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Sensory Processing Disorder and Sensory Integration: Case Study

Capstone Project

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### **Abstract**

This project is a case study on my brother, Damien, who has sensory processing disorder. This included a treatment plan based on sensory integration. All activities were meant to activate the parts of his brain that help him to focus and be in alignment and included strategies for both school and home. These strategies included using chew necklaces, a weighted vest, and sensory integrative activities including being wrapped in a blanket before bed, using a mini trampoline, and doing wall pushups.

Damien's family and teacher used these strategies in school and at home. The teacher found all of the strategies helpful in alleviating many of the concerns in her classroom except for Damien hopping in and out of line. Damien's family found the short phrases to be helpful, as well as the wall push-ups, blanket wrap, and mini trampoline. Damien did not enjoy the lotion and rice. Damien has continued responding well to the other strategies so far.

This case study shows good evidence that small sensory integrative strategies can be simple and helpful for families and teachers to implement into daily life. Further study is needed on a larger scale for children with different types of sensory differences.

## **Introduction: Sensory Processing Disorder**

Sensory processing disorder affects the way that a person takes in senses of sound, smell, taste, sight, vestibular and proprioceptive (Miller, 2007). SPD can stand for sensory processing difficulties or sensory processing disorder. This is because SPD is unique to the individual and can create different levels of difficulty in each person's life. There is a wide variety of ways that SPD can manifest.

Sensory processing disorder looks at the brain's response to at least six different senses. This includes sight, smell, sound, taste, and visceral input. The brain's internal functioning can be separated into more categories than only the sense of touch. Movement and balance are different than touch. This is also separate from muscle control and body position (Kranowitz, 2022).

In simple terms, a person may be over stimulated or under stimulated. This can be broken down further into over responsivity, under responsivity, sensory craving, discrimination differences, postural differences, and dyspraxia (Kranowitz, 2022).

Under responsivity occurs when the brain is overstimulated by a sense. It has too much information coming in at once and it is unable to decipher what is important and unimportant. This can show up as a child seemingly not listening to instructions, when, in reality, the child has too much information coming into their mind, and they don't process the instruction that was given to them (Kranowitz, 2022).

Over responsivity, on the other hand, frequently leads to a child's avoidance of many sensory experiences such as light, getting dirty or unexpected touch. This is because the brain overprocesses these inputs and the child becomes stressed (Kranowitz, 2022).

A child who is sensory-craving is a child who seeks more input. This could look like a child running to every light post that is crossed on the street while on a walk and hitting and climbing on it. Damien, who this case study follows, is mainly sensory-craving (Kranowitz, 2022). There are a variety of ways that a child can experience sensory differences. The table below from *The Out-of-Sync Child* shows the different subsets (Kranowitz, 2027).

**Subsets of SPD:**

1. Sensory Modulation Differences			2. Sensory Discrimination Differences	3. Sensory- Based Motor Differences	
A. Sensory over-responsivity	B. Sensory under-responsivity	C. Sensory Craving	Touch Movement Sight Sound Smell Taste Internal Organs	A. Postural challenges	B. Dyspraxia (movement and coordination problems)

Table 1.0 (Kranowitz, 2007, p. 12)

## Rationale

Sensory processing disorder affects a large part of the population but is not frequently talked about. According to Nielsen et.al, five percent of children likely have sensory processing disorder. That means one in twenty children are struggling, so there is probably at least one child in every classroom who would benefit from strategies aimed to help their brain (Nielsen et.al., 2021). A large study in Denmark looked at the prevalence and associations of sensory processing disorder. It showed a higher percentage of boys experience SPD than girls, and it also indicated that children in sports were more likely to exhibit symptoms of SPD (Nielsen et.al., 2021).

Sensory processing disorder leads to a lot of behaviors that cause parents and teachers frustration and concern. Since behaviors associated with SPD are wildly different from child to child, it can also be hard for a caregiver to know what is going on in the mind of the child. A study done by Bart found that sensory processing difficulties impact children's wellbeing and quality of life as well. In a study conducted on children with and without SPD "atypical sensory responsiveness," they found that children with SPD exhibited a higher level of anxiety and ritual behaviors (Bart et al., 2017).

My brother has SPD and his family saw this very thing happening. He was having significant concerns at school and at home. His teacher and family wanted to help him, but he had a variety of symptoms that made it difficult for his support system to know what actions to take. His mom would get calls every day about issues in the classroom. At school, Damien would have difficulties sitting still and listening to instructions. He would get up and run around, chat with his classmates, and loudly move around in his chair. In the hallways, Damien would get in and out of line and he would hit and bump into other students.

Furthermore, at home, Damien also struggled to keep his hands to himself. Damien would push others, frequently without realizing it. He couldn't follow a list of instructions and would become easily distracted. The hope is that these strategies are able to help both families and teachers implement simple tools to improve the wellbeing of many kids.

## Objectives

Beginning work with Damien, we had several objectives for both school and home.

We decided to work on four specific goals with Damien.

1. Damien keeping his hands to himself.
2. Damien learning not to immediately say “no” to anyone who asks him a question.
3. Damien saying “okay” without whining.
4. Damien staying quiet in class.

We came up with specific strategies for each of these goals. The strategies were specifically aimed at helping his mind and body to regulate through sensory integration.

In the evening, we implemented calming strategies to help Damien’s sensory-seeking mind get what it needs. These strategies included jumping on a mini trampoline before bedtime, putting lotion and rice on his arm and brushing the rice off, and wrapping Damien in a tight blanket. The goal is to meet his sensory needs with these activities so he will be able to follow bedtime instructions.

In order to help Damien keep his hands to himself, we did two things. First, we gave him new strategies that would meet his physical needs of using his muscles. Damien did wall pushups at school and home and jumped on a mini trampoline at home as well. Second, to break his habit, Damien was reminded to “ask before hugging people.” This mini reminder should remind and redirect him to a positive course of action.



Damien's habits of saying "no" and whining are likely due to his overstimulation of information. In order to change this habit, we implemented the phrase "say okay instead" in order to not overwhelm him with information.

Damien's objectives in class were to be able to sit and listen without provoking others. The strategies used in class include chew necklaces, wall pushups in the hall, a weighted vest, and small jobs during class. The weighted vest is meant to replace the sensory input that Damien was seeking from touching other students.

## Materials

### Strategies at School

Weighted vest (see fig. 1)

Wall push-ups

Chew necklace (see fig 2 and fig 3)

Headphones

Random jobs

“Grab a pencil for the teacher.”

“Pick up the name tags on the tables.”

### Strategies at Home

Short phrases

“Ask before hugging.”

“Say “okay!””

Trampoline breaks

Wall push-ups

‘Burrito’ blanket wrap



Fig. 1 (Weighted Vest)



Fig 2 (Chew Necklace)

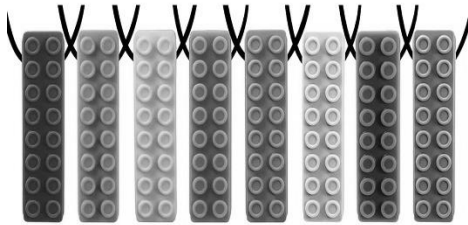


Fig 3 (Chew Necklace)

## **Methodology**

We implemented these strategies at home and at school, specifically during challenging times.

### **At home:**

Damien would often have burst of frustration during which he would be not process what a family member was saying. Seeing that he was likely needing sensory input and was unable to express this, we implemented a strategy to counteract this. When Damien would be on the edge of a meltdown, his family would guide him towards a sensory activity such as his mini trampoline or wall push-ups.

### **At school:**

In a large group, Damien would not stay seated. He would exhibit sensory seeking behavior, trying to walk around, and find things to mess with. To meet these sensory needs, we suggested his teacher give him a job to focus on while the group was seated together.

While in the hallways, Damien would seem to hit other students and slam his body into theirs. We realized he was under stimulated and unaware of his flailing body. We bought Damien a weighted vest to wear in the hallways.

## Results and Data Analysis

### Reports from mom:

Damien's mom shared that when the family would guide him towards a sensory activity while he was on the edge of a meltdown, it would effectively diffuse his frustrations. Specifically, they would guide him to jump on his mini trampoline during their bedtime routine. Having several opportunities throughout the night to receive sensory input was helpful in abating breakdowns.

Specific phrases for redirection were reported to be effective for Damien. His family used "listen without arguing, whining or pouting," "ask other people before hugging them," and "plans can change and that's okay." When asked "what am I going to tell you?" Damien was able to reply with the phrase and correct his own behavior.

### Reports from teacher:

While in a large group, Damien's teacher conveyed to us that he still was chatty, but he had a much easier time staying seated while he had a specific job to focus on. Damien's teacher reported that while in the hallways, he would still get in and out of line, but the weighted vest significantly reduced him touching anyone else. Damien's teacher sent an email the day after implementing the necklace and wall pushups, saying that he had a significantly better day in class.

## Conclusion

Sensory processing disorder impacts the way that the brain takes in information, including the types of information that come in and the amounts. Some children with SPD have brains that are hypo stimulated, hyper stimulated, or sensory seeking.

This project studied the impacts of specific sensory integration strategies for Damien, who has SPD and specifically is sensory-seeking. Damien was having difficulties at school and at home with throwing his body around, being unable to listen to instructions, having meltdowns, and not staying seated. At school and at home, we implemented sensory integrative strategies that were directed at the underlying issue that we perceived.

Overall, the results of this experiment showed great improvements in Damien's problem behaviors. Not every problem behavior was eradicated, but the ones that had a specific sensory strategy attached showed improvement. Through this project with Damien, it seems that sensory integration strategies are effective in meeting the sensory to brain connection so that an individual with SPD is able to succeed in the otherwise burdensome tasks they are given at school and home.

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Fig 1. Photo on Amazon.

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Fig 3. Photo on Amazon.

[https://www.amazon.com/gp/product/B09FZB6C4X/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_image?ie=UTF8&th=1](https://www.amazon.com/gp/product/B09FZB6C4X/ref=ppx_yo_dt_b_search_asin_image?ie=UTF8&th=1)

Fig 2. Photo on Amazon.

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