriate ingredients in the right measurements are blended together to fit the unique makeup and needs of the child that will be using it (Biel & Peske, 2009). Difficulties arise in the classroom in a variety of ways. First, if a teacher
must implement various sensory diets which may conflict with one another depending on the child. Second, teachers may have difficulty ensuring that these ingredients do not hinder the rest of the classroom and the learning experiences of other children.

**Inclusion**

Inclusion may happen in many different ways. For the purpose of this study, inclusion was researched based on a child not being placed in a special needs classroom. Rather, the engagement was with literature that focused on children with SPD in a general classroom with modifications that were situation and individual specific. Modifications may be interpersonal, physical or environmental.

**Classroom**

Classroom inclusion is inclusion within the space of learning, while children are in class. Most often, children are placed in a classroom setting in which there are complex sensory experiences and environments (Ashburner, Zivani & Rodger, 2008). Although this may work for a typically developing child that does not present with ASD or SPD, the excessive movements, hyperactivity and inability to concentrate on classwork or appropriate stimulus (Lin, Min, Chou & Lin, 2012) may be heightened by the complex stimulus found in general classrooms. Children may find the visual clutter, irregular tactile input, excessive noise, as well as verbal instruction to be too much stimulus in one room (Ashburner, Zivani & Rodger, 2008). Children with SPD are already at an increased risk for learning disabilities, lower participation in school related activities and decreased academic achievement (Koenig & Rudney, 2010), thus they do not need the additional stress of over-stimulated or inappropriately simulated classrooms. Some studies show that children with SPD exhibit lower than average performance on
spelling, reading and writing tasks (Koenig & Rudney, 2010). Specifically, children that are under-responsive and seeking sensation are significantly negatively associated with overall academic performance and attention to cognitive tasks (Ashburner, Zivani & Rodger, 2008). This may be due to mainstream classroom setting or instruction. How then, are teachers, with such limited resources, able to create an inclusive space for each student’s individual needs?

Most of the literature is aimed at offering solutions based on moving or removing a child. For these individuals, it is important for teachers in an inclusive setting to reduce unpredictable tactile input by placing children at a distance from others to minimize competing inputs (Ashburner, Zivani & Rodger, 2008; Lin, Min, Chou & Lin, 2012). Additionally, the use of an occupational therapist in implementing sensory processing early on within the classroom is seen to be beneficial to classroom teachers (Lin, Min, Chou & Lin, 2012). This may, however, make children with SPD feel weird or singled out. Without removing or moving a child, Ashburner, Zivani & Rodger (2008) offer several solutions that may aid a child in an inclusive setting. Teachers may increase the predictability of activities, and increase the decibel of their speech to be 2 or 2.5dB louder (Ashburner, Zivani & Rodger, 2008) as auditory problems often lead to learning problems (Biel & Peske, 2009). Some of these suggestions may be difficult for classroom teachers to implement on a daily basis, as there are many classroom factors to consider. Biel & Peske (2009) offer a list of suggestions that may aid a classroom teacher in ways that are small but effective. Allowing a child to twist, jump or stretch before having to give their full attention and focus can make the world of difference. Children should be allowed to satisfy their bodily needs as necessary (Biel & Peske, 2009). Other
suggestions include: allowing a child to chew gum, wear headphones, natural lighting, shut the door, perfume free environment, beanbag chair, tactile stimulation, vibrating pens and keyboards (Biel & Peske, 2009). Finding the right fit for each child may be difficult but the use of an OT may aid the classroom teacher a great deal, just as when implementing a sensory diet (Biel & Peske, 2009; Lin, Min, Chou & Lin, 2012).

**Outside of Classroom**

Time within the classroom does not account for the entire school day. There are many hours of a day in which children are at school participating in different aspects of school culture. These times of day may include recess and lunchtime and the locations may include a lunchroom, playground, hallway, gymnasium and other recreational locations and activities. During these times of the day, children are expected to participate socially in the school climate. Social participation according to Cosbey, Jonston, Dunn & Bauman (2012) is how people relate to and interact with their social surroundings. The specific focus of one research study was the playground, a site in which children may spend a great deal of recreational time. A child with SPD has difficulty processing sensory input in such an unstructured, unpredictable environment (Cosbey, Jonston, Dunn & Bauman, 2012), which causes them to be less sought out for play. Children with SPD spend more time playing alone during recreational time (Koenig & Rudney, 2010) as they need explicit instructions to manage their over and under responses to the stimulus encountered during play (Cosbey, Jonston, Dunn & Bauman, 2012). During recreational time, many children are engaged in physically demanding activities, however children with SPD have decreased physical coordination, further isolating them from their peers (Koenig & Rudney, 2010). The problem is, how to fix
these problems that exist when there cannot be constant supervision and instruction. Giving children activities with increased structure allows a structured environment in which children with SPD may be able to pick up socially acceptable cues and behaviours (Cosbey, Jonston, Dunn & Bauman, 2012). This would potentially decrease the sensory avoidance and sensitivity that may be caused by unpredictable activities (Koenig & Rudney, 2010).

Outside of the playground, students may experience problems in the lunchroom, or around lunchtime, during gym, or in the hallway. Having students keep books in the classroom may decrease their distress in walking the halls (Biel & Peske, 2009). Additionally, offering children a sensory gym rather than a playground or a regular gym class in which they are in sensory safe, supportive environments may allow them to push beyond their limitations and try things they may otherwise be unwilling to try. Sensory gyms have many different toys and different types of equipment that help children with SPD to feel safe (Biel & Peske, 2009). Lastly, Biel and Peske (2009) suggest that lunchtime be not too late or early in the day. This will help students to regulate their eating and schedules.

The literature involving recreational activities within and outside of schools is sparse. It is important to know what children are experiencing when they are not inside the classroom, as recreation is an important part of the inclusive school both because it is where many social interactions occur and because much of the school day is spent during recreational time. Having insight into what children are experiencing during this time of the day would help teachers understand how best to include a child with SPD in mainstream school. Teachers would be able to make situation-based accommodations for
students with SPD, while both accommodating their needs and not hindering the needs of other students.

Chapter 3: METHODOLOGY

Procedure

The proposed qualitative study will delve into Sensory Processing Disorder (SPD) as a rich and extensive topic by exploring the aspects and challenges that teachers face within an inclusive classroom. In this research, I conducted an extensive review of the literature in order to understand the current public understanding of SPD as well as its place within the classroom setting. Throughout the research, I looked into ASD, common behaviours associated with SPD, and how these work and interact with an interactive environment and setting both within the classroom and in the wider school climate. I looked into both social and academic aspects of a school day. I will conduct three face-to-face interviews with teachers in order to probe, gain insight, document, and understand the difficulties and rewards of hosting a child with SPD in an inclusive setting. The use of thought provoking interview questions as well as understanding of body language will assist in gaining insight into my research question in an effort to develop understanding of how teachers are able to make situation based accommodations for students with SPD, while both accommodating their needs and not hindering the needs of others.

Instruments of Data Collection

Informal, semi-structured interviews will be conducted to gather information from current teachers. Allowing interviews to be semi-structured will give me flexibility to use my pre-existing questions as a starting point for further questioning depending on the direction that the interview is taking. Follow up questions can provide information to
flow from the teacher. Allowing the interviewee to speak freely and lead the interview will be an asset in gaining in-depth and relevant information for the study. The interviews will be meaningful in that they gain insight into the importance as a teacher and for a teacher in creating an inclusive space.

I developed an interview protocol in order to gather evidence pertaining to teacher specific relationships with SPD and an inclusive setting. Additionally, the interviews will provide insight into different modifications and accommodations that may be relevant to teaching a child with SPD. Some of my sample interview questions include:

1. What experiences do you have interacting with children with SPD? How long have you been working with this population?
2. What accommodations have you made specifically in the classroom to allow smooth work with a child with SPD? Can you give some examples?
3. What are your success indictors? How is this making a difference?
4. Are there any accommodations you are experimenting with or thinking about experimenting with?

Participants

There were several different aspects taken into consideration when creating a participant poll for this research study. In selecting three individuals to conduct my study, it was important to focus on occupational therapists that have worked both as, and in conjunction with classroom teachers in the primary population as the literature has exemplified how important it is to implement early instruction and early intervention. Therefore, it was important to focus on these occupational therapists. Additionally, in order to understand students with SPD, the participants needed to have experience
working with the population being researched. Lastly, these therapists must have experience working with children who have SPD or a similar sensory issue in a classroom setting. The focus on occupational therapists rather than teachers was a strategic one. From the lack of understanding around SPD in Canada, it would be difficult to find educators who have had experience working with children with SPD. Many teachers have limited knowledge in this subject area, and require support from OTs. The experience of occupational therapists that have worked in a classroom setting is important in getting a comprehensive look into the daily classroom of a child with SPD.

I plan to recruit participants through browsing online to see which occupational therapists have worked within general education, public or private schools, to implement sensory-based education. If need be, these interviews will be conducted on Skype in order to have an online chat with potential schools. Another way I plan to recruit individuals for my study is through word of mouth and my research supervisor. I plan to discuss my MTRP during my practicums and ask my community for support in locating participants.

Data Collection and Analysis

I conducted three 60-minute interviews at a private practice, in a quiet, distraction free space. I recorded the interviews, and later transcribed them. After transcribing each of the interviews, I began by reading the data to get a feel for what was talked about and any important points that were stressed. I read and reread the data focusing on broad ideas that stood out. I used my interview questions as a basis to determine which information was of the utmost importance and which information was not necessary. I underlined important words, phrases and used asterisks to indicate quotes that I wanted to
use. I made notes to myself in the page margins as I went along indicating emergent themes, insights and potential questions. At first, I identified seven themes that emerged. I consolidated this information into five themes by combining and eliminating themes. My final five emergent themes were Knowledge and Understanding, Optimal Learning Environment, Manifestations of the Disorder, Regulation and Treatment. I then used my notes and transcriptions to sub-categorize my themes into more specific groupings in order to analyze my data in an efficient and effective way. I used a table in order to organize my interview responses into themes and codes.

**Ethical Review Procedures**

I followed the ethical review approval procedure for the Master of Teaching program. I obtained informed consent (written) from each teacher that participated in an interview for my study and notified them that they will have the opportunity and the right to pull out of the study at any time. The teachers were given the letter of consent for the interview (see attached in appendix A). I explained the nature of the study to each of the participants and allowed them to make an informed decision as to whether or not they would like to participate in my study. I protected the identity of each participant by using pseudonyms both in my notes and within my paper. I will allow the participants to see the paper before it is submitted and allow them to revise or edit their specific interviews at any time.

**Limitations**

There are several limitations to my proposed study. One such limitation is that the sampling will be purposeful and selective, to ensure that the participants fit the criteria for the study. Thus, an extremely limited population will be used in order to answer the
research question, giving a narrow scope to the answers and a possible bias toward the study. Another limitation of the study is that the sample size is extremely small. With only three interviews being conducted, the scope of this research is not very wide and will be limited in results. Additionally, as only interviews will be conducted, this further limits the scope of the study. There will be no participant observation or differing points of view within the classroom. Thus, it is important to note that the voices heard within the research paper will come directly from interviews with educators and not through observation or surveys. The interviewee, due to the lack of anonymity within a face-to-face interview may feel uncomfortable disclosing information they may disclose in an anonymous setting. Lastly, the time allotted to the research will span only a couple of months. This may skew the data slightly in discovering the results and discussion.

**Strengths**

Although there are numerous limitations that must be taken into account, this study has a number of strengths as well. The specificity of teachers involved in this study will aid in finding results specific to the subject area. There will be no interviews with teachers who are unsure of this subject area or the importance of understanding the needs of children with SPD. Each interviewee will bring their own field experience into this study and create a rich base of information from which to pull results. Additionally, this study will give a voice to teachers who may not otherwise have the opportunity to share their experiences with others. As this MTRP will aid future and current teachers, it is important that these individuals are able to hear the voice of a colleague and understand personally their struggles and achievements. As well, interviews allow for a personal interaction in which I will be able to gauge the interviewee and adapt my questions
accordingly. If an individual seems uneasy with a question or uncomfortable I can adjust the interview. Moreover, an interview allows for me, as the researcher, to read body language and facial expression as part of the information gathering process. As these interviews will be semi-structured, the participants will have many chances to share their own views and guide the interview in a unique way that I would be unable to accomplish with surveys or questionnaires.
Chapter 4: FINDINGS

Analysis of the three face-to-face interviews with occupational therapists conducted led to the discovery of several themes and understandings. The interviews probed information regarding classroom strategies, accommodations and views on inclusion. There was a great deal of overlap with the answers that Julia, Shelby and Rachael shared. Specifically regarding the misconceptions surrounding sensory processing disorder (SPD) and behaviour problems within the classroom. There were no opposing opinions that were evident when analyzing the data, however, the three individuals had clear differences in points of passion and importance. A lot of the information gained from these interviews coincided with information gathered from my review of existing literature. The only major gap present was that two of the three participants mentioned the prevalence of SPD neurological research and scans that were not evident in any research that I located regarding SPD and the classroom. The data will be presented in five central themes:

- Theme 1: Sensory processing knowledge and understanding
- Theme 2: Optimal learning environment;
- Theme 3: Manifestations of sensory processing disorder
- Theme 4: Regulation
- Theme 5: Treatment

Additional subthemes were used within each overarching theme in order to narrow the focus of the data. Excerpts were used where appropriate and pseudonyms were used for each individual.
Sensory Processing Knowledge and Understanding

This theme is referring to the knowledge and understanding that the participants have regarding their experience with SPD as well as other disabilities and the experiences they have working with this population. This theme includes the subthemes Education/Additional Qualifications, Support, and Misconceptions (Surrounding Behaviour).

Education/ Additional Qualifications

Each of the participants discussed their background with education and the additional qualifications they have specifically regarding sensory processing disorder. All three participants received a master’s degree within the occupational therapy field after working within the special education field for many years. Each of the participants had their own unique qualifications that aid their work with this population.

Julia is SIPT certified (Sensory Integration and Praxis Tests). This is a standardized group of 17 tests as well as treatment techniques, for children between the ages of 4 and 8 and measures different areas of praxis as well as features of vestibular, proprioceptive, tactile and visual systems. The SIPT test is used to determine if performance related deficits are due to poor sensory integration and praxis skills (Bodison & Mailloux, 2006). Additionally, she is certified in DIR Floortime, which is “not necessarily a sensory processing disorder treatment technique, it’s a lens” in which to look at children and their ability to process sensory information based upon social emotional development (Julia, interview).

Shelby has spent 35 years taking continuing education courses specializing in SPD. She taught at U of T in various departments educating individuals about sensory
processing disorders. She is currently the occupational therapy (OT) consultant for the Toronto Catholic School Board. She, like Julia, is qualified in DIR Floortime. She holds various other qualifications surrounding SPD. A few that she highlighted to be of particular importance were Test Battery Certification as well as a variety of theory courses dealing with development. “[I] think understanding the theory and relationship between sensory processing and development is critical to know how to assess and treat it” (Shelby, interview). Shelby valued highly the need to understand the difference between behaviour and sensory needs, and took various courses in order to understand and observe the differences between the two.

Rachael has almost 15 years experience working in pediatrics, completing home-based behaviour therapy and working as a shadow in schools. She has taken a plethora of professional development workshops:

I did is it sensory or is it behaviour and the Wilbarger brushing workshop. I attended autism workshops with a huge emphasis on SPD, as well as a variety of workshops that I have provided for other OTs on sensory processing, on motor planning, on different therapeutic techniques, therapeutic listening, astronaut listening – based on sensory integration theories. The training that I have is all PD workshops. (Rachael, interview).

Support

When I inquired if schools (principals) offer support or PD to aid in understanding for teachers or OTs in the classroom, the answer was an overwhelming no. Julia said “schools do not supply us with any information about sensory, it’s not in their vocabulary” while Shelby suggests it is the role of the OT to provide informal training when teachers have had little to no exposure to SPD. When the participants were further questioned about the support they do receive from parents, principals, teachers, support workers or educational assistants, their answers varied, although the three individuals all
concluded that a support system, flexibility and follow through were a vital part of a successful treatment approach.

Julia suggests that on the occasion that treatment does not work, it is because there is no follow through either at home or at school, or there is no time to implement techniques while Shelby takes it further by saying:

You must see what types of support the principal is offering and how interested the teacher is and one of the jobs is to show the teacher that it will make the job easier. When you are making recommendations, you aren’t adding to the work but you are making their job easier because you are changing the child’s behaviour and make the child less disruptive (Shelby, interview).

Rachael reinforced the responses of the other 2 participants, saying that if a teacher has no time to implement strategies put in place, it makes it more difficult to have support and follow through; therefore taking into consideration the time and resources teachers have access to is vital. Rachael states “in a busy classroom, a teacher cannot be a therapist to one client so we give recommendations that will work for the entire class.” This ensures a higher degree of follow through and support between teachers and OTs.

**Misconceptions (Surrounding Behaviour)**

Each of the participants described a misconception that educators have surrounding SPD and behaviour. A lot of times they are either grouped together as one problem or are mistaken for the other. Teachers may think sensory related issues are behaviour issues, or that behaviour issues are related to sensory needs when this may not be the case. Julia states that “those who are untrained do not understand sensory processing”, which is why the role of the OT is to go into the school and help determine which behaviours are based upon sensory issues and which are stand alone behaviour issues. Shelby explains:
Of equal importance is the behaviour course to know what is sensory and what is not sensory. [The] Pendulum has swung too far the other way [in terms of all behaviour issues being described as sensory issues] sometimes it has nothing to do with sensory. The way that kids control their lives is what they eat, what they wear, and when they pee and poop so a lot of issues around these things have nothing to do with sensory. I have taken behaviour courses to help me identify what truly is sensory and what is behaviour (interview).

However, the misconceptions that surround SPD are not solely based on behaviour. Julia had many struggles as a student delving into the world of SPD as professionals were suggesting that no treatment actually works, so only accommodations are possible, mainly avoidance. “You know, you can’t be out in the world because there are unpredictable noises, so wear earplugs and you know, that’s fine, but it’s a band aid on a gaping wound (Julia, interview). This correlates directly to what Rachael explains about staff buy in. “If they don’t understand what they are implementing and why they are implementing it, it is hard for them to buy into it and implement it” (Rachael, interview). The lack of education and information on the part of school professionals such as teachers and principals around SPD led to a lot of misconceptions that were identified by my participants.

**Optimal Learning Environment**

The second theme takes into consideration the best learning environment for all students and that includes students that have sensory related issues as well as neurotypically developing students. The subthemes within this category include *

*Prevalence, Space and Severity*. Prevalence is included among the subthemes for Optimal Learning Environment as it highlights the overwhelming amount of students that have sensory related issues and the fact that ignoring them in general education classrooms is no longer an option.
**Prevalence**

The literature suggests that the actual known cases of SPD are unknown, however, the participants responses showed that it is a prevalent issue among school children in both general and special education classrooms.

When Julia was working in classrooms, she had a caseload of up to 96 children at a time, and when she began, “the first 5 referrals all listed sensory processing needs or a sensory processing issue” and it was something she could not get away from. (Julia, interview). Shelby elaborated on this point, saying:

> For 35 years I worked in hospital setting, [and was] involved in assessment and treatment and consultation to schools for children just with sensory processing. In private practice 25% of kids who come are just for sensory processing, 90% of overall have sensory processing.

Rachael further added to this by saying that:

> Any client that I have worked with that has ASD has sensory processing issues and it is just a frame of reference that I use when I look at any case. I use a sensory integration framework to guide assessment and framework.

**Space**

Space refers to the physical space that exists within the school and more specifically, in the classroom. Each participant discussed the space or physical environment of the school in their own way and found both pros and cons related to the space teachers have within their classrooms and schools.

Julia suggests that “schools aren’t made for treatment, they are made for education” as there is very little space to actually implement treatment options and suggestions. She suggests that “if you can’t accommodate in this specific environment and you need to change environments that is what you need to do” in order to reach a child’s optimal learning environment. Teachers as well as support workers, such as OTs
must be resourceful when using physical space within a school, as most educational institutions do not have spare rooms available or available space within the actual classroom. “Believe it or not, stairwells have a fantastic little bit of space underneath them and I would often do my assessments in stairwells” (Julia, interview). Additionally, a teacher could place a desk, or other educational equipment in the stairwell to allow the child a different physical space to do what they needed (Julia, interview), assuming that there was permission from administration as well as supervision.

Shelby feels that space and integration are linked. Having a child use a fidget, for example, in close proximity to a child who is easily distracted is a bad idea, however, can be unavoidable in small spaces like a classroom (Shelby, interview). In this instance, a teacher must learn to use the physical space to their advantage, taking into account other options for distractions, like inside a desk (Shelby, interview). When implementing accommodations, the physical space available must be taken into consideration, as well as the children who occupy the space.

Rachael discussed space in terms of the structure of the classroom as well and related this to the issues of treatment and accommodation. She strongly stressed the idea of environmental structure of the classroom and discussed accommodations such as “having tennis balls on chairs to reduce noise, looking at the lighting in the classroom if clients are sensitive to light” (Rachael, interview). The job of the OT, and/or the classroom teacher, is to look around the existing space and see what can be used and manipulated in order to help every child in the room. It can be something as small as “changing the activity from a loud noisy classroom to a smaller area in the room” (Rachael, interview).
Severity

The optimal learning environment is also dependent on the severity of the students’ disorders within the physical space. Julia explains that limited resources means that not every child is able to reach their full potential in an inclusive space.

There are some kids who just do not belong in that classroom because you can accommodate all you want, it will not make them any more functional – it is like being in a war zone. Kids struggle and work hard to stay in the regular system but it is a constant bombardment of sensory input all the time, they are fighting against every single moment of the day (Julia, interview).

She suggests that looking at a child’s social/emotional development will help to determine severity and the best possible scenario for the child, the teacher as well as the larger class.

Similarly, Shelby feels that inclusion does not work for every child. The optimal learning environment may not be in a general education classroom, or in a special education classroom but one with balance. Freely allowing children to move from classrooms based on severity, needs and situation will allow the best results (Shelby, interview). When asked about her philosophy of inclusion, Shelby said:

We falsely make ourselves feel better by saying we are integrating children when we aren’t doing them any favors. [There are] times when it is great and times when we are doing a disservice to the child with special needs.

If a child is flourishing in the classroom, all three participants were heavy advocates for inclusion, suggesting that severity plays a huge role. It must be well planned, and well executed (Shelby, interview).

Rachael suggests that it:

Depends on the client – for some clients, integration is the only way to go and you may have them do individual therapy (school or their own time) and try to generalize it into the classroom. I think that others do better in a segregated classroom because 1-1 attention, similar peers. I firmly believe in it and I have
seen a lot of great success. It depends on the level of functioning
As long as the client is benefitting, Rachael suggested that inclusion and the general
education space works. The abilities of students must be taken into consideration, as it
will not, and does not work for all students every time (Rachael, interview).

**Manifestations of Sensory Processing Disorder**

The third theme that was concluded from the interviews was regarding the
different ways in which sensory processing presents itself within individuals. Not every
child with SPD or a similar sensory issue has the same issue or the same considerations.
The category was broken down further to include *Spectrum, Under Responsive* and *Over
Responsive*. Additionally, within the categories of Under Responsive and Over
Responsive, there were several disorders that came up that I addressed.

**Spectrum**

The meaning of this category is that sensory processing disorder is not one,
definitive disorder. On the contrary, it may be seen on its own, in conjunction with other
disorders such as Autism Spectrum Disorder, it may be very mild, or it may be very
severe. It depends on the child, and the circumstances. Not all of the three participants
spoke about this, however, when it was spoken about, it was extremely important.

Julia said that she doesn’t “see SPD in a vacuum”, as in it is not an isolated
pattern. In fact, she took that idea even further suggesting that everybody is on the
spectrum as presenting with some type of sensory related issue. It is important to know
the “theory and how the sensory system works because certain disorders are grouped
together” (Julia, interview). Individuals may present with different manifestations of the
same type of sensory related issue, or someone with no diagnosable sensory related problems may have certain sensitivities that are related to a sensory system.

This area is very complex and somebody who may present with, tactile defensiveness, their treatment might be totally different than another female, that is exactly their age, that has the exact same symptoms, so you know, everyone is different (Julia, interview).

Tactile defensiveness, as Julia mentioned, is the sensitivity to touch, or touch sensations. This leads to the avoidance or fear of being bothered by various textures, tags, touch, shoes, as well as many other sensations (Sensory Processing Disorder, 2014).

Rachael similarly feels that all students can be positively impacted by recommendations and treatments for sensory processing disorder, as it might make the day easier, eliminate unwanted behaviour or solve problems. Teachers notice that children other than the one with a diagnosis require sensory assistance (Rachael, interview). The teaching of strategies

Allows teachers to problem solve on their own. Once you teach them about sensory processing and strategies, and they see another child who presents with similar issues, they can apply strategies that have been used. I think when it is implemented correctly, it makes things easier on the management of that particular child but the strategies can be used on everyone.

Both participants felt that looking beyond a single diagnosis was important in understanding the sensory needs of children. Additionally, this would help teachers to manage behaviour and classroom needs.

**Under Responsive**

The term under responsive is referring to a hyposensitivity, or a less than regular response to sensory stimuli. The sensory system may not notice or respond to certain stimuli that a typically developing child or person may respond towards. In classrooms, this may look like a child who has “no clue where their limbs were and space, and their
arms would go flailing around” (Julia, interview), or “being under aroused and in need a lot of visual and auditory stimuli to keep alert” (Julia, interview). Julia suggests that children need alerting tools for those who are continually fatigued or cannot keep alert.

Both Julia and Shelby offered a lot of tools and practical classroom strategies that would help a classroom teacher to comfort or support a child that is under responsive to sensory stimuli. The suggestions included a lot of weighted materials such as vests, lap pads and hats in order to create deep pressure compression (Julia & Shelby, interview). Julia additionally suggested tight neoprene clothing to enhance bodily awareness in children. As well, Shelby gave suggestions that Julia did not. She suggested a weighted wristband or a weighted pencil in order to improve hand function in children (Shelby, interview). A helpful tip that she gave for teachers trying to save money is to glue or tape washers to a pencil for easy weight.

Another way that teachers can enhance the school day for a child with under responsive sensory inputs is to increase their vestibular and proprioceptive inputs throughout the day by giving them heavy work to do, such as carrying lunch bins or stacking chairs (Julia, interview). Additionally, by increasing their movement throughout the day, such as children doing push ups, or other types of activity would increase their response (Rachael, interview).

**Over Responsive**

The term over responsive refers to a child’s hypersensitivity to sensory stimuli, particularly in terms of auditory, visual and tactile stimuli. This is particularly difficult within the classroom setting, as there is an abundance of stimulants that may disturb a child’s functioning throughout the day. In terms of tactile defensiveness, it can cause
issues if students’ clothing is bothersome, as well as other materials that they wear (such as socks) or come in contact with throughout the day (Julia, interview). Julia suggests the development of fine motor skills in order to attempt to alleviate the distress students may feel when combatting tactile defensiveness.

In terms of visual and auditory stimuli, the classroom is bombarded with noise as well as visual aids. The way to alleviate this for students is to have them work in stairwells, or use partitions. It is unrealistic to ask a teacher to remove artwork (Julia, interview) from the walls, so accommodations must work around the general classroom needs. Additionally, visual blockers of other kids (such as tents) may be used to calm a student, or orange tinted glasses, which cause less distraction and remove visual distress.

**Regulation**

The fourth theme garnered from my interviews was that of regulation. This refers to the degree and ability of a child to regulate, or normalize behaviour on an ongoing basis. Students fall on a spectrum of abilities when looking at regulation. They may be completely dependent, meaning that they rely on others to control and normalize behaviours and emotions. On the other side of the spectrum, they may be independent, meaning that they can self-regulate and normalize their own behaviours with minimal to no support from others. Thus, the two sub themes are *dependent* and *independent*.

**Dependent**

Many children may have trouble with self-regulation skills because they never learned them, or because they are not properly developed. This is particularly true for at risk youth with special needs (Julia, interview). The follow through for treatment, as well as student success is particularly difficult when students are dependent. The teacher must
focus on the child for a majority of the day, and the child must be willing to work with heavy support from the teacher (Julia, interview).

From an academic perspective – sensory strategies provide good self-regulation and we need proper self-regulation and regulation of arousal levels to learn. You want to be in a calm, alert state to learn. For kids with sensory issues, they might not be in a calm, alert state. [This causes] Difficulty with self-regulation, and sensory strategies can support this (Shelby, interview).

A lot of teachers are unwilling to put in effort with dependent students (Julia, interview), which leads to a low success rate for treatment for these students, as well as decreased learning and academic ability. Julia describes treatment as being based directly on how much support and dependency a child needs:

So, often what well label our treatment, well document it as, um, how much support do they require. So I’ll get a kid in and the child can’t um open any of their containers for lunch. Like just have no clue where their hands are, and have very poor tactile discrimination so right now I’ll say they need maximum physical facilitation to open the containers, meaning I have to do it, right? They’re dependent on me.

Thus, it is extremely important to take into consideration child dependency and push them towards independent status.

Independent

Independent students have found ways in which to cope and regulate themselves, which all students require (Julia, interview), not just those with sensory processing disorder. Independence is vital for students in terms of self-regulation as it is linked directly with academic ability and learning. Shelby said:

When [students] are well regulated, they can access executive function to learn. That is the link. The link is, if the limbic system, and arousal level is buzzing; you can’t access the prefrontal cortex to use all executive functions. Sensory motor strategies can calm the limbic system so you can access prefrontal. [You are able to] see improvement with working memory, behaviours, inhibition and impulsive control, planning and organization, task initiation and self-monitoring. You see
improvement in executive function, less disruptive behaviour, better enjoyment in classroom, better peer relations. All around! (Interview)

Rachael elaborated:

With self-regulation and zones, it can be more concrete in terms of identifying what zone they are in and choosing an appropriate strategy. You can use checklist – when I recommend to schools, give them a chart to identify how they were acting before, what type of sensory input they used and then how the client was acting immediately afterwards as well as time periods afterward (interview).

Many teachers are able to implement treatments as well as zones for the entire class to use in order to self-regulate behaviour and emotions. It is a cognitive behaviour technique students may use in order to stabilize emotions in the classroom environment. In the zones, blue represents lethargy, green represents the optimal zone of regulation, yellow represents a heightened sense of frustration, and red represents out of control behaviour (Julia, interview).

**Treatment**

The fifth and final category that I gleaned from my interviews was that of treatment. I gained an overwhelming amount of information regarding practical strategies and options for treatment both at home and at school, as well as the changes that result from implementation of treatment. When considering a treatment plan, it is important to both consider the strategies that will be used, as well as the situation of the student who is being accommodated, with set goals determined in advance. This category was divided into four subthemes. The first of the subthemes is *functional changes*, followed by *accommodations and techniques*, *motivation* and lastly *goals and objectives of treatment*.

**Functional Changes**

Functional changes in behaviour are behaviour changes that you can see (Rachael, interview). They are concrete and tangible measures (Julia, interview), that can gauge
how much and which changes have occurred over time, or since implementation of accommodations and/or treatment. Functional changes are completely measurable, for example “we have a kid coming in, can’t sit near anybody, can’t wear socks, doesn’t like wearing clothes, we treat them, and all of a sudden they are wearing clothes” (Julia, interview). This change is the type of thing that is looked for in order to see if something is working or not. The ways in which you can measure this is through the COPM pre and post test measures, or speaking to parents about how well students are functioning in a certain area, and their satisfaction level with this functionality (Julia, interview). Shelby sums up this idea:

Sometimes you target behaviour – e.g. restless and can’t sit through circle time or lesson – formally look at increasing the length of time that you are sitting. Have you increased their ability to produce work? Depends on what you target. Ideally you want to look formally but realistically that does not always happen – only if you follow up with the child more or if you get a school on board that will share the data. Even if you send an OT in, it is short term (4-8 sessions) and it is not the best model for follow up. Really dependent on the teacher! You might give a teacher example of what you are looking for, and depending on how on board they are, you would give them specific criteria to check off every day. But they have a lot of stuff to do. At times its huge – when you see dramatic changes, it is easy to observe. With subtle change, you need formal evaluation to see if there really has been a change. However, this does not always happen.

Rachael expands by saying that observed behaviour is important, as you can see the goals coming into place and the treatment is working. They can tolerate things for a certain amount of time that prior they would not have been able to tolerate (Rachael, interview).

Motivation (Teacher and Student)

Motivation to change and to initiate change can come internally from the student, or externally from the teacher. However, the motivation to create change may differ from teacher to teacher, and student to student, depending on their background, knowledge and
past experiences. Motivation to change and treatment may be different on a person-to-person basis (Julia, interview).

In order to combat possible motivational problems for treatment, Julia suggests using the strategy for the entire class, as to not single out the child. She gives an example of using Babar Yoga for a whole class DPA to engage each and every student. An accommodation that is put in place for one may benefit many, and motivate the individual student.

On the part of the teacher, Rachael explains that motivation does not always exist:

Sometimes it is the follow through. Teachers are really busy and if they have a lot of kids it can be difficult. Some people it is the buy in, they need to really understand what SP is, that is why the education piece is so important. That is why I don’t like to give recommendations without explaining to teachers why we are making these recommendations. Sometimes equipment, or funding can be a challenge – like if you are trying to recommend equipment – get creative with things that cost very little. In general, classrooms are very open – a lot of people are asking me to come in and make recommendations, it is more so the follow through but I don’t think that’s specific to sensory.

**Accommodations and Techniques**

The bulk of my information fell into this category, as all three interviewees gave an abundance of information surrounding this category. They have had many years of experience implementing accommodations and treatments for sensory processing disorder both in the classroom and within private practices. Julia likes it to be for any child, that any child is able to use the accommodation put into place. At times, treatment and accommodation go hand in hand, and at times, one is more important than the other. “I did a lot of accommodations and sometimes I did treatment because I felt that treatment was more necessary than accommodations” (Julia, interview).
A method that all three participants mentioned was the Wilbarger protocol as a method of treatment for students, however, parental and teacher involvement is a high priority with this accommodation. Additionally, each participant had individual accommodations they felt worked well. In terms of adaptive seating, Julia and Shelby mentioned ball chairs as well as Hokki stools. Shelby took this further saying that there are many accommodations for adaptive seating, such as “move and sit cushions, or tying a Theraband around chair legs so that children can move and bounce, [or] hot water bottles on the floor so they can bounce their feet on the floor” (interview). Rachael suggested different types of cushions rather than chairs.

In terms of weight, several suggestions were given. Shelby and Rachael suggested weighted vests, lap pads, hats, neck collars or a wristband, which increases bodily awareness (Shelby, interview). At times though, a child may need to increase exercise rather than use extra equipment, this can be accomplished through “push ups at the chair or wall push ups or jumping jacks” (Shelby, interview), which will improve their vestibular and proprioceptive input (Rachael, interview).

All three interviewees listed therapeutic listening headphones as a great accommodation for students with sensory needs. They can be used in order to take a break, or to block our surrounding noise (Rachael, interview). If a child is feeling overwhelmed, the headphones are an auditory blocker for them (Julia, interview). Another way to calm a child is to use “Chewing gum, pressure to the jaw provides a lot of calming input and decreased registration of sensory input. Not one piece of gum – must be 2 or 3” (Shelby, interview).
Rachael adds onto the list several accommodations the other participants do not mention. One of which is a sensory diet, which she describes as:

A list of activities that satisfy a client's sensory needs. If a client is seeking sensory input, the sensory diet will provide them with what they need, so if they need movement, touch, smell, taste – give them activities through the day that help to satisfy the cravings. If a child is avoiding sensory, if they are really sensitive – we will find ways for them to cope throughout the day so they are not always anxious about sensory input that they may come into contact with.

This helps a client to satisfy their own sensory needs throughout the day and manage their issues. As well, she discusses the idea about being multisensory, which is, incorporating more than one sensory task into the academic task.

[We need to] teach teachers how to make activities multisensory – e.g. using water tables, shaving cream, different textures, making letters out of putty or wiki sticks in order to increase sensory input while teaching. Having sensory resources available – headphones for kids who are very disturbed by sound, putting blinds on the window if it is too bright, having the zones of regulation – a lot of strategies based on sensory principles (Rachael, interview).

Another way Rachael suggests a teacher can be taught is by use of the zones by:

Putting posters in the classroom so that it becomes part of the curriculum, recommending great children’s books – for younger population, they can read that at circle time and it can start discussion around what makes you feel uncomfortable or what you actually like.

The accommodations and treatment techniques are wide and they are vast. They are not meant to be isolated, or for only one child. They are used in order to help teachers apply accommodations to whole class instruction, or students down the line who may experience sensory issues. It is important to remember that sensory issues exist on a spectrum, and what may work for one child, may not work for another child.

**Goals and Objectives**

Goals and objectives go hand in hand with treatment and accommodation, as you must have your end goals in place prior to the onset of treatment. It is important to note
what you are trying to accomplish in order to determine if the techniques being put into place are effective strategies. Julia suggests that it is important for goals to be “realistic and achievable. If goals are unrealistic, [you should] refocus the objectives” (interview).

As Shelby suggests, at times the goal is to help as much as you can while being as unobtrusive as possible:

First try strategies that are the least intrusive and most socially acceptable. Accommodations first that don’t interfere with other aspects of the day and that don’t make the kid stick out more. Sometimes that can be more our issue than the child’s issue – teachers say, well how will the other kids feel? Really you just have to say to the class, just like Sammy needs glasses to see better, Jonny needs a ball chair to learn better (interview).

Goal setting is as, if not more important than treatment. Rachael says:

Education has been a big piece – parents, families, teachers, children, peers – differentiate between behaviour and sensory – beyond the child’s control. It is improvement and progress – it is setting goals and allowing them to be achieved because of implementation of sensory strategies. So it can be academic progress, social progress, changes in communication, changes in self-regulation, ability for clients to go through a sensory diet independently. A lot of it is observed behaviours (interview).
Chapter 5: DISCUSSION

Introduction

The purpose of this study was to determine how occupational therapists aid elementary teachers in becoming responsive to specific cases of SPD within the general education classroom. In order to determine the purpose of this study, the questions that needed to be asked were: ‘How are occupational therapists able to assist teachers in making situation-based accommodations for students with SPD, while both accommodating their needs and not hindering the needs of the other students in the room? What challenges do these occupational therapists confront in fostering an inclusive classroom for all? What perceived impact do these OTs observe on inclusion and classroom learning?’ These questions, as well as the purpose of the study will be discussed throughout chapter five by drawing connections between current literature and findings of the study. Additionally, implications and recommendations as well as areas of further study will be explored within this chapter.

Connections to Literature

The findings in chapter four relate to the literature in several important ways. The connections and overlap exist in the areas of over-responsive and under-responsive behaviours, sensory diet, and inclusion. An area in which the literature was lacking was delivering practical strategies in dealing with sensory processing disorder (SPD) within the classroom. In using the findings from chapter four, many practical strategies came to light.

A theme that emerged from findings in chapter four was manifestations of the disorder. Although the literature touched mainly upon sensory processing disorder
manifesting in terms of over and under responsive behaviours, Shelby, Rachael and Julia discussed sensory processing disorder in a more in depth and cohesive way. Similarly to Bill and Peske (2009) viewing SPD as an umbrella term that encompasses different patterns and subtypes, Julia suggested that every individual with SPD is different, with different manifestations as the disorder is on a spectrum. What may work for some does not work for others, which is why categorization and treatment of SPD can be extremely difficult. Much of the reviewed literature does not describe over-responsive and under-responsive behaviour subcategories but rather describes them as overarching themes within SPD.

The literature by Biel and Peske (2009) suggests that individuals commonly present with both over-responsive and under-responsive behaviours, yet at the same time fails to describe what these behaviours are, or what they may look like within the classroom setting. The interview findings fill this gap in terms of describing what these behaviours look like, providing practical solutions and implications for classroom use. In terms of under responsive behaviour, weighted objects were suggested by all three interview participants in order to combat this type of manifestation. These individuals require deep pressure compression as well as alerting stimuli. The literature terms these by describing them as sensory seeking behaviour (Ashburner, Zivani, Rodger, 2008). In terms of over-responsive behaviours, the interviewees highlighted the importance of defining tactile defensiveness as well as visual and auditory stimuli as potential manifestations of SPD that may present within the classroom and make learning difficult. These findings are extremely important, as in a classroom there is an abundance of stimuli that may be disturbing to children with SPD. Artwork on the walls, noises from
the chalkboard, Smartboard, tables, chairs, as well as natural and unnatural lighting may disturb the learning and daily functioning of an over responsive child. Julia was able to offer a variety of practical solutions; however, it is important to note that many teachers may not have this knowledge without the work of an occupational therapist in their classroom. It is unrealistic to remove all artwork and colour from the room. Nevertheless, if there is an over-responsive child in the classroom, it is the job of the teacher to consider aiding that student in whichever way possible.

An area in which both the literature and the respondents touched upon but failed to expand on was one of the Sensory Diet. The literature was inconclusive in determining whether a Sensory Diet was a practical, appropriate approach for classroom teachers in dealing with a diagnosis of SPD. Reinson (2012) states that a sensory diet lacks a cohesive framework for implementation and use, specifically within the public school system. Rachael advocated for a sensory diet, suggesting that it gave her the ability to provide a child with what they needed in order to succeed throughout the school day. Furthermore, it was clear from the interviews that the other research participants implemented a sensory diet without using the umbrella term in order to describe this treatment plan. A sensory diet was used in many different contexts in order to make daily life comfortable for students with SPD.

In terms of inclusion, each individual in the field has their own opinions regarding whether it is best for a child to be integrated into a general education classroom or segregated into a specific needs classroom. Each of the respondents suggested that integration and inclusion was dependent on the child, as well as the severity of the disorder and how the disorder was manifesting itself. The literature stated different
opinions on this matter. Ashburner, Zivani & Rodger (2008) suggested that children might find the visual clutter, irregular tactile input, excessive noise, as well as verbal instruction to be too much stimulus in one room. Other literature went on to suggest removing and moving a child from the chaos of a regular classroom as a form of inclusion and integration. However, this is inauthentic. The optimal learning environment for each and every student involved must be a consideration. If the child that is integrated is secluded in each and every way, it is likely not the best solution. Similarly, if treatment is hindering the learning, well-being and safety of other individuals in the room, it is additionally not the best solution. It is clear that the physical space, severity and prevalence of the disorder as well as the classroom must be considered in order to determine the best fit for inclusion. It must be considered on a child-by-child basis in order to optimize learning and functioning for each student. Oftentimes, treatment may be used as a whole class approach in order to benefit the teacher, the students with SPD as well as the typically functioning students. If treatment is used on the wider class, the child is less likely to feel alienated and different, which may boost morale in the classroom and generate tolerance and understanding among students.

The three interviews conducted provided a variety of practical strategies and implications that classroom teachers can use if a single student is diagnosed with SPD, is suspected of SPD symptoms, or if there are classroom management approaches needed for a whole-class issue. There are few that are implemented in classrooms today as teachers may be uninformed or unaware. The highlights that are inexpensive and easy to implement are tennis balls on chairs, as well as noise cancelling headphones in order to reduce auditory distress. Other strategies could include allowing a child to use a fidget
toy, or chew gum throughout the day in order to remain focused and alert, as well as a quiet corner in which any child can go to take a break from visual and auditory stimuli that may be detrimental or disturbing throughout the day. Additionally, introducing Yoga and Meditation has proven to be effective for restless students who are unaware of their bodily movements in order to gain a better understanding of where their bodies are in space. Interviewees suggested that methods that work for one child may be used as a whole class approach in order to potentially benefit other students as well as the overall functioning of a class. Rather than creating an individual sensory diet for each student, testing and experimenting with different accommodations and techniques may be extremely beneficial for those who do not possess years of knowledge and experience working with sensory processing disorder.

**Implications and Recommendations**

Making my way through this process, I have unequivocally changed both as a researcher, and as a teacher. Participating in such a vast, extensive research paper, I have had the opportunity to explore a topic that I am passionate about in an in-depth, practical way, that I may not otherwise have had the support and opportunity to explore. I have had the opportunity to explore and investigate a topic from beginning to end as an independent researcher, which I have never experience before. I have been interested in sensory disorders since I was a child but never had a name for it before. This experience has allowed me to learn a lot about myself as a person, a researcher and a teacher while also opening my eyes to the struggles and wonders of sensory processing disorders as it relates to students in a classroom setting.
As a researcher, I have come to understand the amount of work and dedication that goes into a research study. I was able to challenge my own thinking on a specific topic, and delve into aspects I otherwise would not have considered. As an educator, I strive to continuously educate myself, even on topics I have knowledge about. I have come to realize that learning is a lifelong process. Although I know an extensive amount about sensory processing disorder, there is still a lot for me to learn and know. There are different aspects for me to uncover as a researcher and it is important for me to never stop inquiring and pushing to know more. With continued research, I will be able to support my future students to the best of my ability, with the most current and up to date information in this field.

I have gained valuable information from current and past literature, as well as from my participants’ responses, which is information that I will share with my colleagues, as well as in my own practice as a classroom teacher. Through my research, I discovered there is a continued need to explore sensory processing disorder in a classroom setting. It is vital that research in the area is continuously uncovered as a vast majority of individuals dealing with SPD are never diagnosed and never accommodated for. It is essential to bring awareness into an area in which few people are educated in order to reduce anxiety and distress for those struggling with SPD symptoms. From the data I collected, it is evident that occupational therapists are equipped with an abundance of information on the topic, while many classroom teachers and administrative supports lack the information and knowledge surrounding SPD. It is difficult for a child to gain support from a teacher who has no knowledge surrounding symptoms and accommodations that exist for students struggling with any type of sensory integration
issue. It is important for educators, parents and students to be able to put a name to this 
disorder. Teachers must advocate for PD surrounding SPD in order to eradicate 
classroom management problems as well as poor academic results that may result in 
ignored symptoms.

As a teacher, this study has helped me to recognize and understand what sensory 
related problems look like within a classroom. Although I knew about SPD, I am now 
thoroughly versed in understanding and seeing what it may look like in each of its 
different forms. I will never attribute certain behaviours to child difficulty or 
misbehavior. I have gained the knowledge and the expertise to know when the help of an 
OT is needed and to recognize that practical solutions can be used as a whole class 
approach. Furthermore, as a teacher going forward I know better than to force a child to 
touch an unfamiliar texture without explanation and discussion. This study has given me 
insight in assisting students to succeed in mainstream classrooms and most importantly 
how to support all students who may be affected by SPD (teachers, parents, and 
students). Strategies and techniques to combat SPD should be given to classroom 
teachers in order to better assist and support students as well as to create a culture where 
students are supported. This can be provided either through pre-service education in 
teaching degrees or through professional development. It is vital that teachers are able to 
see the signs of SPD in order to differentiate between a behaviour issue and a sensory 
issue. This is the root of uncovering the reason behind behaviour as well as the ability to 
determine how to best assist students.

Recommendations for readers of this research; whether a parent, student with 
SPD, or a typically developing child enrolled in school, would be to never dismiss or
ignore a sensory related issue as a behaviour problem. Never assume that a student is trying to be difficult in relation to different auditory, visual, or tactile senses. If a tag on a child’s shirt, or the seam of their socks is bothersome, aid them in relieving their discomfort, rather than suggesting they just get over it. If a child seems particularly disturbed by different visuals in the room, or extremely fatigued, do not dismiss this as regular behaviour. It is extremely important to take a child’s concerns and feelings into consideration rather than passing judgment due to misinformation. It is extremely important to advocate for children, as sometimes they do not have the words, or abilities to advocate for themselves. It is easy to ignore a child’s cries for help if you do not know what you are looking for, so education is key to understanding when a child is truly in distress.

**Further Study**

First and foremost, it would be beneficial to know how many students are struggling with SPD in classrooms, as well as how many teachers have had students exhibiting signs of SPD in their classrooms (either diagnosed or undiagnosed). It would be beneficial to know this information so as to understand what type of PD is needed in order to educate classroom teachers. Additionally, it would be beneficial to know what teachers are able to do in order to accommodate for sensory related problems. It would be valuable to see how accommodations were made without the use of occupational therapists in a general education classroom. Further studies are needed in order to determine how classrooms are affected by students with sensory processing disorder in terms of academic success as well as classroom management. Lastly, it is important to
consider the views of children both with and without SPD. It would be important to know how students are personally affected by living with SPD.
REFERENCES


http://www.spdfoundation.net/about-sensory-processing-disorder.html
Appendix A: Letter of Consent for Interview

Date: ___________________

Dear ___________________,

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. I am studying Sensory Processing Disorder in an inclusive classroom for the purposes of investigating an educational topic as a major assignment for our program. I think that your knowledge and experience will provide insights into this topic.

I am writing a report on this study as a requirement of the Master of Teaching Program. My course instructor who is providing support for the process this year is Dr. Mary Lynn Tessaro. My research supervisor is Mary Lynn Tessaro. The purpose of this requirement is to allow us to become familiar with a variety of ways to do research. My data collection consists of a 40 minute interview that will be tape-recorded. I would be grateful if you would allow me to interview you at a place and time convenient to you. I can conduct the interview at your office or workplace, in a public place, or anywhere else that you might prefer.

The contents of this interview will be used for my assignment, which will include a final paper, as well as informal presentations to my classmates and/or potentially at a conference or publication. I will not use your name or anything else that might identify you in my written work, oral presentations, or publications. This information remains confidential. The only people who will have access to my assignment work will be my research supervisor and my course instructor. You are free to change your mind at any time, and to withdraw even after you have consented to participate. You may decline to answer any specific questions. I will destroy the tape recording after the paper has been presented and/or published which may take up to five years after the data has been collected. There are no known risks or benefits to you for assisting in the project, and I will share with you a copy of my notes to ensure accuracy.

Please sign the attached form, if you agree to be interviewed. The second copy is for your records. Thank you very much for your help.

Yours sincerely,

Researcher name: Kali Singer
SENSORY PROCESSING DISORDER

Phone number, email: 416 409 2324, singer.kali@gmail.com

Instructor’s Name: ________________________________
Phone number: ______________________ Email: ____________________

Research Supervisor’s Name: ________________________________
Phone #: ______________________ Email: ______________________

Consent Form

I acknowledge that the topic of this interview has been explained to me and that any questions that I have asked have been answered to my satisfaction. I understand that I can withdraw at any time without penalty.

I have read the letter provided to me by Kali Singer and agree to participate in an interview for the purposes described.

Signature: ______________________________________

Name (printed): ___________________________________

Date: ______________________
Appendix B: Interview Questions

1. How many years have you been teaching full time?
2. What is your teaching background? Where did you go to school?
3. What experience have you had working with children with special needs?
4. What experiences do you have interacting with children with SPD? How long have you been working with this population?
5. Have you had any special training in regards to SPD?
6. Do you receive any formal/informal training from your school if there will be a child with SPD in your class?
7. What, if any, support do you receive from principals, support workers, educational assistants? Explain.
8. What accommodations have you been able to make over the years for children with SPD?
9. What accommodations have you made specifically in the classroom to allow smooth work with a child with SPD? Can you give some examples?
10. What perceived benefits have you seen regarding these implementations?
11. What are your success indicators? How is this making a difference?
12. Are there any accommodations you are experimenting with or thinking about experimenting with?
13. How do you, as a teacher, cope with accommodating for children with SPD? What struggles have you had?
14. How, if at all, is the larger class affected by the specific accommodations you have made?
15. What is your philosophy about integration and inclusion personally?

16. What personal experiences have you had with SPD, if any? What caused you to work with this specific population?

17. Is there a difference between when you are implementing accommodations and when you are not? Have you noticed these accommodations working?