5-10-2024

The Effects of Parental Income Level on Sensory Processing at a Low-Income Daycare

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THE EFFECTS OF PARENTAL INCOME LEVEL ON SENSORY PROCESSING AT A LOW-INCOME DAYCARE

by

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A Capstone Project Presented to the
FACULTY OF OCCUPATIONAL THERAPY
GEORGIA STATE UNIVERSITY

In Partial Fulfillment of the
Requirements for the Degree
OCCUPATIONAL THERAPY DOCTORATE (OTD)

April 2024

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Degree Sought	Occupational Therapy Doctorate (OTD)
Department	Occupational Therapy
Program	Occupational Therapy Doctorate (OTD)

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Acknowledgement

I am deeply indebted to those people without whom my project would be possible, including: my capstone advisor, Dr Sutanuka Bhattacharjya; the chair of my department, Dr Kinsuk Maitra; my site mentor, Ms Angelia Rembert; and my capstone coordinator, Dr Carolyn Podolski. I could not have undertaken this journey without their consistent guidance and support. Many thanks as well to those in my cohort who supported me intellectually over the past three years, and without whom my degree would not have been possible: thanks especially to Isabel Atkinson, Makayla Matson, and Katherine Tyre. They consistently inspired me to do my best at every step of the way. Finally, I'd like to acknowledge those who offered personal support through all the ups and downs of graduate school: my roommates, my best friends, my partner, my family, and my biggest muse of all, Sky. To complete such a great accomplishment as this one requires the continued support and love of a village of people, and I am so grateful for mine.

Abstract

This paper examines the impacts of parental income level on the sensory processing abilities of children. Additionally, the capstone project involves providing education to daycare personnel so they are better equipped to handle sensory-related behaviors in their day-to-day classroom operations. Often, negative behaviors are a byproduct of sensory dysregulation. “Sensory processing” refers to one’s ability to take in sensory information (i.e. sounds, sights, smells, etc.) from the environment, process it, and use it to guide our behaviors. “Dysregulation” refers to the state of imbalance in the nervous system, leading to feelings of discomfort and, for children, problematic behaviors that may manifest in the classroom.

This question was answered using the Child Sensory Profile-2. The assessment was filled out for 41 children, ages 3-10, at a daycare that serves low-income families.
The research found only a few significant differences in sensory processing abilities in the older age group (children ages 5+). These differences were in sensory seeking behaviors, touch, and movement, with children of low-income parents having a higher incidence of symptoms.

These results imply that income level of parents can have an impact on the sensory processing abilities of children in some categories. Generally, the results suggest that children in low-income families are more likely to seek out sensory input, especially touch and movement input. In conclusion, income level of parents appears to have some impact on sensory processing abilities of children.

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Summary

The purpose of this research study is to examine how the income levels of parents impact the sensory processing abilities of their children in the context of a daycare. “Sensory processing” refers to one’s ability to take in sensory information (i.e. sounds, sights, smells, etc.) from the environment, process it, and use it to guide our behaviors. Not much research has been conducted on this topic. However, it is an important topic to consider when working in pediatric occupational therapy as several children attending therapy services come from low-income households. This study was conducted by filling out a Child Sensory Profile-2 for each child involved in the study. The hypothesis was that there would be a significant difference in the mean scores of the children when compared by income status of the parents.

The Child Sensory Profile-2 is a survey questionnaire, typically filled out by caregivers of children. However, for the purpose of this study, I, the student researcher, filled out the assessments. Children were selected for the study if they attended the daycare, were over the age of three, and had parents who could read and speak English. They were sorted by income status based on how they were paying to attend the daycare; those who attended with state assistance were the “low-income” or “CAPS” category and those whose parents paid out of pocket were the “non-CAPS” category. After selecting the children, I observed them in their classrooms for two weeks, making notes of their behaviors and responses to certain sensory stimuli. After the assessments were completed, the means were compared, based on income level of parents, using a Mann-Whitney U test. Children were compared in two separate age groups: (1) three- to four-year olds, and (2) those children aged five years and older.

The tests found three statistically significant differences. Low-income children in the older age group (five years and older) were found to have higher scores in the Movement, Touch, and Seeking categories when compared to those children whose parents paid out of

pocket for them to attend. All other differences were not statistically significant. From this, it can be concluded that children of low-income parents, aged five and older, have more movement- and touch-related symptoms and are more likely to seek out sensory input than their peers. Other than this finding, other results are inconclusive due to the small sample size of the study.

These results are relevant to the practice of occupational therapy because it is important to consider socioeconomic status of children and parents when treating any deficits, including those related to sensory processing. With the knowledge that socioeconomic status of the parents may impact the sensory processing abilities of children, occupational therapy practitioners can better design their interventions and plan sessions, assessments, and goals.

In tandem with and inspired by the research, a program was developed to guide education of daycare personnel. The purpose of this program development is to provide a comprehensive and easily digestible guide to sensory processing, sensory strategies, and trauma-informed care for daycare teachers. This is because sensory processing differences are common in daycare-aged children and many daycare personnel are unaware of how to best handle the behaviors that manifest as a result of these differences.

A needs assessment was informally conducted based on my own experiences as a daycare teacher. This project was based, in part, on my experience as a daycare teacher. I began working in daycares at the age of fifteen; however, when I started occupational therapy school and learned more about sensory processing, it became easier for me to manage certain behaviors in the classroom. It is especially important for daycare providers to approach their care for these children in a trauma-informed way.

The results of the program development include three guides that cover (1) an introduction to basic sensory processing terms and definitions, (2) strategies that can easily be

implemented in the classroom, and (3) an overview of trauma-informed care. Guides were distributed to each member of staff via email so they have an electronic copy and the freedom to print physical copies as desired. I then attended a staff meeting to discuss the guides with the teachers, giving a brief overview and answering any questions they had.

A program such as this is useful for occupational therapy practitioners as well as daycare providers. Often, behaviors are unmanageable because the problem is not the behavior itself, but rather the dysregulation of the child. When daycare providers have an understanding of what sensory processing is and how to help children regulate themselves, these problematic behaviors can be better controlled. Additionally, any occupational therapy practitioner who works in a daycare can use a program such as this one to guide daycare-based interventions.

CHAPTER 1

Literature Review

Sensory processing disorder, also known sometimes as *sensory integration dysfunction*, is a condition in which children cannot correctly manage the sensory information they receive from their environments (Intermountain Healthcare, 2018). While sensory processing disorder (SPD) is not currently recognised as a medical diagnosis, its impact on the functioning of anyone affected can be enormous. Because sensory processing disorder is a disorder of the senses, its physiological dysfunction is located in the central nervous system, where the senses are processed. While treating children with SPD, it is important to consider and understand all factors that may lead to or worsen symptoms. One of these factors that may have a great detriment on the nervous system is exposure to adverse childhood experiences, also known as ACEs.

In his 2001 book chapter, child psychiatrist Bruce D. Perry links the experience of childhood maltreatment to the incorrect development of the nervous system in a process he calls *neuroarcheology*. Perry provides an overview of early neurodevelopment and then explains that an interruption of this process can have a profound impact on the functioning of the nervous system. He identifies two major insults to this development as (1) "a lack of sensory stimulation from neglect," and (2) "an abnormal persisting activation of the stress response from trauma," an experience he names *sensory chaos* (Perry, 2001). MRI and CT scans of children who have been neglected show, overwhelmingly, cortical atrophy; conversely, in children who have experienced great stress, their stress-response neural systems do not return to their previous levels of homeostasis. These neurobiological changes prove that the development of a child's nervous system can be greatly impacted by ACEs.

This theory has been proven true in several other studies. Webster (2022) found that exposure to ACEs negatively impacts the health and development of children. The children in

the study were found to be at higher risk for developmental delays and problems with daily functioning. A 2018 study from the Taub Center for Social Policy Studies in Israel examined the impacts of poverty on sensory development in children. Researchers found that poverty led to a lack of environmental stimulation and/or increased stress, in turn leading to abnormal development of the nervous system. Some studies have also found that sensory-based interventions work to improve other symptoms of trauma and PTSD, possibly because the mind-body link is so strong in cases of trauma. For instance, in 2019, Crosby et al. found that sensory-based interventions worked to improve trauma symptoms in adolescent girls. Interventions provided in this study included weighted blankets, fidgets, and exercise equipment. These interventions helped the girls to manage PTSD triggers and better self-regulate. Additionally, a pilot study by Kaiser et al. used light, visual, and auditory therapies on adults who had experienced childhood maltreatment. These sensory therapies significantly improved symptoms of mental illness for several of the adults (Kaiser, Gillette, & Spinazzola, 2010). Similarly to Perry's work, Denison et al. (2018) discuss the extensive neurobiological impact of trauma, and then explain how this makes self-regulation difficult for children. They discuss how sensory rooms and interventions, including paintings, music, weighted blankets, and optical lamps, have proven to help children to better self-regulate. Deep pressure, rhythm, and heavy work were used in their study as effective intervention methods to improve self-regulation in a residential treatment setting. A book chapter by Lyons suggests that activities in nature might be used as a sensory-based intervention from a trauma-informed perspective. Lyons posits that nature offers several opportunities for sensory interaction (playing in the water, feeling sunshine, etc.) and can allow patients to expand sensory experiences in a healing and holistic way (Lyons, 2021).

These findings have been reported even in extreme cases of poverty and neglect. In 2009, Cermak provided an overview of research on the sensory processing of children in

orphanages, finding that children who had been institutionalised consistently showed behaviours suggestive of sensory processing disorder. In this overview, Cermak references Haradon et al., who conducted one of the first studies on sensory processing in children in orphanages. This 1994 study found that the touch, movement, vision, and hearing processes of infants were negatively impacted by living in the orphanage. However, after an individualised intervention plan, scores in all domains except movement improved, setting a foundation of support for early intervention sensory integration treatment.

Another book of significant contribution to this field of study is the 2012 work Trauma-Informed Practices with Children and Adolescents by child psychologists William Steele and Cathy A. Malchiodi. Both practitioners work specifically with traumatized children. They posit that trauma is a largely sensory experience that cannot be worked through with cognitive processes alone. Instead, children who have experienced trauma must be provided with trauma-informed, sensory-based interventions that are designed with consideration for their past experiences. The book draws on Perry's theory of neuroarcheology to explain how traumatic experiences become encoded in the nervous system. As an art therapist, Malchiodi mentions art as an effective sensory-based intervention to treat trauma symptoms.

Although a small amount of research has been conducted into the phenomena of adverse childhood experiences and their impact on the development of sensory systems, the field is still largely unexplored. Furthermore, little to no research has been found to examine how to treat these deficits with consideration for the experiences the child may have; in other words, how does a clinician treat sensory processing difficulties in a trauma-informed way when the trauma is likely the cause of the disorder?

Therefore, it is crucial both to further examine the impacts of ACEs on sensory processing abilities and to provide a foundation for how to treat this specific aetiology of

SPD. Occupational therapy plays a great role in the rehabilitation of trauma survivors; however, a greater understanding of how to treat these individuals is imperative.

CHAPTER 2

Needs Assessment

This project was inspired by my own experience as a daycare provider. I worked in this daycare while attending occupational therapy school, from June of 2021 to December of 2023. As a teacher, I worked in every classroom, from infants to the school-aged children. I noticed that several of the children who I knew were facing hardship at home had difficulties in the classroom, especially focused on behavior. The more I learned about sensory processing, the more correlations I was able to see: those children with the hardest time focusing, sitting still, and regulating themselves were often those who came from low-income families.

I began incorporating sensory strategies I had learned in school and at fieldwork sites into the classroom during daily management, and was amazed when I noticed a difference. For example, I had one four-year-old boy who was constantly seeking sensory input. He would climb on tables and jump off, bump into other children and teachers, and touch everything around him. This was especially troublesome during nap time, when the other children were sleeping peacefully and he was making a lot of noise. I began using proprioceptive input to calm him by gently squeezing his arms, legs, and head. It worked beautifully, and for the first time since he arrived at the daycare, this child was able to fall asleep after receiving his gentle squeezes for a few minutes.

This inspired me to create a program that was easily digestible and could be used by daycare providers who had no prior knowledge of sensory processing. *How many behaviors*, I wondered to myself, *were being ignored or made worse because the child could not regulate themself*?

My curiosity and desire to change the process of managing behavioral challenges in the classroom did not stop there. In school, I learned more about sensory processing and the

physiological changes that occur in the nervous system when children have sensory processing differences. I conducted my own search for literature to corroborate the personal findings I had related to income levels of parents, but found frustratingly few articles to provide support. However, those I did find were all suggesting the same idea: adverse experiences in childhood can change the sensory processing abilities of children.

I believe any daycare provider who knows what sensory processing skills are, how to regulate a child, and why they may struggle in the first place can make a difference in how they behave in the classroom. Clearly, there was a need for education on sensory processing in the context of daycare, especially with children from low-income households.

This desire to change the way behavior is perceived in the daycare setting did not stop with my ideas for program development. I was curious to know if my observations - that those children who struggled the most with self-regulation were those from low-income families - led to any real statistical conclusions. Because of this, I decided to conduct the research portion of this project, observing the children in their classrooms and taking data on their behaviors.

Both the research and program development aspects of this project were conducted at the same time, but as I was refining the program, my observations of the children's behavior informed my decisions about what information to include in the program guides. Neither aspect is dependent on the other; rather, they worked in tandem to form my understanding of sensory processing in the context of daycare provision. I was able to analyze data as well as develop a program for this area and population, and each aspect was informed by what I learned in the other.

On expressing these concerns with my site mentor, she agreed and supported the need for this program, further justifying the need for this project to be conducted.

CHAPTER 3

Methods

Site Description

The site was a daycare that cares for children ages 6 weeks to 13 years old. There are six classrooms - (1) Infants, (2) Toddlers, (3) Two-year-olds, (4) Preschool, (5) Pre-K, and (6) After-School. The daycare's hours of operation are 6 am-6 pm. Children are served breakfast, lunch, dinner, and two snacks throughout the day.

Research

Participants

Participants were chosen using the following inclusion criteria: children ages 3+ who attend the daycare and whose parents can read and understand English. Both male and female children were allowed to participate, as were children of any ethnic group and socioeconomic status. Any child who met the inclusion criteria and attended the daycare regularly (at least 90% of the time) was selected to participate in the study. Convenience sampling was used. Forty-nine total children were invited to participate in the study, and 41 of these children did participate (84%). The age range of participants was 3 years to 10 years. Participants were grouped into two age groups, 3-4 and 5+. Participants were then separated, within their age groups, into groups by income level of parents. The CAPS group consisted of children who attended the daycare on state assistance, or CAPS (Childcare and Parent Services). The non-CAPS group consisted of children whose parents pay for their attendance out of pocket. Tests were then run based on income level of parents. For each child identified as appropriate for the study, an email was sent to their primary caregiver. No compensation was provided to participants. Ethical approval was obtained before participants were recruited.

Assessments

The assessment used for this project was the Child Sensory Profile-2. This is a standardized assessment used to evaluate a child's sensory processing patterns. It can be used for children ages 3 years 0 months to 14 years 11 months. It is a paper-and-pencil survey questionnaire that ranks the frequency behaviors on a scale of 0 (Not Relevant) to 5 (Almost Always). The assessments were completed by me, the student researcher, as an objective observer.

Statistical Analysis

Data was analyzed within each group (preschool and elementary-age) using a descriptive analysis and a Mann-Whitney U test was run to compare between CAPS and non-CAPS within each age group.

Program Development

Participants

Participants of the program development included all daycare teachers at the site. Teachers range in age and education level, but all are responsible for a classroom of children.

Resources

Several resources were used in the development of this program. A large portion of the knowledge incorporated in the guides was information I had used in practice at pediatric fieldwork settings that involved a lot of sensory processing. In addition, I used websites that had information about sensory processing. Finally, I found compiled lists on online blogs, written by registered occupational therapists who were offering sensory strategies to be used with dysregulated children. It was important to draw inspiration from my personal experience, scholarly advice, and the personal anecdotes of practicing occupational therapists.

Evidence for Program

This program was designed with evidence-based practice in mind. Evidence-based practice is a core tenet of occupational therapy, and it is especially important to approach sensory intervention with evidence-based practice in mind because the field of sensory processing is lacking in several areas of research, including the effects of income levels of parents on the sensory processing abilities of children. If implemented by daycare teachers, this program will work because it has been proven, both through research and anecdotal experience, that sensory interventions work in young children to manage behaviors.

CHAPTER 4

Results (Output)

Research

After the Sensory Profiles were completed, each Sensory Profile was sent home with parents in the children's take-home folders. Parents were emailed and encouraged to reach out to me with any questions they had about their children's results. Those children who were found to need supports were notified by the parents via verbal contact, and encouraged to reach out to their children's pediatrician if they felt the need to further discuss results.

The question that this research project sought to answer was if there are differences in the sensory processing abilities of children based on the income level of their parents. The Mann-Whitney U tests yielded results showcasing the difference in means between children of the CAPS and non-CAPS groups. Each subsection of the Child Sensory Profile-2 was analyzed. Significant differences were found only among three subsections of the SP-2 in the elementary-age group. Children in the CAPS group were found to have higher scores (mean = 27.36, SD = 5.80 vs mean = 20.83, SD = 1.94) on the Seeking subsection ($p = 0.02$), the Touch subsection (mean = 17.09, SD = 3.36 vs mean = 13.17, SD = 2.04) ($p = 0.03$), and the Movement subsection (mean = 12.18, SD = 3.19 vs mean = 8.67, SD = 0.82) ($p = 0.01$). Though the other results were not statistically significant, scores were generally higher for those children in the CAPS group.

Program Development

A program was designed to educate the daycare teachers on sensory processing, the process in which it may manifest in the classroom, and methods to incorporate sensory strategies into everyday classroom management. Deliverables were constructed and provided to daycare staff. I attended a staff meeting to discuss the content of each deliverable and answer any questions staff members had about the materials. These deliverables were designed over the course of the semester and the daycare owner has a digital copy of each one, to be distributed to any new teacher who enters the classrooms.

The first deliverable is an introduction to sensory processing. This guide is 21 pages long. It covers basic definitions related to sensory processing, explains in easily digestible language how sensory processing works from a neurological perspective, provides a definition of each of the 8 sensory systems (visual, tactile, olfactory, gustatory, auditory, vestibular, proprioceptive, and interoceptive), and provides examples and definitions of each type of pathological sensory makeup.

The second deliverable is a guide to sensory strategies that can be used in the classroom. This guide is 20 pages long, and has activities that can facilitate a calming or arousing state for each sensory system except interoception. For interoception, a short list of activities is included, intended to make children more aware of their interoceptive systems.

The third deliverable is a guide to trauma-informed care, and how it can be used in the context of daycare provision. This guide is 10 pages long, and covers a variety of topics related to trauma, including what trauma is, why it is important to understand trauma, what trauma-informed care is, ways to support caregiver-child relationships, social contexts that impact trauma, and the avoidance of re-traumatization.

I presented these guides to the daycare staff at a staff meeting, giving them an overview of the content of each. Staff were invited to read the material and ask any questions

they may have had. Verbal feedback from teachers included gratitude for a helpful and easily understood program, understanding of the material, and a deeper sympathy for the struggles faced by the children in their care.

CHAPTER 5

Discussion and Impact

Research

This research project sought to examine the differences in sensory processing abilities of children based on income levels of parents. The study found significant differences in *Seeking*, *Touch*, and *Movement* processing in children ages 5 and older. This suggests that there are differences in these areas of processing, and that children of low-income parents are more susceptible to sensory differences in these categories.

Specifically, these results suggest that older children of low-income parents had significantly higher scores on the Child Sensory-Profile 2 and, therefore, may have sensory-related differences in their touch and movement processing. Other than these results, the results of the assessments did not meet the expectation that there would be significant differences in more aspects of sensory processing. These statistical findings are only loosely consistent with findings of other research projects which have suggested that sensory processing is impacted by adverse childhood experiences, including poverty. A low sample size could have affected the findings in this study. However, the mean scores of the CAPS group were, on average, higher than those of the non-CAPS group. Although the majority of these results were not statistically significant, these scores still reflect the hypotheses suggested by several other studies. Specifically, the results of this study contribute more information about exactly how these children might be impacted, and these scores can be used to predict, in turn, how their behavior is impacted by the sensory processing differences identified. This information can be used in practice when working with children of low-income parents. It is helpful to know, before even conducting an assessment on the children, in what areas they may be different from their peers.

Program Development

The goal of this program development was to create guides that daycare providers, with no prior knowledge of or training in sensory processing, could utilize to better inform their behavior management decisions in the classroom on a daily basis. The guides are evidence-based and easily digestible, written in common terms so anyone can understand them.

Guides such as these can be used in multiple daycare sites. They can be used to guide the decisions of teachers. When the teachers at this daycare were provided with the guides and given an overview of the material, they all expressed that it was helpful and they were excited to use it in their classrooms.

This program can fill in the gaps in a larger problem in occupational therapy. Often, children make slow progress in occupational therapy because there is no carryover of learned skills or adaptations at home or in the school environment. However, if the teachers and daycare providers in the child's life are aware of sensory processing and how best to help children regulate, the children will benefit more. Additionally, those children who do not have access to occupational therapy services (often due to the low income level of parents and inability to acquire insurance), but need sensory supports, will have access to sensory strategies via their daycare providers.

This program serves to address the small-scale problem of daycare teachers not knowing how to manage behaviors in the classroom. Given a wider reach, this program could have a larger impact at more daycares than one, and provide benefits to multiple teachers and children.

Limitations

Research

This study cannot be published, nor can the results be considered, without acknowledging its potential limitations. These limitations might be used in the future to design a better study and formulate more accurate conclusions.

Generalizability is limited with this study due to the small sample size. Additionally, the distribution of ages within groups was not even. The majority of the children were three or four years old. Different results may also have been obtained if the Child Sensory Profile-2 assessments were filled out by parents and caregivers, rather than an objective observer. Additionally, the statistically significant results and overall differences in means may be attributed to outliers in each group. Several children had average scores in many areas, but a few had extreme scores. Due to the lack of statistically significant results in most areas, these results cannot confirm or deny a relationship between the variables. It is beyond the scope of this study to definitively state that there is or is not an overall difference in sensory processing abilities based on the income level of parents. These limitations may have impeded the obtainment of accurate results.

Despite these limitations, these results are nonetheless valid for the purpose of contributing discussion to the question, “Does parental income level have an impact on sensory processing abilities of their children?” Although statistically significant results were limited, it is clear from the numerical difference in mean scores of each group that there are at least minor differences in sensory processing, with low-income children having, generally, higher scores. Further research is needed to establish a clear depiction of exactly how these differences manifest and impact the lives of these children.

Program Development

This program was developed based almost entirely on my personal experiences as a teacher at a low-income daycare. While this program has potential to help the individuals at this specific daycare, if someone were to recreate or build from this program, it would be wise to conduct more research into the knowledge of daycare staff, the behaviors of children, and the implementation of such a program in a site with which they were not familiar. A deeper needs assessment could have been conducted, including speaking with daycare staff and management about the existing knowledge of other teachers.

Additionally, due to the short time period of fourteen weeks to complete the capstone project, an evaluation method was not designed to examine the effects of the program development. A future program such as this one might examine the results of the program in regards to how it was implemented by teachers, how children responded to it, and how sustainable the knowledge and understanding of sensory processing are.

Despite, or perhaps because of, the personal motivations and experience behind this program development, the program has great potential to aid in the classroom management efforts of daycare teachers. Because it was inspired by personal experience and informed by research that was being conducted at the same time, the program is effective and evidence-based. However, further research is needed to confirm the viability and reach of such a program.

Sustainability Plan

This program is self-sustainable. All material has been written to be understood by someone with no sensory training or education. However, I plan to remain accessible to the daycare by phone, email, and in-person visits, to answer any questions that may arise and continue to explain the material as needed.

All teachers at the daycare have been emailed a digital copy of each guide. Additionally, the daycare owner and administrative assistant have the digital copies of each guide, to pass along to any new staff members who join the team.

This project can be shared publicly and distributed to any daycare center who might wish to utilize it. Because it was designed to be self-sustainable, no further training is required than simply reading the guides. This means that the program can reach as far as it can be shared electronically.

Conclusion

Overall, this project was an intense and enlightening journey into the real-world implications of sensory processing differences in daycare classrooms. Although the project did not garner the results for which I had hoped, it has opened the door for more conversation surrounding sensory processing as impacted by adverse childhood experiences such as poverty. Both the research and program development aspects of this project can be used by occupational therapy practitioners and students to guide clinical practice when working with children who may be similar to those included in this study. Furthermore, I hope this study can pave the way for future research to be conducted in this field.

Overall, this study suggested that there are differences in how children of low-income parents process sensory experiences, though results are inconclusive about exactly how these differences may manifest. Regardless, it is important for daycare providers to be aware of both sensory processing differences and the trauma that these children may also have experienced. The outputs of this project can be utilized in the sensory and trauma-informed treatment of children, both in the daycare context and in therapy sessions.

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Tables

Table 1: Child Sensory Profile-2 Subsection Scores for Group One - Ages 3-4

Subsection	**Mean**		**SD**		**Z-score**	**P-value**
	CAPS	**Non-CAPS**	**CAPS**	**Non-CAPS**		
Seeking	34.00	31.40	9.31	13.32	-0.86	0.39
Avoiding	32.56	29.40	9.91	7.85	-0.83	0.41
Sensitivity	33.11	30.67	5.58	6.18	-0.24	0.81
Registration	29.33	29.00	4.89	5.35	0.51	0.61
Auditory	16.67	14.20	4.24	4.46	-1.43	0.15
Visual	8.89	8.47	1.36	1.68	-0.92	0.36
Touch	13.22	15.27	2.54	4.65	0.80	0.42
Movement	13.67	12.40	6.08	5.22	-0.74	0.45
Body Position	8.78	8.87	1.20	1.59	-0.44	0.65
Oral	18.78	17.20	9.51	8.22	-0.23	0.81
Conduct	17.78	15.53	8.22	6.58	-0.75	0.45
Social Emotional	20.56	17.80	6.88	3.78	-1.16	0.25
Attentional	17.89	17.13	5.30	4.10	-0.57	0.57

Table 2: Child Sensory-Profile 2 Subsection Scores for GROUP TWO - AGES 5+

Subsection	**Mean**		**SD**		**Z-score**	**P-value**
	CAPS	**Non-CAPS**	**CAPS**	**Non-CAPS**		
Seeking	27.36	20.83	5.80	1.94	2.41	0.02*
Avoiding	37.91	30.83	9.59	9.24	1.46	0.14
Sensitivity	28.36	30.17	3.78	10.91	0.25	0.80
Registration	32.82	31.00	6.51	8.85	0.59	0.55
Auditory	14.91	13.17	3.02	4.36	1.16	0.25
Visual	7.64	7.83	1.36	1.17	-0.45	0.65
Touch	17.09	13.17	3.36	2.04	2.16	0.03*
Movement	12.18	8.67	3.19	0.82	2.46	0.01*
Body Position	10.73	10.67	1.56	2.42	0.05	0.96
Oral	11.73	13.50	2.79	3.02	-1.31	0.19
Conduct	16.64	12.67	4.69	3.88	1.51	0.13
Social Emotional	26.64	23.50	8.14	8.94	0.90	0.37
Attentional	15.09	14.00	2.73	6.07	0.35	0.73

Appendix 1 - Learning Objectives

1. Complete a research project to determine if there is a difference in sensory processing skills.
    a. Prepare research project.
    b. Complete research project.
    c. Run statistical analyses.
2. Write research portion of paper detailing research project.
    a. Compile data into tables.
    b. Prepare information to be put into paper.
    c. Write paper.
3. Collect and share information about sensory processing from/with teachers.
    a. Speak to all teachers during naptime.
    b. Attend staff meetings to share deliverables with staff.
    c. Create deliverables to be shared with staff members.
4. Create a program that can be used by staff members to provide trauma-informed and sensory-inclusive care to children.
    a. Provide introduction to sensory processing.
    b. Provide strategies to be used in classroom.
    c. Provide information on trauma-informed care.
5. Maintain program sustainability.
    a. Ensure that every classroom has a copy of the program developed.
    b. Ensure that each staff member understands the information provided.
    c. Ensure connection after capstone is over.

Appendix 2 - Supervision Plan

Roles of the Student:

- Understand and abide by the OT program's policies and procedures as related to the capstone
- Identify personal goals and interests and appropriate outcomes as part of the planning of the capstone experience and project. These goals have been identified in the *Learning Objectives* portion of the Capstone project.
- Collaborate to develop the plan with the capstone coordinator (CC), faculty mentor, and the site mentor
- Collaborate to develop the MOU with the site mentor and the CC, including individualised specific objectives and plan for supervision
- Synthesise knowledge from preparatory coursework in the OT curriculum to support the capstone project. The student has gained knowledge from pediatrics electives, the mental health course, and multiple research courses to prepare for this Capstone project.
- Develop a research question. The PICO question is: What is the effect of poverty (I?) on the sensory modulation abilities (O) of children (P) who have experienced it?
- Conduct needs assessment. The needs assessment is based on the student's personal experience working in daycares. The purpose of the needs assessment is to form a foundation of knowledge on which to build the project.
- Identity guiding theoretical perspective. The guiding theoretical perspective is the neuroarcheological perspective defined in Bruce Perry's 2001 work *The neuroarcheology of childhood maltreatment*, as well as the Ayres Sensory Integration framework.
- Appraise the literature. A literature search has been conducted that reviews existing literature to support the theory of neuroarcheology and the effectiveness of sensory-based interventions in treating children who have experienced trauma.
- Design the project's methodology
    - Research - Conduct *Sensory Profile-2* on all children from whom consent is received. Report results.
    - Program development - Create educational materials and design a training session to educate daycare staff on (1) Trauma-Informed Care, (2) Sensory Processing, and (3) Classroom Interventions. Conduct the training session with daycare staff.
- Complete all tasks assigned by the site mentor

Roles of the Mentor:

- Orient and instruct the student as needed on specific negotiated learning activities
- Collaborate with the capstone team to define mentorship responsibilities
- Provide supervision and feedback throughout the capstone. Informal feedback will be given each week in a weekly meeting. A full performance review will be conducted at midterm (week of February 19-23) and during the last full week of the Capstone project (week of April 8-12).

- Collaborate with a faculty mentor to guide the student through the needs assessment
- Correspond proactively with the capstone team with any concerns

Scheduled meetings: Capstone mentors and the student will meet once a week for a minimum of twenty minutes. Meetings will consist of routine check-ins to monitor how the timeline of the project is progressing and to assess how the student is meeting the needs of the daycare. As deliverable components are completed, they will be shared with the site mentors and reviewed during weekly meetings.

Week	**Due**
Week 1: January 8-12	
Week 2: January 15-19	
Week 3: January 22-26	
Week 4: January 29-February 2	
Week 5: February 5-9	Deliverable #1 (Introduction to Sensory Processing)
Week 6: February 12-16	
Week 7: February 19-23	Midterm review
Week 8: February 26-March 1	
Week 9: March 4-8	Deliverable #2 (Strategies)
Week 10: March 11-15	
Week 11: March 18-22	
Week 12: March 25-29	
Week 13: April 1-5	Deliverable #3 (Trauma-Informed Care) & Research Write-up
Week 14: April 8-12	Final performance review

Communication methods: Student and site mentors may communicate in any convenient method, including in-person, over email, over text, over phone calls, and via Zoom. The student will keep site mentors updated on what work is being completed and what progress is being made. Texts, phone calls, and emails will be communicated during work hours (9 am-5 pm).

Specific requirements of the project: The student will complete a research project that involves assessing the sensory processing of all children at the daycare. This project will be conducted by assessing each child's sensory processing abilities using the *Sensory Profile-2*

and then reporting on the results. The student will also provide deliverables. The deliverables include (1) an Introduction to Sensory Processing, (2) Strategies to use in the classroom for different presentations of sensory processing challenges, and (3) Trauma-Informed Care. Deliverables will be worked on throughout the Capstone semester and will be turned in to site mentors according to the timeline below. They will be in the form of handouts or brochures. Hours will be logged each week.

Timeline of Deliverables

- Introduction to Sensory Processing - due February 5
- Strategies - due March 4
- Trauma-Informed Care - due April 1
- Write-up of the research project: due April 1

Resolving disputes: Any disputes between the student and site mentors are to be brought up as soon as possible, either at the time of disagreement or in the scheduled weekly meeting. All involved parties should maintain professionalism and work together to find a resolution to any conflicts. If a weekly meeting is not sufficient to resolve any dispute, faculty mentors will be brought in to collaborate on a solution. If the student fails to turn in a deliverable by its deadline, the site mentor should be notified immediately. The student and site mentor will work together to determine a new due date.

OTD Program Curricular Design

1. Understanding and utilizing occupation to promote health and wellness.
    a. Sensory integration strategies will be used to support classroom occupations, including play, rest & sleep, and education. Strategies will be incorporated into pre-existing daily routines to be as natural as possible.
2. Use of evidence-based practice to support the doctoral capstone project.
    a. Evidence has been collected to support the theoretical base of the capstone project. As the program development occurs, the student will continue to use evidence-based practices to guide intervention selection.
3. Understanding and using professional ethics and values.
    a. The student will abide by the AOTA Code of Ethics throughout the capstone project.
4. Enhancing advocacy and leadership skills
    a. The student will advocate for the profession of OT and its place & value in a daycare setting. The student will demonstrate leadership skills while creating a program designed to support students with sensory processing challenges in a daycare environment.
5. Lifelong professional growth and development.
    a. Throughout the capstone experience, the student will build foundational skills related to pediatrics, sensory processing, and trauma-informed care that will support practice throughout a career in occupational therapy.
6. Enhancing diversity, inclusion, and cultural competence.

a. This capstone project will include a diverse population of students. All procedures will be conducted with sensitivity to the children's cultural and socioeconomic backgrounds.

Appendix 3 - IRB Approval

INSTITUTIONAL REVIEW BOARD

Mail: P.O. Box 3999
Atlanta, Georgia 30302-3999
Phone: 404/413-3500

In Person: 3rd Floor
58 Edgewood
FWA: 00000129

November 13, 2023

Principal Investigator: Sutanuka Bhattacharjya

Key Personnel: Bhattacharjya, Sutanuka; Lorys, Camden M

Study Department: Department of Occupational Therapy

Study Title: Identification of sensory processing differences in children from families of varying income levels

Review Type: Expedited Category 7

IRB Number: H24160

Reference Number: 376570

Approval Date: 11/07/2023

Status Check Due By: 11/06/2026

The Georgia State University Institutional Review Board (IRB) reviewed and approved the above-referenced study in accordance with 45 CFR 46.111. The IRB has reviewed and approved the study and any informed consent forms, recruitment materials, and other research materials that are marked as approved in the application. The approval period is listed above. Research that has been approved by the IRB may be subject to further appropriate review and approval or disapproval by officials of the Institution.

It is the Principal Investigator's responsibility to ensure that the IRB's requirements as detailed in the Institutional Review Board Policies and Procedures For Faculty, Staff, and Student Researchers (available at gsu.edu/irb) are observed and to ensure that relevant laws and regulations of any jurisdiction where the research takes place are observed in its conduct.

Federal regulations require researchers to follow specific procedures in a timely manner. For the protection of all concerned, the IRB calls your attention to the following obligations that you have as Principal Investigator of this study.

1. For any changes to the study (except to protect the safety of participants), an AmendmentFormmust be submitted to the IRB.The AmendmentFormmust be reviewed and approved before any changes can take place.

2. Any unanticipated problems occurring as a result of participation in this study must be reported immediately to the IRB using the Unanticipated Problem Form.

3. Principal investigators are responsible for ensuring that informed consent is properly documented in accordance with 45 CFR 46.116.

    - The Informed Consent Form (ICF) used must be the one reviewed and approved by the IRB with the approval dates stamped on each page.
    - A Waiver of Assent has been approved for this study in accordance with the requirements set forth in 45 CFR 46.408(a)

4. A Status Check must be submitted three years from the approval date indicated above.

5. When the study is completed, a Study Closure Form must be submitted to the IRB.

All of the above-referenced forms are available online at http://protocol.gsu.edu. Please do not hesitate to contact the Office of Research Integrity (404-413-3500) if you have any questions or concerns.

Sincerely,

Lisa Cranwell-Bruce, IRB Member

Appendix 4 - Introduction to Sensory Processing

Introduction to Sensory Processing

Definitions

Dysfunction - the brain has trouble appropriately responding to sensory information

Fine Motor - movements made using the small muscles in our hands and wrists

Gravitational Insecurity - when children react to movement in an extreme way, typically fear

Gross Motor - movements made using our large muscles

Sensorimotor - the coordination of sensory experiences (e.g. vision, touch) and motor experiences (movement)

Sensory Diet/Lifestyle - the daily amount and types of sensory stimulation required to function

Sensory Modulation - the ability of the brain to regulate and organize sensory input

Sensory Processing - the process of the brain that organizes sensation from a child's body & the environment and makes it possible to use the body effectively within the environment

Sensory System - the brain, spinal cord, and neurons; these work together to create sensory experiences for us with each of the 8 senses

Stimulus/Stimuli - any input or sensation we receive from our environment

How does Sensory Processing Work?

1. We sense information in the environment using our *sensory organs*.
2. This information travels to our brain, using our neurons (nerve cells), which send signals.
3. Our brain processes this information and allows us to use it to function.

For example:

1. Our eyes see words on a paper.
2. The neurons in our eyes send this information to our brain.
3. Our brain understands and organizes this information, and we are able to read.

Sensory processing dysfunction occurs when our neurons send too many or too little signals to our brain, or when our brain has a hard time organizing and processing this information.

The Eight Sensory Systems

1. Visual

What is the visual system?

The *visual system* deals with our sense of sight. This includes how we interpret colors, patterns, lights, and other things that we can see. The sensory organs that relate to this system are the eyes.

What does it look like when a child has dysfunction in the visual system?

A child with visual dysfunction might respond negatively to bright or flashing lights, bright colors, or “loud” patterns (i.e. patterns that are visually overwhelming). Some children may also be difficult to arouse when the lights are dim.

2. Auditory

What is the auditory system?

The *auditory system* deals with our sense of hearing. This includes how we interpret sounds, music, and conversation. The sensory organs that relate to this system are the ears.

What does it look like when a child has dysfunction in the auditory system?

A child with auditory dysfunction might respond negatively to loud noises, several conversations happening at once, or upbeat music. This child might have difficulty focusing on work if the classroom around them is noisy or if someone is speaking to them.

3. Olfactory

What is the olfactory system?

The *olfactory system* deals with our sense of smell. This includes how we interpret any smells in the environment. The sensory organ that relates to this system is the nose.

What does it look like when a child has dysfunction in the olfactory system?

A child with olfactory dysfunction might respond negatively to any strong smell in the classroom. This child might become upset when cleaning products are being used; when a food that has a strong smell is being served; when they smell paint, markers, or glue; or when a teacher is wearing perfume or scented lotion.

4. Gustatory

What is the gustatory system?

The *gustatory system* deals with our sense of taste. This includes how we interpret anything that we eat or put on our tongue. The sensory organ that relates to this system is the tongue.

What does it look like when a child has dysfunction in the gustatory system?

A child with gustatory dysfunction might respond strongly to tastes. This includes food eaten at meals and snacktimes, toys they may put in their mouth, and candy or treats that they are given in addition to daily meals. The child may respond positively if they like the taste, or negatively if the taste is unpleasant to them.

5. Tactile

What is the tactile system?

The *tactile system* deals with our sense of touch. This includes how we interpret the clothes on our body, the objects we touch, and any feeling on our skin. The sensory organ that relates to this system is the skin.

What does it look like when a child has dysfunction in the tactile system?

A child with auditory dysfunction might respond strongly to textures and touch. For instance, a child may hate being touched by others, and exhibit tantrum behaviors even if a friend just taps them on the shoulder. A child may also have strong reactions to clothing textures, including dress-up clothes and the feeling of a tag in the back of their shirt.

6. Proprioceptive

What is the proprioceptive system?

The *proprioceptive system* deals with our sense of where our body is in space. This includes how we interpret movement, location, and actions. The sensory organs related to this system are the muscles. When we move, our muscles have receptors that tell our brain where and how we are moving.

What does it look like when a child has dysfunction in the proprioceptive system?

A child with proprioceptive dysfunction might have difficulty making appropriate movements and understanding personal space. This child may trip easily because they cannot sense how close they are to an object. They may use too much or too little force when lifting, throwing, or pulling objects. It may be difficult for them to walk in a straight line. They may sit too close or too far from others because they cannot tell where their body is in space.

7. Vestibular

What is the vestibular system?

The *vestibular system* deals with our sense of balance. The vestibular system allows us to maintain our balance, even while moving. The sensory organs related to this system are the otolithic organs, or two tiny organs in our inner ear that detect the movements of our head and allow us to remain balanced.

What does it look like when a child has dysfunction in the vestibular system?

A child with vestibular dysfunction might have difficulty remaining balanced. They might become dizzy easily, such as when playing a game that involves spinning or when turning quickly while running around outside. They may stumble easily while walking because they are off-balance while moving around.

8. Interoceptive

What is the interoceptive system?

The *interoceptive system* deals with our sense of the internal state of our body. This includes how we interpret our breathing, heartbeat, pain, hunger, thirst, and urge to use the bathroom. The sensory organs that relate to this system are all internal organs, including the heart, lungs, stomach, and bladder.

What does it look like when a child has dysfunction in the interoceptive system?

A child with interoceptive dysfunction might be unaware of their body's cues. For instance, they may have frequent urinary or fecal accidents because they are unaware they need to use the bathroom until it is too late. They may respond too aggressively to pain because they feel it more intensely than others, or they may seem to have a high pain tolerance because their body does not notify them when something is wrong.

Sensory Makeups

Sensory Modulation - Over-Responsivity

What is Sensory Over-Responsivity?

Sensory over-responsivity is the tendency a child has to react “too much” to a sensory experience. This is caused by the sensory organ associated with the sensory system sending too many signals to the brain. The response is more intense than expected.

Examples of Sensory Over-Responsivity

- Visual - Larissa closes or covers her eyes when the lights are turned on. She is overresponsive to bright lights.
- Auditory - Missie covers her ears when a loud noise occurs in the classroom. She is overresponsive to noise.
- Olfactory - Mark avoids using scented glue sticks and markers. He is overresponsive to smells.
- Gustatory - Hestia is a picky eater and does not like trying new foods. She is overresponsive to tastes.
- Tactile - Ira avoids touching the grass when he is playing outside. He is overresponsive to textures.
- Proprioceptive - Maybelline falls over often. She is overresponsive to proprioceptive input.
- Vestibular - Bernardine is afraid when playing a game that involves quick changes in position. She is overresponsive to vestibular input.

- Interoceptive - Hal asks for water more frequently than his peers, complaining of a dry mouth. He is overresponsive to thirst.

Sensory Modulation - Under-Responsivity

What is Sensory Under-Responsivity?

Sensory under-responsivity occurs when a child's threshold for noticing stimuli is higher than others their age, so they can tolerate more of the stimuli. This is caused by the sensory organ responsible for the sense failing to send enough signals to the brain. The response is less intense than expected.

Examples of Sensory Under-Responsivity

- Visual - Kelsi misses objects that are right in front of her while she is looking for them. She is under-responsive to visual input.
- Auditory - Cynthia is slow to respond to her name when it is called, and often needs it called several times. She is under-responsive to sounds.
- Olfactory - When the teacher uses bleach to clean a spill, other students cough and move away, but Linnea seems unbothered and continues to play. She is under-responsive to smells.
- Gustatory - Jessica will eat any foods, and often tries to put toys in her mouth as well. She is under-responsive to tastes.
- Tactile - Adelina is potty training, and should be able to tell when her diaper is wet, but she never can. She is under-responsive to tactile stimuli.
- Proprioceptive - Leo has floppy, poor posture. He is under-responsive to proprioceptive stimuli.
- Vestibular - Corinna can spin in circles for minutes at a time without getting dizzy. She is under-responsive to vestibular input.

- Interoceptive - Janine does not seem to feel pain; she never cries when she scrapes her knee or bumps her head. She is under-responsive to interoception.

Sensory Modulation - Sensory Craving

What is Sensory Craving?

Sensory craving is the tendency a child has to seek out more sensory input than expected. These children are often misunderstood as "hyperactive" or "daredevils." However, their sensory systems crave more input than those of their peers.

Examples of Sensory Craving

- Visual - Rina loves to play with the light switches, and if she had her way, she would turn them on and off for hours. She craves visual input.
- Auditory - Justus loves making noise, and always ends up banging toys together or loudly singing. He craves auditory input.
- Olfactory - Anna likes to smell things, and always smells her food before putting it in her mouth. She craves olfactory input.
- Gustatory - Lyssa loves chewing on things, and her favorite snacks are the crunchy ones. She craves gustatory input.
- Tactile - Imogen hates wearing her shoes, and often takes them off so she can feel the ground on her feet. She craves tactile input.
- Proprioceptive - Daria loves roughhousing with her friends, and laughs excitedly when she is tackled or hugged. She craves proprioceptive input.
- Vestibular - Kirsten spends the entirety of recess spinning on the tire swing. She craves vestibular input.
- Interoceptive - Children do not typically crave interoceptive input.

Sensorimotor - Dyspraxia

What is Dyspraxia?

Dyspraxia is a child's inability to plan new or unfamiliar tasks. These children are often afraid to participate in physical tasks, and feel ashamed and incompetent when they must play games that involve gross motor.

Examples of Dyspraxia

- Laura has difficulty writing her letters, even though she is in fourth grade. She cannot plan the tiny movements of her wrist that are necessary for handwriting.
- Bethany mispronounces words often. She cannot plan the movements of her mouth that are necessary for speech.
- Lars stumbles often while walking and running. He cannot plan the movements of his legs.
- Mickey makes a big mess when he eats because he often misses his mouth with the spoon. He cannot plan the movements of his arm that are necessary for eating.
- Paulina cannot put her own coat on without help, even though she is in elementary school. She cannot plan the movements of her arms and torso to get her coat on.

Appendix 5 - Sensory Strategies

Sensory Strategies

What is the Purpose of Sensory Strategies?

Sensory strategies can be used to help regulate, or organize, your children and their behaviors. For each sensory system, activities will be provided; these activities will not work for every child all the time, but can be tried out to see what works and when. These activities have been compiled from websites written by registered occupational therapists, or provided by me based on experiences I have had in pediatric therapy. Many of these activities can be used for the entire class at once. Those activities that should be done individually are written in **blue**, and those that can be done individually or with the whole class are written in **purple**. A child needs **calming** activities when they are "bouncing off the walls," yelling, running, climbing, or just seem unable to sit still or calm down. A child needs **arousing** activities when they are sleepy, sluggish, seem unable to focus, or are not paying attention to what is going on around them.

Visual Activities - To Calm

1. Create or buy a sensory jar or bottle. This is a peaceful activity that can regulate your children. To make a sensory jar, simply use a clear plastic jar or bottle and fill it with corn syrup, water, food coloring, and glitter. The children can shake the bottle and watch the glitter settle.
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2. Build a fort or have a small tent in the classroom where children can hide but still be visible by teachers. Sometimes, the bright lights overhead are too upsetting for children, and being permitted to hide from the bright lights can calm them.
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3. Keep a lava lamp in the classroom, out of children's reach. When a child is struggling with behavior, point out the lamp to them. Watching the bubbles move through the lamp can be calming and help organize the child's behavior.
4. Provide coloring sheets to children who are struggling to behave. Coloring is a calming visual activity, and a child who is permitted to draw may be able to communicate their feelings more accurately through a drawing than through words.

5. Read a book with lots of illustrations. The illustrations will give the child something to focus on outside of their own disorganized feelings.

Visual Activities - To Arouse

1. Have your child put together a puzzle. They will need to think about how to orient pieces, match colors, and more.
2. Have your child sort toys or match objects by color.
3. Have your child trace or draw shapes.
4. Provide beads, toys, etc. for the child to make patterns. Making patterns will require the child to think about what comes next, match up colors, and more.
5. Provide paper for drawing. Drawing will give your child something to focus on and may allow them to communicate their feelings better.

Auditory Activities - To Calm

1. Play with a rain stick. This is a calming noise.
2. Have children quietly repeat calming affirmations, such as “I am calm,” “I am safe,” and “I can be quiet.” This will reinforce feelings of peace and safety for the children and allow their brains to process the quiet.
3. Play “copy the sound.” Have children copy humming, singing, clicking, or other sounds.
4. Play “guess the sound.” Have children close their eyes and guess what a noise is (i.e. clapping hands softly, tearing paper, pouring water).
5. Play “guess the animal.” Play animal noises and have children guess which animal is making the noise. This will force the children to focus on one noise at a time.
6. Play the “quiet game.” When the classroom itself is quieter, children will be better able to regulate themselves and their behavior.
7. Turn on rain sounds. Rain sounds are soothing.
8. Turn on soothing music. Soft, instrumental music can calm an entire classroom down, or work for just one child who is struggling to behave.
9. Turn on white noise. White noise blocks out other small noises that may be irritating to children.

Auditory Activities - To Arouse

1. Have children clap on each syllable of a word.
2. Play “body noises.” Have children close their eyes and take turns making noises with their bodies, such as clapping, snapping fingers, stomping feet, etc. Other children must guess what noises they are making.
3. Play “Freeze Dance.” This will encourage the children to listen and pay attention to the music so they can know when it stops!
4. Play “guess the animal.” Play animal noises and have children guess which animal is making the noise. This will force the children to focus on one noise at a time.
5. Play “listen for the word.” Read a book and have children clap every time they hear a certain word, such as “wolf” in “Little Red Riding Hood.”
6. Play rhyming games, and have children rhyme words to other words. This will cause them to think about the sounds they are making.
7. Play vibrant, upbeat songs that the children will be excited to listen to.
8. Play with instruments, especially those that make loud noises.
9. Read a book to your children that they will find interesting. Use exciting tones and inflection. This will entice the children to pay more attention to the story and the words you are saying.
10. Sing or play action songs, such as “If You’re Happy and You Know it” or “Itsy Bitsy Spider.” When the children are encouraged to incorporate movement into the music, it will be easier for them to focus on the sounds.

Olfactory Activities - To Calm

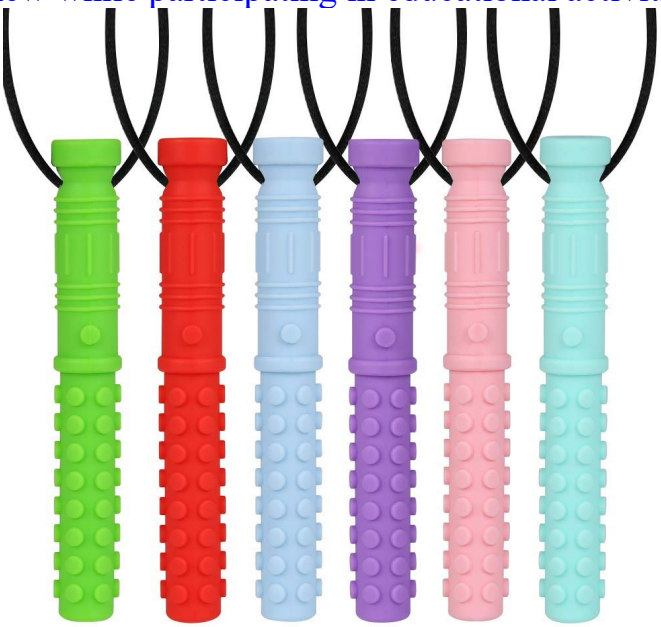
1. Place scented oils on a cotton ball and keep in a Ziploc bag for children to open and smell. Calming scents include lavender, rose, and vanilla. Provide these scented bags when children appear to be struggling to regulate themselves.

Olfactory Activities - To Arouse

1. Place scented oils on a cotton ball and keep in a Ziploc bag for children to open and smell. Arousing scents include citrus, mint, and cinnamon. Provide these scented bags when children appear to be struggling to stay awake or alert.

Gustatory Activities - To Calm

1. Provide chewy toys for each child in your classroom. The repetitive motion of chewing provides calming input for the children and can help them regulate and organize their behavior, and even focus better if they can chew while participating in educational activities.



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2. Have children play “blowing” games, where they have to blow something light like a feather or a pom-pom. The repetitive and soothing action of blowing will help your child take deeper breaths and calm themselves down.

Gustatory Activities - To Arouse

1. Bring a bag of jelly beans in and allow the children to “taste test” them, guessing what flavor each bean is. This will encourage them to pay attention to what tastes they are experiencing and cause them to become more alert.
2. Build with pretzels and marshmallows. Allow the children to snack as they create their buildings. The crunchy texture of the pretzels will cause the children to be more alert.
3. Find a recipe for “edible play-dough.” You can make play-dough out of peanut butter, applesauce, marshmallows, and more. While the children are creating it, allow them to taste the materials.
4. Play “edible finger painting” with your children, and allow them to finger paint with clean hands on a clean table using something edible, like pudding or yogurt. They can taste the “paint” as they work.

Tactile Activities - To Calm

1. Apply deep pressure to the child with hugs, gentle squeezes to the hands and arms, or a weighted blanket or stuffed animal. This pressure can soothe a child's anxiety and help ground them to the situation.
2. Create a tactile bin for your classroom by filling a bin with sand, dry rice, or dry beans. When a child appears to be struggling to calm down, allow them to run their hands through the bin. The texture of the materials will calm the child down.
3. Have the child wash their hands with warm water. The warm water running over their hands will work to calm them down.
4. Provide child with a soft blanket or stuffed animal to hold. The soft texture will be soothing.
5. Rub unscented lotion on a child's hands and/or arms, gently squeezing as you do so. The soft feeling of the lotion and the gentle pressure and rubbing will calm the child down.
6. Allow children to play with squishy toys such as stress balls. The calming motion of squeezing the toy, along with the soft and squishy texture of the toy itself, will soothe the child and help them focus on their environment.
7. Have children play with play-doh. The squeezing, kneading, and rolling will give their hands something to work on and will calm them down. Squishy textures are calming and allow the child to "squeeze their feelings out."
8. Play with shaving cream on the desks/tables. This will give the child a new texture to focus on and it can be calming for them to run their hands through this texture.

Tactile Activities - To Arouse

1. Have the child wash their hands with cold water. The cold water running over their hands will alert them and allow them to “wake up” and focus better.
2. Hide objects in your classroom’s tactile bin and have children guess what the objects are or, if this is too difficult, find objects. This will give them a goal-directed activity to complete and will help them better focus on educational activities.
3. Have children finger paint a specific object or scene.
4. Have children make specific objects out of play-dough.
5. Put shaving cream on the desk and have children draw specific shapes, numbers, letters, etc.
6. While playing outside, encourage children to touch different textures with their hands - mulch, tree bark, grass, etc. Encourage them to rub, pat, grasp, etc.

Proprioceptive Activities - To Calm

1. Have child sit in a beanbag chair or on some pillows. This will provide calming pressure to their bodies.
2. Provide children with a weighted blanket or weighted stuffed animal.
3. Have children give themselves “bear hugs.” The act of crossing their arms over their body, and the deep pressure, will calm them down.
4. Have children lean into their desks and push through their palms.
5. Have children push their hands together and hold for ten seconds.

Proprioceptive Activities - To Arouse

1. Have children pull on a stretchy band, such as a thick rubber band or a yoga strap.
2. Encourage children to crab walk.
3. Encourage children to do jumping jacks.
4. Encourage children to do push ups.
5. Encourage children to stomp their feet or march around.
6. Have children crawl (through a tunnel, in an obstacle course, etc.).
7. Have children participate in a yoga video on YouTube.
8. Outside, encourage children to climb on equipment and to hang from monkey bars.
9. Play games that involve kicking a ball.
10. Play games that involve running.

Vestibular Activities - To Calm

1. Encourage children to “log roll” around in the classroom with a safe distance between them and other children or objects.
2. Have children participate in yoga, especially poses that cause them to go upside down (child’s pose, downward dog).
3. Have children sing and do motions for “Head, Shoulders, Knees, and Toes.”
4. Turn on slow, soothing music and encourage children to sway or rock, demonstrating how to do so.

Vestibular Activities - To Arouse

1. Have children participate in an obstacle course.
2. On the playground, encourage children to hang upside down from pull-up bars, to swing, to go across monkey bars, to slide, or to spin in circles on a tire swing.
3. Play games that involve skipping, galloping, jumping, spinning, or running.

Activities to Promote Interoception

1. Find social stories on YouTube that talk about toilet training, hunger and thirst, emotional regulation, or temperature. Watch the videos with children individually or as a class.
2. Have children practice breathing exercises, such as pretending to smell a flower and blow a candle out.
3. Have children participate in yoga or meditation activities that encourage them to "listen" to their body.
4. Play games that involve matching emotions to facial expressions, words, etc. Encourage children to identify their emotions in the moment. For example, if a child is crying, ask, "Do you feel sad?" or "Do you feel angry?"
5. Use prompts for children who need them. For instance, for a child who is struggling with toilet training, remind them to go at set times throughout the day. This will form a habit of using the bathroom at the same times every day and they will learn to recognize their body's signals.

Appendix 6 - Trauma-Informed Care

A Guide to Trauma-Informed Care in the Context of Daycare Provision

What is Trauma?

Trauma is any emotional response that occurs after a terrible event (American Psychological Association, 2023). For children, traumatic events may include abuse, witnessing or experiencing domestic violence, loss of a loved one, neglect, illness, or military-related family experiences. For preschool children, trauma may manifest in the following ways:

- Fear of being separated from their caregiver
- Crying or screaming a lot
- Eating poorly or losing weight
- Having nightmares

For elementary-aged children, trauma may manifest in the following ways:

- Anxiety or fearfulness
- Feelings of guilt or shame
- Difficulty concentrating
- Difficulty sleeping (Substance Abuse and Mental Health Services Administration, 2023).

If you notice these signs in any of your students, they may be experiencing trauma. Trauma can impact a child's behavior and ability to learn, play, and interact with others in the classroom. It is important to understand trauma when teaching young children, as well as to be aware of the signs and symptoms of traumatic responses. This awareness will help you provide the best care possible to each child.

Why is it Important to Know about Trauma?

You might think, “So what if my students are traumatized? How does that affect me?” However, being conscious of your students and their emotional well-being can go a long way in the classroom for your students and their academic achievements. Imagine you have a student who cries often, never eats her lunch, and wakes up screaming during naptime every day. It might be easy to look at this child as a “problem child,” a perspective which may lead to disappointment, frustration, and annoyance with the child. However, approaching these behaviors through the lens of trauma-informed care allows you, the daycare provider, to bring patience and wisdom to the table while managing the child. In this guide, you are going to learn what trauma-informed care is and how to administer it. By treating these children with patience, respect, and love, you have the power to change their challenging behaviors. Additionally, you can bond with a child who may not experience positive relationships with adults anywhere else in their life. Creating a safe space for a child who does not feel safe or loved elsewhere is a great honor.

What is Trauma-Informed Care?

Trauma-informed care, or TIC, is a concept in the medical field that involves treating patients with consideration for their trauma. Although TIC is a medical concept, it can be applied to daycare provision. TIC comes with a set of strategies and best practices to be used when dealing with patients or, in the case of daycare provision, with children in your care. According to the American Academy of Pediatrics (2021), these strategies include:

- Holding an understanding of what trauma is and how it can impact children
- Supporting caregiver-child relationships
- Recognition of the cultural context of trauma
- Avoidance of retraumatization

Using trauma-informed care in your everyday classroom management is important when working with children who may have been traumatized.

Ways to Support Caregiver-Child Relationships

As a daycare provider, you have the opportunity to support caregiver-child relationships uniquely and educationally. Caregiver-child relationships are important because security in familial relationships is a foundation for children to learn, grow, and develop into confident and happy people. One way to facilitate this bond is for you, as the teacher, to form a good relationship with the caregivers. Some ways to do this include keeping open and honest communication, keeping caregivers updated about what their child is doing in class, and including caregivers in classroom activities. Send regular emails and messages, and send notes home with children when applicable, so caregivers remain updated about the classroom. When a caregiver is involved in the child's educational experience, the child benefits from this involvement. When caregivers come to you with questions or concerns, listen to them and work together with them to come to solutions. Another useful tactic can be assigned "homework" that caregivers can work on with children, especially if the homework involves social-emotional learning. Some examples of social-emotional "assignments" that can benefit children and caregivers include identifying feelings and emotions, brainstorming strategies for self-control, and rule-following games such as Simon Says. Encouraging parents to work on these essential tasks with their children will bring children and caregivers closer together and foster a healthy relationship.

Cultural Context of Trauma - Immigrant Youth

Immigrant children, or children of immigrants, have often been exposed to violence, whether they experienced it themselves or witnessed their loved ones go through it. Many of these children went through prolonged periods without access to food, water, bathrooms, or a safe place to sleep. The conditions they live in while immigrating are often harmful and unsafe. They are exposed to things such as beatings, rape, drugs, and crime, both in their home countries and on their journeys to this country. In detention centers and shelters, many are sexually or physically abused by other immigrants or by faculty members of the shelters. Some immigrant children are taken from their parents and placed in foster care. Being separated from their parents is difficult for the children. Additionally, it often takes children time to learn English. It is difficult for them to be in a school environment where they are likely confused for most of the day due to not understanding what is being said to them or what is going on around them. All of these challenges contribute to trauma in immigrant children. Studies have shown that these challenges lead to mental health challenges, including depression, anxiety, and PTSD. For more information, visit https://www.apa.org/monitor/2015/03/immigrant-children

Cultural Context of Trauma - Mental Health Care for Parents

When parents struggle with mental health, their children are negatively impacted. This information is important to know because according to the CDC, 1 in 14 children has a caregiver with poor mental health. Parents who are impacted by mental illness experience barriers to caring for their children, in turn impacting the mental health of the children. This happens especially when parents do not have access to resources that help to support their mental health. Children of parents with untreated mental illness are more likely to have mental, physical, or developmental delays. Additionally, the external sources that impact parental mental health (such as vulnerabilities, discrimination, and living in unsafe environments) often impact the children as well. For these reasons, the mental health of parents has a direct influence on the mental health and propensity for trauma of children. For more information, visit https://www.cdc.gov/childrensmentalhealth/features/mental-health-children-and-parents.html

Cultural Context of Trauma - Racial Injustice

Exposure to racism, including discrimination and stigma, can harm a child's development and contribute to traumatic experiences. Studies have found that Black children exposed to racism are more likely to score high on adverse childhood experience (ACE) screenings and assessments. Many factors go into this finding, including historical trauma, social conditions, and adoption of health risk behavior. According to the Jordan Institute (2020), 10% of Black children (ages 0-18 years) have experienced individual racism. When this is considered in ACE assessments, Black children are more likely to have higher scores than White children without experiences of individual racism. Additionally, Black children are over-represented (meaning there are more of them in this category) in children with 2 or more ACEs. ACEs that are more common in Black children include parental mental illness, witnessing domestic violence, death of a parent or guardian, and poverty. For more information, visit https://jordaninstituteforfamilies.org/2020/racism-is-an-adverse-childhood-experience-ace/

Avoidance of Re-Traumatization

Because several of the children in your care may already be traumatized, it is important to avoid re-traumatization when working with these children. Re-traumatization occurs when children are reminded of past traumatic events. Any small experience, especially sensory experiences such as a smell or a tone of voice, can bring a child back to a traumatic moment in their life, making them upset and unable to regulate themselves. It is important to make sure children feel safe and supported while at daycare (Center on Child Wellbeing and Trauma, 2024). Some ways to avoid re-traumatization include:

- Communicating effectively, especially about sensitive subjects. For instance, make sure children are aware when they have to practice shooter drills, in case any of the children in your care have been exposed to gun violence.
- Assure children that they are safe when they seem upset. Even if a child is simply throwing a tantrum, they may feel unsafe, and it is important to remind them that they are secure in your care.
- Use inclusive language, especially when talking about sensitive subjects such as race, gender, and sexuality. Some children may have faced abuse because of these aspects of their identity.
- Validate children's emotions. Often, children who are abused are hurt because they express negative emotions at home. Remind children that they are allowed to be upset, to cry, to be angry, etc.