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Summer Rusher
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CAN SENSORY TOOLS HELP STUDENTS WITH AUTISM IN REGARD TO ACADEMICS, COMMUNICATION, BEHAVIORAL AND EMOTIONAL MANAGEMENT?

by

Summer Rusher

Submitted to the School of Honors Committee

in partial fulfilment

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2020

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2020

Dedication

To all my future students.

Acknowledgment

I would like to thank my advisor Dr. Gordon Miller for all of his hard work, dedication, and encouragement. This process was much more manageable with him by my side.

I also would like to thank all of my friends and family who have supported and encouraged me throughout this process.

Abstract

Students with autism face many difficulties in the classroom and with everyday tasks outside of the classroom. In the classroom, they face difficulties with academic focus, communication skills, and behavioral management. Knowing this, academics, communication, and behavior were all evaluated. This thesis was written to decipher the effects of sensory tools on students with autism in the classroom and decide if sensory tools should be used more often in the classroom and at home. Sensory tools are a relatively new therapy idea. They are a wide range of tools that have all different functions and purposes. Some schools and families have adopted these tools while others are still skeptical of their productivity. The information in this thesis was collected through both a literature review and a study.

KEY WORDS: sensory tools, autism, self-contained classrooms

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Introduction

A student with autism spectrum disorder is sitting in a classroom. He sits in the front row, but contrary to popular belief, that does not make him focus: objects are still moving and sounds are still occurring. The teacher is thoroughly explaining a mathematical topic that is complex and seems so irrelevant to him. The student cannot understand and is starting to feel more and more uncomfortable. The student can feel an outburst building due to a sense of confusion, frustration, and not belonging. Afraid of what the teacher or students may say, do, or think, the student frantically looks for a way to ground himself, a way to regain control of his thoughts and emotions. With no options in sight, it quickly becomes too late; the meltdown begins.

How nice would it be if we were able to minimize situations like this in the classroom? The student with autism could be focused, grounded, and less embarrassed. The other students would not be disrupted, and the teacher would not have to interrupt the flow of the classroom or try to calm the student down while just making it worse. The goal of minimizing meltdowns in the classroom could be achieved with the use of sensory tools. Sensory tools are any tool that can stimulate a sense. They are used in stressful environments for students to be able to relax. Not only do sensory tools assist the behavioral and emotional challenges that students with autism face, but they also assist in academic achievement and the advancement of social skills.

This thesis will include information gathered from both research and a survey given to the teachers in Pathways School of Excellence on Southeastern University's campus in Lakeland, Florida. Pathways contains middle and high school students, ages 11 to 22, with various intellectual disabilities and/or other mild learning and/or physical disabilities. Pathways consists of five self-contained classrooms, classrooms that include only students with special needs. It is a faith-based school that desires to provide all students with a comprehensive

educational experience as they grow and develop into the individuals God has designed them to become. The research for this thesis focused on four main questions:

- What challenges do students with autism face in the classroom?
- Are sensory tools practical in the classroom?
- What are some advantages to sensory tools?
- What are some disadvantages to sensory tools?

The survey distributed to the teachers at Pathways contained a series of questions related to their use of sensory tools and their preferences with regard to types of sensory tools used. Questions included but were not limited to:

- What challenges do students with autism face in the classroom?
- Do you use sensory tools in your classroom?
- What sensory tools do you use in your classroom?
- What are some advantages to those specific sensory tools? What are some disadvantages?
- What other tools and strategies do you use to best assist your students in the classroom: academically, socially, emotionally, and behaviorally?

Currently there is a large movement for inclusion, which allows students with milder forms of intellectual, learning, or physical disabilities to be included alongside their nondisabled peers in general education classrooms (Reid, 2005). The idea of this movement is for students with disabilities to be included in a regular curriculum in order to help them develop academically, socially, emotionally, and behaviorally with their grade level peers (Special Education Guide, 2019). When students are in these general education classrooms, they are entitled to receive accommodated curriculum. The curriculum does not have to be based on

general standards. In saying this, some students are working toward the same standards as their peers but receive accommodations to help them along the way. The accommodations are specific and written out in a legal document called an IEP, or Individual Education Plan/Program. “The IEP, once signed by the [parent] and the school district, is binding; the school district must provide everything included in that IEP” (Siegel, 2007, p.19). Creating an IEP is a thorough process because it is created to specifically serve one student’s needs. There are six key groups of people in the creation process: “the child (if appropriate), the child’s parents, a school administrator, any specialists [in the child’s areas of academic need], and anyone else the parents would like to invite such as the child’s grandparents or other caregivers” (Siegel, 2007, p.23).

There are five important things to consider when trying to conduct an efficient inclusion classroom: “acknowledging differences, recognizing strengths, understanding inclusion, planning for practice and obtainable outcomes” (Reid, 2015, p. 94). All children are different and that holds true for children with autism. It is important that students with autism know and acknowledge their differences from students without autism, but that they do not let these differences define them. Every student has strengths; therefore, while noting the student's differences, it is equally important to also recognize the student's strengths. In saying this, some students would not benefit from being in an inclusion classroom and alternative placement options should be considered. The correct understanding of inclusion will help to understand how to provide the best education possible for the students. The teachers of traditional classrooms who have students with special needs must be properly trained, equipped and made aware of tools to assist students with autism as adequately as possible while still meeting the needs of their other students. This can be very challenging, as teachers must prepare for accommodations and differentiation for the autistic student while preparing appropriate

instruction for the traditional students in their classrooms. Also, teachers are expected to collect data on students and use that data to create obtainable goals. Many current Pathways students have come from inclusion settings that were unsuccessful. Since the level of disability included in an inclusion classroom is not clearly defined, many students get left behind and do not receive the accommodations and assistance they need to succeed.

Literature Review

Autism

Since autism is a spectrum disorder, meaning it has a range of conditions, each child can have very different symptoms and combinations of symptoms (Iowa Department of Education, 2010). Autism is

> "…characterized by persistent deficits in social communication and social interaction, as well as by restricted, repetitive patterns of behavior, interests, or activities from early childhood. Autism Spectrum Disorder (autism or ASD) is associated with significant impairment in everyday functioning and are also highly correlated with comorbidity, including impairments in attention, mood, cognitive skills and adaptive skills" (Larson, Aasland, & Diseth, 2018, p. 1063).

Autism does not have a known cause, nor does it have a cure (Iowa Department of Education, 2010). "It affects as many as one child in 59 children in the United States today" (Autism Speaks, 2019). "It is also more common in boys than it is in girls" (Iowa Department of Education, 2010).

Students with disabilities, such as autism, have not always had the resources and care that they have now. In the past, "social attitudes reflected the view that persons with disabilities were unhealthy, defective and deviant. For centuries, society as a whole treated these people as objects of fear and pity. The prevailing attitude was that such individuals were incapable of participating in or contributing to society and that they must rely on welfare or charitable organizations" (University of Florida Health, 2019). Before the 1800's people with autism lived at home, to be cared for by their families, and did not participate in regular everyday activities. They were deemed incapable of functioning in traditional society. In the late 1800's, people with autism

were sent to special institutions built by the state or local agencies. During this time, society chose segregation as the best way to manage people with disabilities. In 1920, Gainesville, FL built the Florida Farm Colony for the Feebleminded and Epileptic. Thankfully, in the past 40 or 50 years, society has seen some big changes in the management and treatment of people with disabilities. The movement began with President John F. Kennedy. He declared that people with disabilities are not hopeless. Not only has this wave of acceptance helped in the management of people with disabilities, but also the treatment of them. Terminology has changed. People with disabilities used to be called idiot, moron, or retard. Also, it has come important to identify the person not the disability (University of Florida Health, 2019).

Medical professionals can diagnose children with disabilities as early as day-care age. Some common early symptoms are when the child "performs repetitive activities and movements, becomes upset at changes in daily routine, has unusual responses to certain situations, and does not babble or develop language appropriately" (Iowa Department of Education, 2010). In a recent study, day-care teachers and parents were able to identify very similar autism symptoms in the children who were between the ages of three and six. There were very few differences found in the identifications of the day-care teachers and the parents within the same group of children. In saying this, it is important to identify autism early to begin interventions (Larson, Aasland, & Diseth, 2018). These interventions can be used to improve the students overall functioning ability, communication skills, and behavior management.

One of the biggest struggles students with autism face is sensory processing disorders. These sensory issues cover a large spectrum from "unisensory issues such as hyper/hypo sensitivity to multisensory issues that involve integrating information from difference senses" (Howe & Stagg, 2016, p. 1656). There are three types of unisensory processing issues: sensory

sensitivity, sensory insensitivity, and sensory seeking. The situation and the sensory modality, or mode in which something exists, indicates the type of sensory issue a student possesses. These sensory disorders cause negative reactions that are usually intense, not within normal parameters. Parents with children who have autism must often change their daily routines to meet the needs of their children and not over stimulate them. This is a hard task to complete as so many objects in the natural world, that we encounter many times throughout the day, often stimulate more than one sense at the same time. For example, flowers appeal to our sight, touch, and scent. In saying this, sensory issues are usually easier to accommodate at home than at school (Howe & Stagg, 2016)

These sensory issues are directly linked to academic underachievement, difficulty socializing with peers, and making friends (Howe & Stagg, 2016). Many adolescents with autism are aware of their sensory processing issues. A study was done in which the researchers collected qualitative and quantitative data from adolescents with autism. The researchers, Howe and Stagg, used a survey containing three questions:

- Do you think these sensory difficulties affect your leaning?
- How does it make you feel when you experience these sensory difficulties?
- Do you think there are any positives about how you experience sensory difficulties?

They also used a questionnaire where the students rated on a scale from one to ten, one being the lowest and ten being the highest, how much each sense impacted their expectations in the classroom. Of the fourteen individuals who completed the survey, “86% scored outside the normal range on two or more of the quadrants… [all] the participants were aware of their sensory issues, and all reported difficulties in the classroom within at least one sensory domain” (Howe and Stagg, 2016, p. 1661).

Sensory Tools

"To a child with sensory integration problems, the environment may be confusing, painful, or frightening because these systems are not working together to help him or her decode and understand the environment" (Darrow, 2009). This is a key reason why sensory tools have become important to many schools. A room dedicated to sensory tools can be a favorite place for students with autism. Sensory rooms are designed to "provide sensory stimulation to users through a range of visual, auditory, tactile, and olfactory equipment" (Carter & Stephenson, 2012, p. 95). Sensory tools can be quite expensive but can also be hand crafted at a cheaper price.

Sensory rooms are not a place that students would spend every minute of their school day. The room should be used strategically. Many sensory rooms are used as a place for students to calm down and relax, some are even used as a reward. Teachers and professionals should create a 'sensory diet' for each individual student (Zarling, 2017). The diet should include how often the student gets to go, reasons the student is allowed to go, what time and how long the student is allowed to go. This 'diet' should be included in the student's IEP.

Some objects that may be found in most sensory rooms included weighted blankets, swings, and balls (Carter & Stephenson, 2012). Weighted blankets are sensory tools that can be found in sensory rooms or even regular classrooms. The pressure and weight of the blanket have a calming effect on students with autism. This effect helps reduce some stereotypical behaviors such as hand clapping, moving fingers in front of their eyes, blinking, and rocking (Losinski, Cook, Hirsch, & Sanders, 2017).

Alternative seating is a sensory tool that is easy to implement in the classroom. Alternative seating would include anything but a regular chair. For example, the carpet, bean

bags, and rocking chairs are all alternative seating options. Alternative seating plays a role in academic success as well. This is because alternative seating allows students to fidget and move their legs while still being at their desk and either paying attention to the teacher or doing their work.

Fidget tools are another sensory tool that is easily implemented into the classroom. Fidget tools have been accused of being distractions. If they not used correctly, they will become distractions. Teachers must use and monitor these tools throughout the day. A bonus aspect of these tools is that every student can use them. No one has to feel singled out or different. Examples of fidget tools are fidget cubes, fidget spinners, Slinkies, and Rubik's cubes. "These prescribed therapeutic items generally do not require visual attention and can simply be manipulated with the hands to provide organizing tactile input and an outlet for undisruptive small movement" (Biel, 2017, p. 12). These little tools can redirect students' physical and emotional energy, directly influencing their attention span and academic performance.

Something as simple as a stuffed animal can be considered a sensory tool. Not only are these tools soft and cuddly but they can also be great learning buddies and venting partners. Teachers at Fayetteville-Manlius Elementary School, in New York, have partnered with researchers from Boston Children's Hospital to get Bluebee Pals, cuddly characters to be used as an assistive technology tool to enhance speech therapy and special education instruction, (PR Newswire, 2018) for their students with autism. The teachers found their students were captivated by the Bluebee Pals. The cuddly characters helped students follow instructions and helped teachers give instruction. (See Figure 1).

Figure 1. Sammy the Bear. Retrieved from https://www.bluebeepals.com/

When people think about sensory tools, they often think about tangible objects, forgetting about other senses such as hearing. “Many autistic children perform unusually well in musical areas in comparison with most other areas of their behavior, as well as in comparison with many normal children” (Brownell, 2002, p. 124). Music is a great sensory tool for the classroom as well. Calm softly-played music can soothe students and allow them to focus better on the task at hand. “Many autistic children respond more frequently and appropriately to music than to other auditory stimuli” (Brownell, 2002, p. 124). Music can be used in the classroom to highlight the abilities of students with autism rather than their disability, actively involve them in the subject matter, and develop their social relationships with peers (Darrow, 2009).

Academics

There have been several studies conducted in order to see if sensory integration has a direct impact on academics for students with autism. All of the different interventions have generated positive outcomes even though the techniques have been different.

Some interventions have been created to target specific educational disciplines. For example, students with autism specifically struggle in writing. Writers must be able to physically form letters, think about what they want to communicate, and understanding the social components of writing. Students with autism often lack fine motor skills, have difficulties with language, and have deficits in cognitive processes. (Asaro-Saddler, Arcidiacono, & Deyoe, 2017).

Researchers Asaro-Saddler, Arcidiacono, and Deyoe, collected data in two self-contained classrooms at an elementary school in the northeast United States twice a week for a seven-month period. They collected three types of data: reviews of student writing samples, teacher interviews, and classroom observations. The data was collected through field notes and transcribed audiotapes. The teachers, who have students with autism, identified ten different writing techniques they use on a regular basis with their students. These techniques engage all different senses. Not all of the techniques work for every student because each student has unique needs (Asaro-Saddler, Arcidiacono, & Deyoe, 2017). These techniques are used across the country.

Multisensory environments are “spaces designed to provide sensory stimulation to users through a range of visual, auditor, tactile, and olfactory equipment” (Carter & Stephenson, 2012, p. 95). Carter and Stephenson, conducted a study in New South Wales, Australia. They distributed a questionnaire to 50 government schools which served children with severe

intellectual disabilities. The first question asked whether that school had a multisensory environment for its students. If the answer was no, there was no need to continue with the questionnaire as the remaining nine questions asked for more specifics about the multisensory environment. They received answers from 36 schools, a 72% response rate, 19 of which said they did have a multisensory environment for their students (Carter & Stephenson, 2012). See Table 1 for how multisensory environments were used in the schools surveyed. Of the environments identified, there were 19 common responses. Ten of these responses had to do with teaching and instruction, four had to do with creating an enjoyable environment and providing a space for students to collect themselves, three involved assessment, and two involved creating a space for relationships to be built.

There is biological evidence to prove why many of these interventions work. The brain stem is very important in organizing auditory and visual processes. It also depends on the neocortex, a part of the brain used for sensory perception (Ayres, 1972), to work alongside it. "Disorders consistently observed in learning-disabled children that are suggestive of inadequate sensory integration in the brain stem are immature postural reactions, poor extraocular muscle control, poorly developed visual orientation to environmental space, difficulty in the processing of sound into percepts, and the tendency toward distractibility" (Ayres, 1972, p. 342). Sensory interventions provide stimulations that can be received in one of two ways: passively or in connection with a goal-directed activity (Ayres, 1972).

Table 1 – Percentage of Schools (N=19) Reporting Purpose for Use of Multisensory Environments

Purpose	Percentage
Provide students with an enjoyable experience	94.7
Relax and calm students who are anxious	94.7
As a passive leisure activity	89.5
Teach/practice communication skills, such as choice making	89.5
Provide students with a range of sensory experiences	89.5
Teach/practice cause/effect relationships	84.2
Relax and calm students who are exiting challenging behavior	78.9
Provide students with opportunity to demonstrate awareness	73.7
Teach/practice use of switches to activate equipment	68.4
Encourage students to reach and grasp	68.4
Teach/practice fine motor skills in using equipment	63.2
Teach/practice skills in self-direction by choosing equipment to use	63.2
Teach/practice visual tracking	57.9
Provide students and staff with a setting in which they can build relationships	52.6
Teach appropriate use of equipment (e.g., without throwing or mouthing)	52.6
Teach/practice other visual skills	47.4
Assessment of cognitive skills	31.6
Assessment of motor skills	31.6
Assessment of vision and/or hearing	21.1
Other	15.8

Communication

Students with autism have poor social skills (Lerna, Esposito, Conson, Russo, & Massagli, 2012). Seeing and understanding social cues is really difficult for them. Reading facial expressions is particularly difficult. Of all the emotions conveyed with facial expressions, happiness is the easiest for these students to decode. Negative feelings are very hard for students with autism to understand (Girli & Dogmaz, 2018). This is probably because these students only really look at the mouth region of the face. They do not consider the upper face region, including the eyes.

"Sensory regulation significantly impacts the ability of a person with ASD to be socially engaged, attend to the most salient aspects of an interaction, and to appropriately regulate emotions and behavior, all of which directly affects social communication" (Preis & McKenna, 2014, p. 476). Sensory integration is individually designed and regulated. Many studies have shown that there is a significant statistical difference after sensory integration has been implemented in regard to increased spontaneity, complexity of utterance, and engagement.

The Picture Exchange Communication System (PECS) has been created for nonverbal students with autism, to help them communicate. There are six phases to PECS and each phase should be well-understood, if not mastered, before moving on to the next phase. Phases one and two teach the students to exchange pictures for desired items and activities. Phase three is when students learn to discriminate between preferred and non-preferred pictures. In phase four students are taught to make requests using complete sentences. Phase five teaches students how to ask and answer questions. Phase six teaches students to make a variety of comments (Lerna, Esposito, Conson, Russo, & Massagil, 2012). Students ages one to eleven have shown the most social gains from using PECS than other age groups (Simpson, 2011).

"Augmentative and alternative communication intervention can benefit individuals with developmental disabilities who have significant speech and language impairments by enhancing their communicative competence and facilitating the development of language skills" (Millar, Light, & Scholosser, 2006, p. 248). Augmentative and alternative communication interventions are devices such as Frenchay Alphabet Board (FAB) and The MegaBee Assisted Communication and Writing Tablet. There are two key reasons why these devices are beneficial: First, "they may reduce the pressure on the individual for speech production, thereby reducing stress and indirectly facilitating speech" (Millar, Light, & Scholosser, 2006, p. 249) and second, "they allow individuals with significant speech impairments to bypass the motor and cognitive demands of speech production and focus on the goal of communication instead; after they establish basic communication and language skills, they may then be better able to reallocate resources to improve their speech productions" (Millar, Light, & Scholosser, 2006, p. 249).

Behavior

"Effective classroom management is dependent on several factors, including classroom rules that establish behavioral expectations designed to prevent inappropriate behaviors while enhancing the classroom climate and desired behavior" (Aspiranti, Bebech, Ruffo, & Skinner, 2018, p.143). The color wheel system is an evidence-based classroom management system that has been used to decrease inappropriate behaviors and increase on-task behaviors in general education elementary classrooms. It uses multiple sets of classroom rules (green rules, yellow rules, and red rules) designed to provide specific behavioral expectations for different classroom activities using colored rules allows student with autism to remember the rules. Figure 2 shows an example of a color wheel that could be used in a classroom.

Figure 2. The Color Wheel. Retrieved from https://spedellreadingstrategies.weebly.com/color wheel.html.

It also allows teachers to remind students of the rules and implement them more quickly. This wheel can be created and used for every content area (i.e. math, reading, physical education, music, etc.) (Weebly, 2015). This system has seen success in reducing disruptive behaviors in many self-contained classrooms (Aspiranti, Bebech, Ruffo, & Skinner, 2018)

Self-contained classrooms can be very beneficial for students with autism. Students must be in an environment in which they can be engaged in thoughtful activities, using a curriculum that has been individually created that has adequate communication supports. All of this should take place in a classroom that is not distracting. Self-contained classrooms are often equipped with many sensory tools to prevent or shorten negative behavioral outbursts.

Many self-contained classrooms use some kind of behavior management system. “With an education edifice in desperate need of structure and organization, educators should use behavior management systems that can help them prevent undesired behaviors by maintaining and complimenting desired behaviors in a positive and effective way” (Garcia & Hoang, 2015). A popular system is called the token economy system. A “token [economy] system involves the use of the rules for earning and/or losing tokens” (Klimas & McLaughlin, 2007). These tokens can then be traded for a desired reward such as a sensory item, food, or activity. During a study in a kindergarten self-contained classroom, it was found that there was a “decrease in the amount of time required to complete an assignment, an increase in assignment completion, and a decline in the frequency of inappropriate classroom behaviors” (Klimas & McLaughlin, 2007). Class Dojo is another behavior management system. Class Dojo is a free app that “helps teachers record and track their students' behaviors in real time, while also giving the students and their parents’ instant feedback” (Garcia & Hoang, 2015). In the Class Dojo system, every student is assigned a self-designed avatar. The students’ avatars earn points throughout the day, or week. These points can be earned for doing things such as completing a task, helping a friend, or setting a good example. Students can also lose points for actions such as calling out, being disrespectful, and disobeying classroom rules. Teachers use these points in different ways, that is the beauty of Class Dojo. A lot of teachers use the points as a form of currency. Students can trade their points in and buy items from a classroom store or treasure box. This system is especially effective in elementary schools and self-contained classrooms as students want to do well and please their authority figures.

Conclusion

As a result of this literature review, I have built upon my knowledge of both autism and sensory tools. Students with autism can be identified early in life. Every student with autism is so different because there is such a broad spectrum. Recently research has been conducted on how sensory tools can help students with autism in the classroom setting. Sensory tools can be many different shapes and sizes, with just as many different functions. These tools have been shown to help students pay attention in class and perform better on standardized tests. They also have been shown to help reduce the number of behavioral and emotional student outbursts. Additionally, sensory tools can even foster communication.

There is need for research in the general area of sensory tools and their effects on students with autism. This research needs to be performed to better equip teachers, specialists, and parents, with tools and strategies, to help students with autism succeed in the classroom. Implementing sensory tools into instruction can produce positive results in academics, communication skills, behavior management and emotional management.

Methodology

The methodology for this thesis involved administering surveys to teachers of self-contained classrooms at Pathways School of Excellence.

The teachers at Pathways were chosen because they work with students with autism every day. Of the five teachers, one teaches only middle school students while the other four are teaching classes that have both middle and high school students. The classes at Pathways are created based on ability, not grade level.

The surveys were conducted to gather information on how frequently sensory tools are used in the classroom, the tools' pros and cons, and the tools' specific effects on students with autism regarding academics, communication, behavior, and emotional management. The surveys consisted of five specific questions (see Appendix A) which enabled the teachers to express their opinions, views, and thought processes about their practices.

The teachers were contacted through email (see Appendix B). The surveys were attached, as a link, to the consent forms on the initial email (see Appendix C). For the purposes of this study and to maintain confidentiality, the teachers who responded are referred to as Teacher 1, Teacher 2, Teacher 3, and Teacher 4 throughout the paper.

The questions on the survey were formulated as a result of the information gathered from various works of scholarly literature regarding autism, sensory tools, and the effects of sensory tools on students. The questions were created to identify if, how, and why sensory tools are used in the classrooms of those teachers who were surveyed.

The surveys were created strategically. They were short enough to be able to be completed in a planning period, but also long enough to gather adequate information. The teachers' responses are summarized in the Data Analysis chapter.

Data Analysis

The survey was collected from the teachers at Pathways School of Excellence via Google Forms. Google Forms was set for anonymous responses, to protect the identity of the respondents. Of the five teachers contacted, four responded for an 80% response rate. The teachers will be referred to as Teacher 1, Teacher 2, Teacher 3, and Teacher 4. All six questions were open ended and required written responses.

Question One

The teachers were asked what challenges their students with autism face in their classroom (Table 2).

Table 2 - Challenges Students Face

	Teacher 1	Teacher 2	Teacher 3	Teacher 4
Academics	Yes	Yes	Yes	Yes
Communication	Yes	Yes	Yes	Yes
Behavioral Management	Yes	Yes	No	Yes
Emotional Management	Yes	Yes	Yes	Yes

Teacher 1 specifically stated that his/her students lack the ability to regulate their emotions when they are upset. Also, their comprehension skills are not adequate or on grade

level which hinders their ability to succeed in the classroom. Teacher 2 noted that half of his/her students are nonverbal which makes communication difficult and also frustrating. Behavior becomes communication when students cannot verbally communicate. Therefore, the inability to communicate can lead to very aggressive behavior. Teacher 3 stated that the struggles students face is on a very individualized basis. Every student is different and every student with autism is different. Just because they have the same disorder does not mean they have the same functioning abilities. Teacher 3 listed a few generic examples of struggles his/her students have: cognitive processing delays, sensory perception issues, social deficits, expression challenges, and motor skill challenges. Teacher 4 noted that all of his/her students are nonverbal. Not only do these students lack the ability to communicate effectively but they also struggle to determine right from wrong and have very short attention spans. These three factors contribute to their frustration and ultimately their behavioral issues.

Question Two

The teachers were asked how they used sensory tools in their classroom for academics. Some teachers use sensory tools for direct instruction, individual activities or short brain breaks. Table 3 shows sensory tools that the teachers stated they use in their classroom for academics.

Table 3 – Sensory Tools Used for Academics

Teacher 1	**Teacher 2**	**Teacher 3**	**Teacher 4**
Music Play-Doh Goo-bags* *A Ziploc bag containing a goo substance	None used	Headphones Pencil toppers Weighted vests Fidgets Flexible seating Emotion putty** **Color-changing and metallic putty	Sensory room Latches Knobs Zippers Disco lights Music

Teacher 1 explained that he/she uses sensory tools in academics to help students maintain focus, regulate appropriate emotions, and communicate questions and answers with teachers and peers. Some sensory tools, such as goo-bags and Play-Doh, provide exciting ways to practice academic skills such as spelling. For spelling, the students would build the letters of Play-Doh or draw them in the goo-bags. Teacher 1 also explained that music is a constant tool in the classroom. It is used to aid focus and improve comprehension. Teacher 2 stated that he/she does not use sensory tools during academic time. In his/her classroom, sensory tools are used as brain breaks for students. Teacher 3 stated that he/she uses sensory tools frequently during academics. They are used to engage the students' attention cognitively and physically by stimulating their senses. Teacher 4 states that he/she utilizes the school's sensory room for brain breaks. Also, he/she has a sensory wall, a wall with various sensory tools on or attached, for students to be able to use at any time. Teacher 4 also mentioned that sensory tools are most often used during centers in small group or individual activities. In general, sensory tools are used during academic time in order to keep students stimulated and engaged in the activity at hand.

Question Three

The teachers were asked how they used sensory tools in their classroom for communication purposes. Some teachers have their students use the tools more directly than others. Teacher 1 explained that in his/her class they use plush monsters, a type of toy, to act out the reason they are mad or frustrated. These plush monsters can also be used to explain a disagreement between two classmates and how they can solve the issue. Teacher 2 uses sensory tools to foster communication. Teacher 2 wants the students to ask for specific tools. Teacher 3 uses a Picture Exchange Communication System (PECS) and voice output technology such as TouchChat, which is an online version of PECS that can speak for students. He/she always wants

interactions to be positive and productive. It is important to be patient, persistent, sincere, affectionate, and respectful when students are trying to communicate. Teacher 3 says it is important to ignore irritating and attention-seeking behaviors. Since students want and need attention. Thus, condemning bad behaviors gives them attention and they do not mind that it is negative. But the attention reinforces the negative behavior, so it is more beneficial to ignore the behavior. He/she also mentioned that it is important to physically interact with students, especially when they are using sensory tools in regard to communication. Teacher 4 stated that he/she does not typically use sensory tools for communication in the classroom.

Question Four

The teacher were asked how they use sensory tools in their classroom for behavior and emotional management. All four teachers use sensory tools when students are in a heightened state, beginning to get really upset. Teacher 1 says the most productive tools in his/her classroom for behavioral and emotional management are pillows, soft blankets, swivel chairs, plush toys, and music. Every student has their preference, but the goal of every tool is the same, to calm the students' minds and bodies. Two of the four teachers, Teacher 2 and Teacher 3, try to use the tools proactively to reduce the number of breakdowns students have in a day. According to Teacher 2, sensory tools are used more intentionally when he/she can see that a student is becoming heightened. The only time that sensory tools are not used when a student becomes heightened is when the student is exhibiting these behaviors to escape doing an activity that he/she must do, such as reading. Teacher 3 provides his/her students with a therapeutic space in the classroom that contains multiple sensory tools. Students have the opportunity to go to that space and retrieve whatever tool they need in order to calm down so that he/she is better prepared for learning and able to more positively interact with others. Teacher 4 offers the

school's sensory room as a place where students can go if they are in need of a "time-out." The sensory room contains lights, flexible seats, calming music, and other fidget tools the students can use. Students in his/her class are often working for rewards, by exhibiting appropriate behaviors, throughout the day. One of the rewards that the students have the opportunity to work for is the sensory room.

Question Five

The teachers were asked what specific sensory tools they use in their classroom and the advantages and disadvantages of each tool (See Table 4 in Appendix D). There are a lot of different tools that all of the teachers use. Each student and teacher has his/her preferences on what should and will be used in the classroom. Teacher 3 made an interesting point on a disadvantage to all sensory tools; it is hard to work them off of the tools so that they can accomplish tasks without assistance. The sensory tools are currently being used to level the playing field, so, overall, they are a positive thing. Additionally, sensory tools may not always be available when students are at home or out in the community. Therefore, students should learn how to accomplish tasks without these sensory tools.

Question Six

For the final question, teachers were asked how their students respond to the use of sensory tools. All four teachers agreed that their students respond positively to the use of sensory tools in the classroom. Teacher 1 stated that the tools he/she has in his/her classroom works as it is designed. Some students do not respond as well to some tools as they do to others, so the teacher and student will try several tools to find the most effective one for the situational need. It is a trial and error situation until the student can find a tool that works the best for him/her. Teacher 2 stated that his/her students enjoy sensory tools. Teacher 3 believes his/her students

find sensory tools to be soothing by helping to reduce the stress and anxiety that the students feel. Teacher 4 stated that his/her students typically respond positively, but not always.

Conclusion

Sensory tools have become more popular in schools. They can be used to help students with autism in the classroom in regard to academics, communication, behavioral and emotional management. It is important to note that while sensory tools generally help students with autism, not all sensory tools will positively impact all students with autism, or even in the same way. Considering autism has such a wide spectrum of disabilities, each student will rely on different tools used in different ways. There is not one specific tool that will work with every student.

Of the five teachers contacted, four responded for a response rate of 80%. Teachers who responded, gave thorough answers. This is important because the more information that is provided, the conclusions are more reliable. The two biggest weakness of this study is the population size, it is very small, and the fact that all of the teachers are from one school. Since this survey was only sent and collected from teachers at Pathways School of Excellence, the data only represents Pathways School of Excellence and cannot be assumed to represent all teachers in all school settings.

In order to expand this study for future research, several different routes can be considered. A researcher can look at different types of schools:

- Other specialized schools
- Other faith-based schools
- Non-faith-based private schools
- Public schools

Sensory tools are not only adequate tools for students with autism, they can be used to help students with other disabilities, traumatic illnesses, and students without disabilities. In different fields, sensory tools may not be used to achieve academic goals, but they can be used to foster

communication or control/maintain behaviors and emotions. Other places where the sensory tools are beneficial are

- Children's ministry
- Rehabilitation centers
- Counseling centers
- Hospitals
- Other agencies that work with children

Sensory tools can be used to assist adults too. All of the locations listed above are also applicable to adults both with and without disabilities. Adults with disabilities do not stop needing accommodations and help just because they are older. These tools are still reliable and useful in their everyday lives. Adults without disabilities are not exempt from feeling stress, anger, sadness, anxiousness, depression, etc. Sometimes adults need help channeling, expressing, and working through problems and feelings. Sensory tools can help with those needs.

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Appendices

Appendix A

Survey Questions

- What challenges do students with autism face in your classroom (including but not limited to academic, communication, behavioral, and emotional needs)?
- How do you use sensory tools in your classroom for academics?
- How do you use sensory tools in your classroom for communication?
- How do you use sensory tools in your classroom for behavior and emotional management?
- What specific sensory tools do you use in your classroom? List some advantages and disadvantages to each (if applicable)?
- How do students respond to the sensory tools you use in your classroom?

Appendix B

Recruitment Email

Hello,

I am a senior at Southeastern University and I am in the School of Honors. I am constructing a thesis project on the use of sensory tools in the classroom and how these tools impact students with autism.

I have attached a consent form which also contains the link to a survey asking about the pros and cons of sensory tools in your classroom (which should take no longer than 30 minutes).

I would really appreciate your help on my data collection process.

Thank you,

Summer Rusher

Appendix C

Consent Form

Title: Can Sensory Tools Help Students with Autism in Regard to Academics, Communication, Behavioral and Emotional Management?

Investigator(s): Gordon Miller (Primary Investigator) and Summer Rusher (Co-Investigator)

Purpose: The purpose of the research study is to understand how students with autism use and respond to sensory tools in the classroom.

What to Expect: This research study is administered online. Participation in this research will involve completion of one questionnaire. The questionnaire will ask six questions regarding challenges students with autism face in your classroom, sensory tools you use in your classroom, pros and cons of those tools, other tools and strategies that are implemented in the classroom, how students with autism respond to these interventions. You may skip any questions that you do not wish to answer. You will be expected to complete the questionnaire once. It should take you about 20-30 minutes to complete.

Risks: There are no risks associated with this project which are expected to be greater than those ordinarily encountered in daily life.

Benefits: There are no direct benefits to you. However, you may gain an appreciation and understanding of how research is conducted.

Compensation: There will be no compensation for completing this study.

Your Rights and Confidentiality: Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time.

Confidentiality: The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you. Research records will be stored on a password protected computer in a locked office and only researchers and individuals responsible for research oversight will have access to the records. Data will be destroyed five years after the study has been completed.

Contacts: You may contact any of the researchers at the following addresses and phone numbers, should you desire to discuss your participation in the study and/or request information about the results of the study: Gordon Miller – gmiller@seu.edu or Summer Rusher – srusher@seu.edu.

If you have questions about your rights as a research volunteer, you may contact the IRB Office IRB@seu.edu

If you choose to participate: Please, click THE LINK BELOW if you choose to participate. By clicking THE LINK BELOW, you are indicating that you freely and voluntarily and agree to participate in this study and you also acknowledge that you are at least 18 years of age.

It is recommended that you print a copy of this consent page for your records before you begin the study by clicking below.

[Link was provided in the original Consent Form. It is no longer active.]

Appendix D

Table 4 – Sensory Tools and Their Advantages and Disadvantages

Teacher	Sensory Tool	Advantage	Disadvantage
Teacher 1	Sensory Bottles	Quiet	
	Music	Easily accessible	Can sometimes have an opposite effect
	Plush Toys	Fun and small	Can cause arguments over who gets to have which character
	Play-Doh	So many uses	
Teacher 2	Sensory Room		Takes an adult out of the room
	Bean Bag		
	Bite Sticks		
	Trampoline		
	Fidget Toys		
	Pillows		
	Blankets		
	Stuffed animals		
Teacher 3	All tools		Having to taper students off of the tools
Teacher 4	Spinning Light Wands		
	Textured Balls		
	Sequence Pillows		
	Stretchy/Rubber Pieces		