

University of New Hampshire

## University of New Hampshire Scholars' Repository

---

Honors Theses and Capstones

Student Scholarship

---

Spring 2022

### Sensory Scouting: An Analysis of Supports for Sensory Needs of Children in Local Businesses

Alison Whitman

*University of New Hampshire - Main Campus*

Follow this and additional works at: <https://scholars.unh.edu/honors>



Part of the [Community Health Commons](#)

---

#### Recommended Citation

Whitman, Alison, "Sensory Scouting: An Analysis of Supports for Sensory Needs of Children in Local Businesses" (2022). *Honors Theses and Capstones*. 673.

<https://scholars.unh.edu/honors/673>

This Senior Honors Thesis is brought to you for free and open access by the Student Scholarship at University of New Hampshire Scholars' Repository. It has been accepted for inclusion in Honors Theses and Capstones by an authorized administrator of University of New Hampshire Scholars' Repository. For more information, please contact [Scholarly.Communication@unh.edu](mailto:Scholarly.Communication@unh.edu).

**Sensory Scouting: An Analysis of Supports for  
Sensory Needs of Children in Local Businesses**

Alison Whitman

Honors Thesis

Department of Occupational Therapy

University of New Hampshire

Faculty Mentor: Sarah Smith, DSc, OTR/L

### **Abstract**

Families with children with challenging sensory needs may experience a decline in community participation, leading to decreased quality of life, personal feelings of well-being, and identity as a member of the community (Little et al., 2015 & Silverman & Tyszka, 2017). The purpose of this study was to examine and report the sensory experiences such as the sights, sounds, and physical movement opportunities within local businesses in the Seacoast New Hampshire area. To accomplish this, nine family-focused businesses were evaluated using the Sensory Scout Business Assessment-4<sup>th</sup> Edition (SSBA). Many businesses were found to have potentially overwhelming movement, auditory and visual experiences for children who have sensory sensitivities. Few businesses had opportunities for tactile experiences. The sensory factors within businesses may inhibit or facilitate a child's participation and success in the businesses. Findings can inform families of places in the community that best support their child's sensory needs.

### **An Analysis of Supports for Sensory Needs of Children in Local Businesses**

Children with Sensory Processing Disorder (SPD) experience difficulties in detecting, modulating, or interpreting senses, which impacts a child's participation in everyday life activities (Crasta et al., 2020). Environmental sensory stimuli that can be challenging for children to regulate include tactile, auditory, visual, gustatory, olfactory, proprioceptive, and vestibular stimuli (Crasta et al. 2020). The prevalence of children with sensory processing difficulties is 1 in 6.25 children in the United States (Crasta et al., 2020). Prevalence varies from 10-55% in children without an identified disability and 40-88% in children with an identified disability (Pfeiffer et al., 2018). SPD often occurs idiopathically, but SPD may also be a comorbidity of autism spectrum disorder (ASD) or attention deficit hyperactivity disorder (Crasta et al., 2020). For children with ASD, the prevalence of sensory processing difficulties is between 45-90% (Dellapiazza, 2018). Common sensory responses for a child can include sensory seeking or avoiding behaviors, and the prevalence of these responses vary by individual (Kirby et al., 2019).

Sensory processing refers to the interaction between one's brain and their environment, and these interactions may impact a child's participation in activities and overall health. (Dean et al., 2018). Everyday activities that are related to decreased participation as a result of sensory processing differences include activities of daily living such as dressing and bathing, education, play, and leisure (Dean et al., 2018). Participation in a variety of activities allows children to engage in many contexts to develop skills (Little et al., 2015). Specifically, individuals and families with children with sensory sensitivities are more likely to experience a decline in community participation (Little et al., 2015).

Participation in the community is vital to one's overall health, personal feelings of well-being, and identity as a member of the community. However, due to a lack of engagement in the community, families and children with sensory needs may experience social isolation and withdrawal (Kong et al., 2017). Children with sensory needs themselves may experience a decline in play and social participation (Silverman & Tyszka, 2017). Also, the family unit may experience a decrease in well-being and quality of life as a result of the barriers in the community (Silverman & Tyszka, 2017).

Although a depth of research has reviewed the impact of sensory processing differences on participation in many contexts, little research exists understanding the sensory factors in businesses and communities that may contribute to community participation success for children with sensory sensitivities. Sensory seeking children may prefer leisure participation due to the child being attracted to environments that involve more sensory stimulation, rather than more social activities (Choi & Chung, 2021). However, children who experience sensory sensitivities tend to avoid sensory-rich leisure activities and instead may prefer activities within their home environment, with a low preference for skill-based activities (Choi & Jung, 2021). In order for families with children with sensory sensitivities to most fully participate in the community, they must understand their child's sensory preferences and find environments that optimally match their child's needs.

### **Sensory Scout Project**

Twenty-One Senses is a non-profit organization founded in 2018 to teach communities how to support and include children with sensory needs (Twenty-One Senses, n.d). Twenty-One Senses was founded by caregivers of children with sensory needs to bring awareness, education, and support for families who have similar needs (Twenty-One Senses, n.d). In 2021, Twenty-

One Senses partnered with the University of New Hampshire Department of Occupational Therapy's Healthy Families Research Program to pilot the Sensory Scout Project. The ongoing goal of the Sensory Scout Project is to collect sensory data on local businesses to allow families with children with sensory needs to understand the resources and stimuli within the businesses. Having an understanding of the sensory stimuli within the businesses may improve the overall experience in the business and increase participation in the community for families with children with sensory needs. Individuals with ASD and sensory sensitivities have reported a preference for expected and predictable sensory input during leisure activities (Little et al., 2015). By setting expectations of the environment, families are able to prepare for their experience in the community. Therefore, the purpose of this study was to examine and record the sensory experiences such as the sights, sounds, and physical movement opportunities within local businesses in order to share this information with families who have children with specific sensory needs.

## **Method**

### **Research Team**

The Sensory Scout research team consisted of the primary researcher Alison Whitman, Occupational Therapy undergraduate honors student, the secondary researcher Sarah Smith, Assistant Professor of Occupational Therapy, and research external community partner Danielle Heaton, Program Director of Twenty-One Senses. The research team met weekly for two months to discuss and evaluate the project goals. Ms. Heaton generated a list of potential family friendly business destinations in the seacoast New Hampshire area for Ms. Whitman to assess.

### **Recruitment**

Nine businesses in the seacoast New Hampshire area agreed to participate in a Sensory Scout assessment. Businesses were selected based on having experiences tailored to children and adolescent interests and included businesses provided a variety of leisure activities in the community (Table 1). The process of consent included an informational card regarding the project and Twenty-One Senses, as well as verbal conversation with the primary researchers. Managers from the businesses verbally consented to participation in the assessment. Out of 10 businesses asked to participate, nine businesses agreed. The businesses worked cooperatively with the primary researcher to complete the assessment to gain broad information about the business.

**Table 1**

*Business Participants*

Business Type	Business Purpose
Rage Room	Open room to smash glass and other fragile objects with a variety of tools including hammers and bats. Open room to throw paint at walls and a canvas
Escape Room	A variety of rooms with different themes that have clues to solve a puzzle
Library	Access to books, magazines, computers, and other educational tools Children's room with toys and events catered to different ages
Indoor Rock Climbing	2 areas of rock-climbing walls with soft mats on the ground
Candy Store	Various types of candy and ice cream with eating area
Bowling	Bowling alley, arcade, axe throwing, and food area
Farm/Market	Indoor market with fresh foods, premade meals, petting zoo, play area, and fall festivities
Museum	Children's museum with a variety of activities to allow creative exploration
Toy Store	Small store with toys and games for children of all ages

## **Data Collection Tool**

Twenty-One Senses self-developed the *Sensory Scout Business Assessment (SSBA)* to assess a variety of sensory factors in businesses. The questions in the SSBA relate to a general overview of the business, the business structure, exhibits and activities, sounds and smells, accommodations available, and details about the visit to understand the range of sensory factors (See Table 2). The SSBA was created on a team with five Twenty-One Senses members (D. Heaton, personal communication, May 12, 2022). The tool was drafted, and Twenty-One Senses members made iterations based on feedback, format refining, and redesigning the approach to questions to develop the version used in this study.

The online SSBA consists of a combination of qualitative and quantitative questions that are open text box and preselected survey responses. The details specific to the time of the visit is noted to understand how hours observed might impact the results, such as visiting at atypical times. The sensory factors, such as noise and movement of people, may be impacted by the number of people within the business, so this data allows researchers to understand how this may impact the results of the study. The primary researcher accessed the assessment on an iPhone. The primary researcher was trained prior to using the tool with the program director, and the primary researcher trialed the tool with feedback from the program director. Biweekly meetings were held over two months to answer questions and review results.

## **Table 2**

### *Sample SSBA Questions*

1. Is the flooring surface even and consistent?
2. Are there any large gaps in the floor or doorways?

3. Variable lighting sources (general, task, accent lighting).
4. Learning types used (reading, listening, watching, hands on play, hands on creating, full body movement).
5. Average decibel reading.
6. Sensory accommodations available from business (headsets, fidgets, calm space, social stories, sensory map, sensory app, reduced lighting, reduced sounds, reduced capacity).
7. Your visit was representative of (average visit, slow visit, busy visit).

### **Data Analysis**

Data from the survey was downloaded to Microsoft Excel (version 2204) with answers to all questions from the nine businesses. Data was copied and pasted to Microsoft Word (version 2204), and the primary and secondary researchers categorized questions by each sense (auditory, visual, tactile, and movement). The final 38 categorized questions were selected from the original pool of 61 questions based on the significance of the impact on the child's ability to experience the sense determined through researcher deliberation. The final selected questions were translated to Microsoft Excel to identify frequency of total opportunities from all nine businesses for each of the four senses.

## **Results**

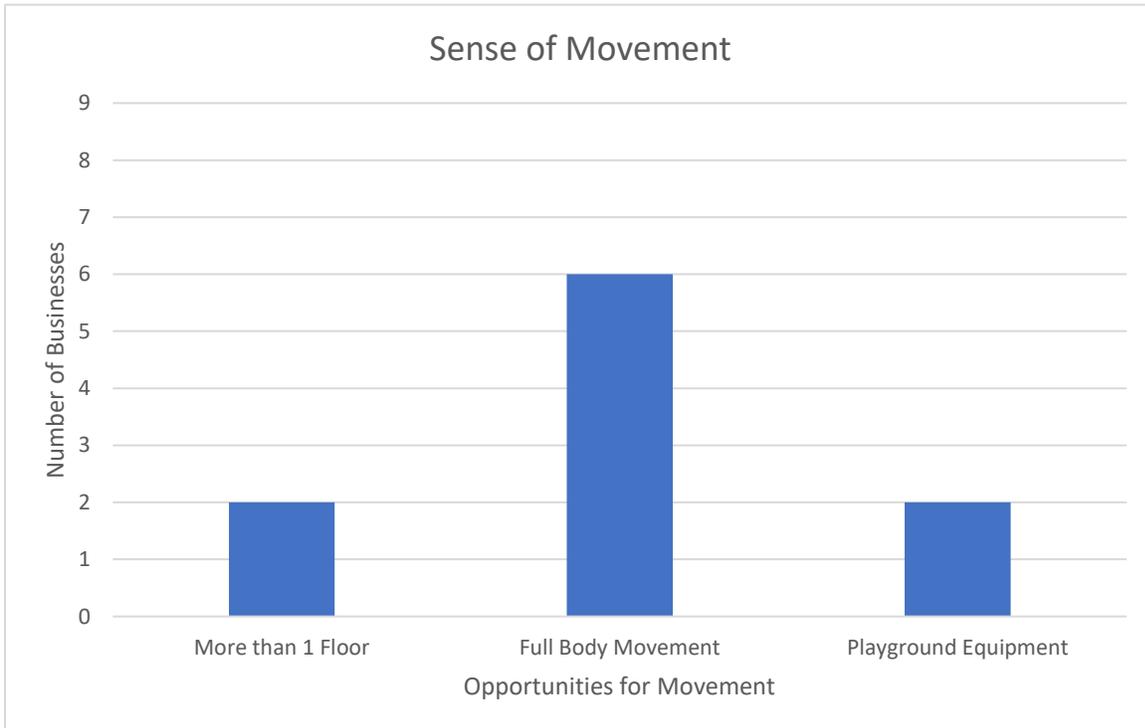
### **Movement**

There were three questions from the survey that best represented the ability for a child to experience movement within the nine businesses (Figure 1). The first question, "Select if the business has multiple floors" was chosen for 2/9 businesses (library and museum). More than half (6/9) of businesses assessed were identified as using "Full Body Movement" as a learning type (rage room, escape room, indoor rock climbing, bowling, farm/market, and museum). The

survey also asked if a business has playground equipment, and 2/9 businesses included this (farm/market and museum).

### Figure 1

*Local Business with Opportunities for Movement*



### Visual

Seven questions were selected related to a child's ability to experience visual feedback within a business (Figure 2). The first question selected pertained to the flooring surface being even and consistent, and 7/9 businesses (rage room, indoor rock climbing, candy store, bowling, farm/market, museum, and toy store) had uneven flooring within their businesses. Similarly, a question asked if there are any large gaps in the floor, and 4/9 businesses (library, candy store, farm/market, toy store) were indicated to have gaps. Another question on the survey asked what lighting types are used, and the options were general lighting, task lighting, and accent lighting.

Most (8/9) of the businesses used general lighting (rage room, escape room, library, indoor rock climbing, bowling, farm/market, museum, and toy store) to illuminate the business as a whole.

More than half (6/9) of the businesses used task lighting (escape room, library, indoor rock climbing, candy store, bowling, and museum) to focus on exhibits or areas of the business. Many

(7/9) businesses used accent lighting (rage room, escape room, candy store, bowling, farm/market, museum, and toy store) to focus on certain objects. The final question pertaining to

a child's ability to experience visual feedback related to the difference in lighting from the

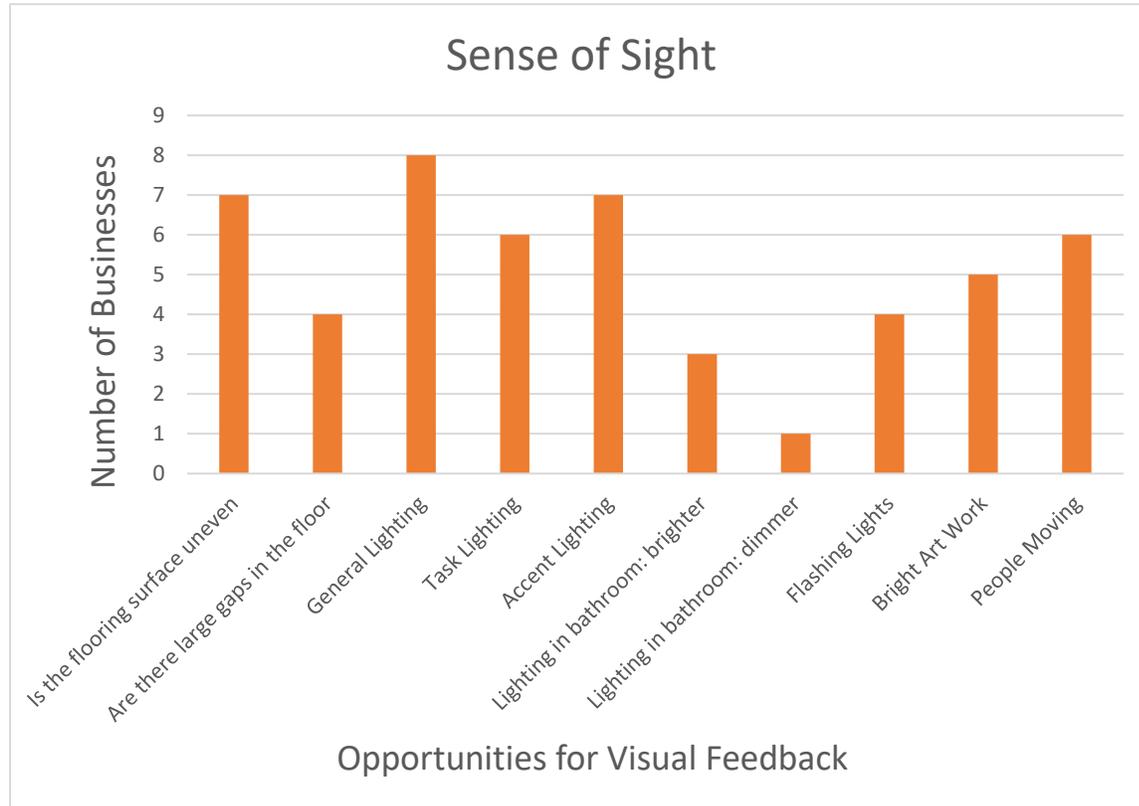
business to the bathroom. In 3/9 businesses, it was indicated that the lighting in the bathroom is

brighter than in the general area (rage room, library, and candy store). In 1/9 businesses, the

lighting in the bathroom was dimmer than in the general area (escape room).

## Figure 2

### *Local Businesses with Opportunities for Visual Experiences*



## **Auditory**

Fourteen questions from the SSBA related to a child's ability to experience auditory feedback from the businesses (Figure 3). In regard to general sounds heard while inside the businesses, six out of nine businesses that had radio, music, or televisions in the background making noise (rage room, escape room, candy store, bowling, museum, and toy store). Five out of nine businesses that had machine or equipment noises in the general area (escape room, candy store, bowling, museum, and toy store). In 5/9 businesses, echoes could be heard from other areas or exhibits (rage room, candy store, bowling, museum, and toy store). In 2/9 businesses, PA announcements played at random points throughout the visit (escape room and museum), external traffic could be heard (farm/market and museum). Due to nearby traffic, external noise could be heard in 3/9 businesses (farm/market, museum, toy store). High-pitched noises could be heard in 2/9 businesses (rage room and museum), and people and crowds could be heard in 7/9 businesses (rage room, escape room, indoor rock climbing, bowling, farm/market, and museum).

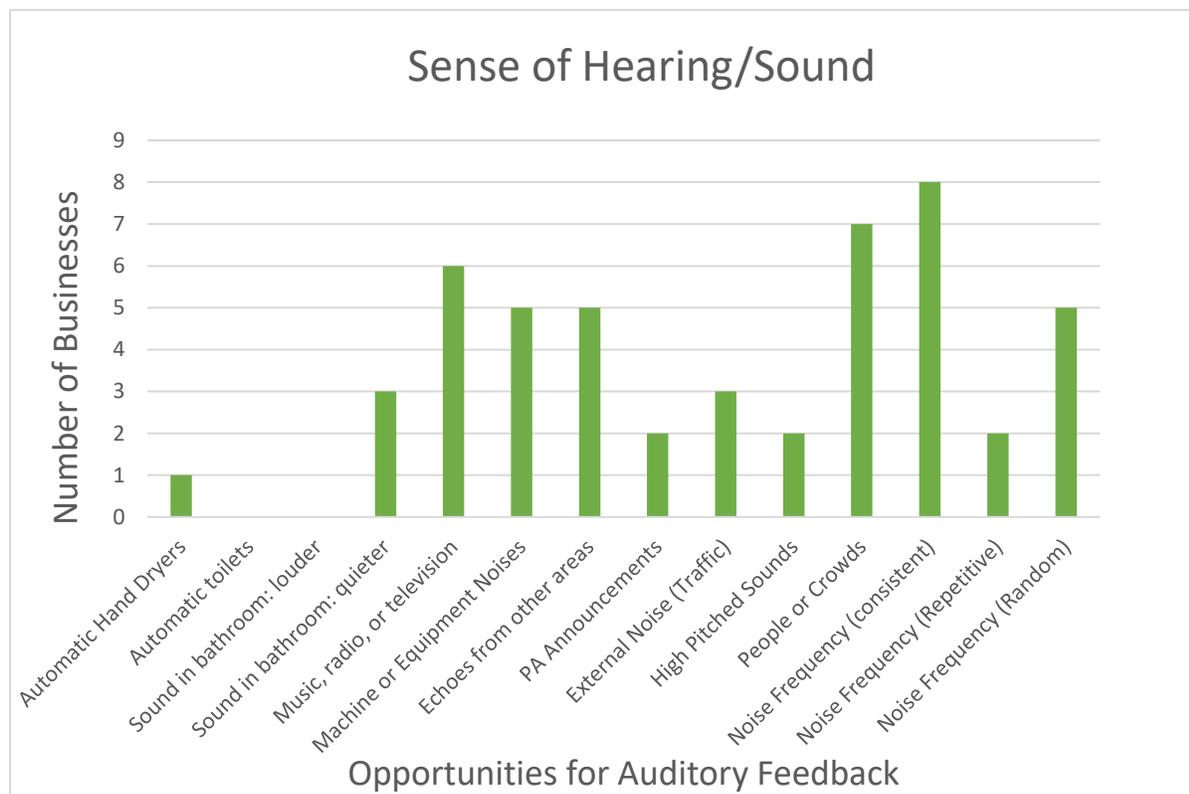
Further investigating auditory factors in the businesses, the general area of 8/9 businesses had constant noise (rage room, escape room, indoor rock climbing, candy store, bowling, farm/market, museum, and toy store). Due to factors including heating, ventilation, and air conditioning systems turning on, 2/9 businesses had repetitive noise (candy store and toy store). The general area of 5/9 businesses had random noises throughout the visits (rage room, escape room, library, indoor rock climbing, and toy store).

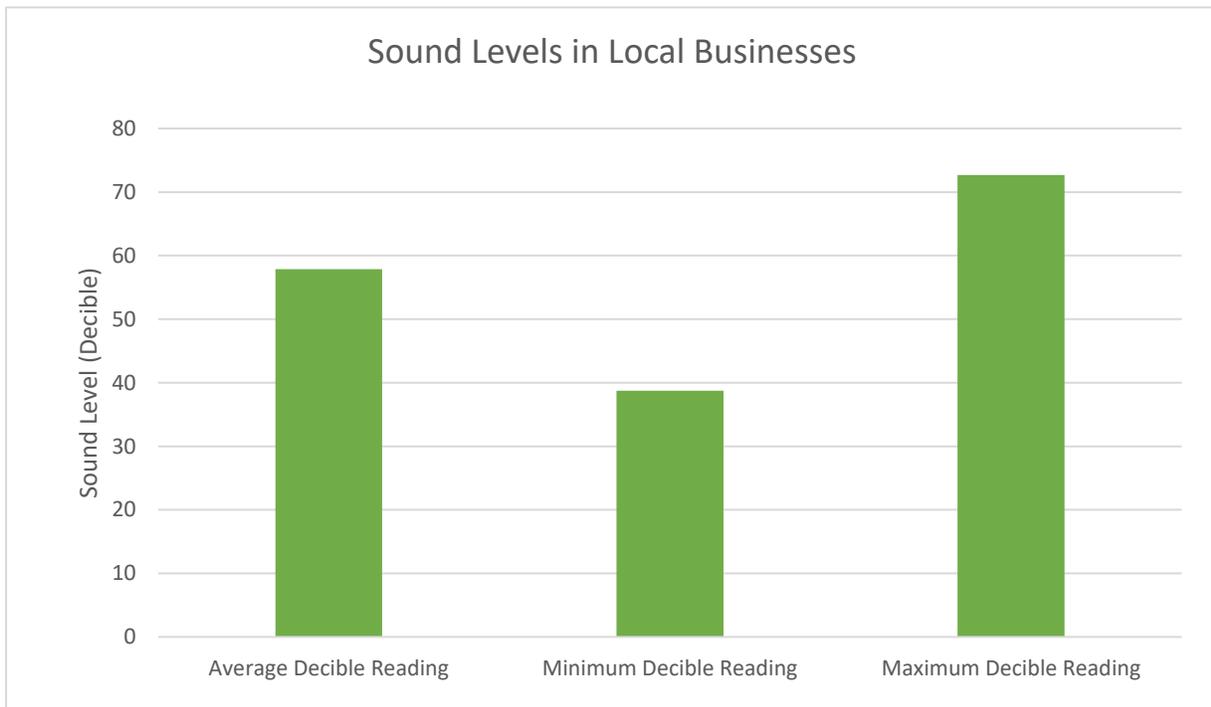
Two SSBA questions assessed auditory factors within the bathrooms of the businesses. In 1/9 bathrooms, automatic hand dryers could be used (bowling), and none of the businesses had a bathroom with automatic toilets. In 3/9 bathrooms, the sound level was quieter (indoor rock climbing, museum, and candy store).

In seven businesses, the primary researcher was able to get decibel readings to measure the sound levels across the visit (Figure 4). The average decibel reading from the 7/9 businesses assessed (rage room, library, indoor rock climbing, candy store, bowling, museum, and toy store) was 57.86 dB. Out of four businesses assessed for minimum sound level (rage room, library, candy store, and toy store), the average minimum decibel reading was 38.75 dB. The maximum decibel reading was acquired from 6/9 businesses (rage room, indoor rock climbing, candy store, bowling, museum, and toy store), and the average maximum sound level was 72.67 dB.

**Figure 3**

*Local Businesses with Opportunities for Hearing/ Sound*



**Figure 4***Decibel Readings in Local Businesses***Tactile**

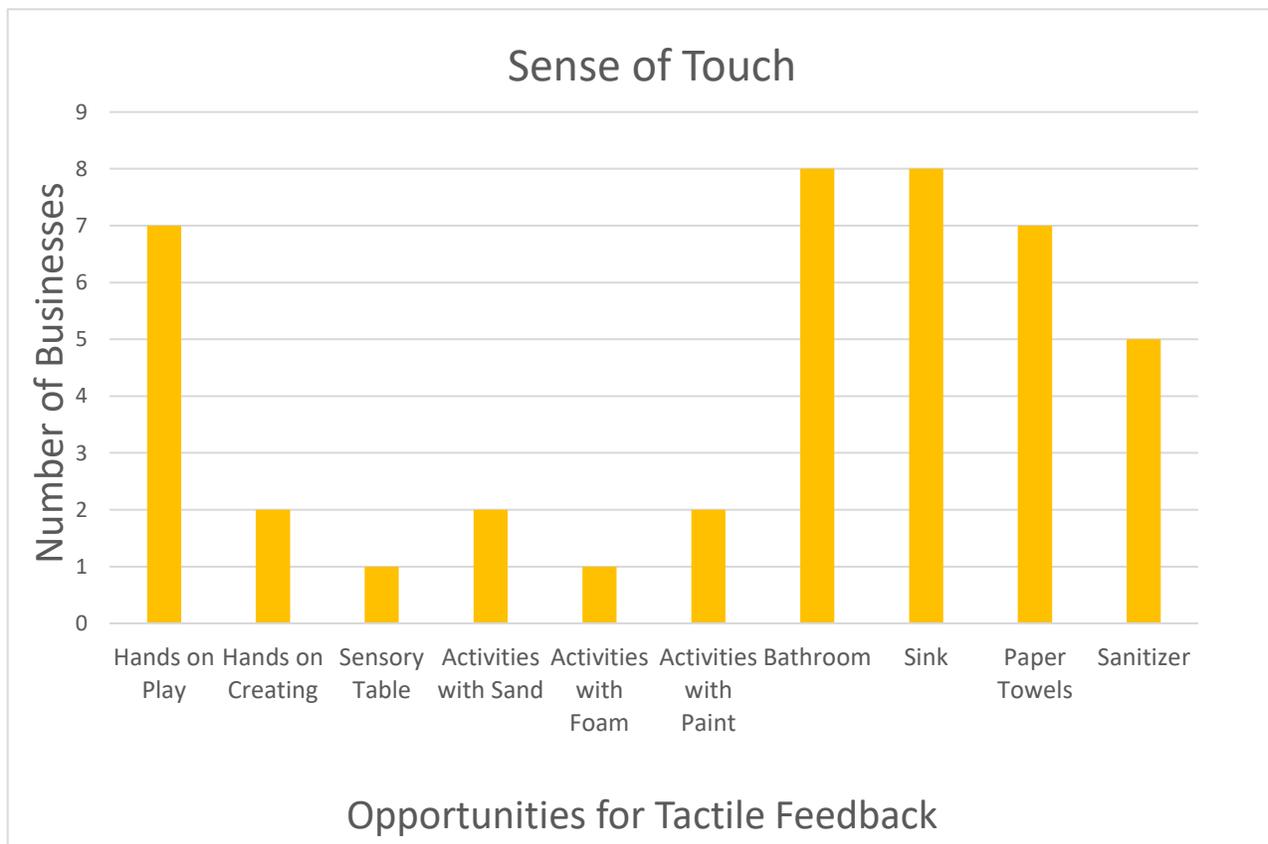
Ten questions within the SSBA directly investigated a child's ability to experience tactile sensations (Figure 5). Within the question "Learning types used," options for responses included hands on play and hands on creating. The activities in 7/9 businesses used hands on play (rage room, escape room, library, indoor rock climbing, bowling, farm/market, and museum), and 2/9 businesses used hands on creating (rage room and museum) as methods for learning. Following the previous question, the survey assessed if the businesses had a sensory table or wall panel, and 1/9 businesses (museum) had this available. Additionally, one question on the SSBA asked if any of the hands-on activities included a variety of textures including sand, foam, and paint. The activities in 2/9 businesses involved the use of sand (farm/market and museum), 1/9 businesses

had foam activities (museum), and 2/9 businesses had opportunities for children to explore paint (rage room and museum).

Involving the areas with hands on activities, one question investigated methods of cleanup nearby these areas as a support for children with tactile sensitivities. In 8/9 businesses a sink was located in a nearby bathroom for cleanup from hands-on activities (rage room, escape room, library, indoor rock climbing, candy store, bowling, museum, and toy store). In 7/9 businesses, paper towels were available within the bathroom for cleanup, which excluded the bowling alley which used automatic hand dryers. In 5/9 businesses, hand sanitizer was located at the front desk or near the hands-on activities (escape room, library, indoor rock climbing, bowling, and museum).

**Figure 5**

*Local Businesses with Opportunities for Tactile Experiences*



## **Discussion**

### **Movement**

Opportunities for movement were evaluated in the businesses to predict the impact on children that are movement-avoidant. Children with SPD may experience vestibular dysfunction that impacts their participation in activities of daily life. For example, some children with SPD dislike climbing on jungle gyms that involve having their feet off the ground and experience difficulty going downstairs due to disorienting visual stimuli (May-Benson et al., 2020). Most businesses assessed in the current study included an aspect of movement that could negatively impact a child's participation and success within the business. Many businesses had opportunities for full body movement as a result of the purpose being intended for children, such as with bowling and indoor rock climbing. Children who are movement-avoidant may have difficulty participating in the activities that involve full body movement. Few businesses had playground equipment, which may be beneficial to children that are movement-avoidant as these children tend to avoid jungle gyms (Benson et al., 2017). Only 2/9 businesses had more than one floor, which may positively impact the experience of children that are movement-avoidant. Children that are movement-avoidant may have difficulty processing stairs, elevators, and escalators (May-Benson, 2020). Overall, most of the businesses had opportunities for full body movement but much fewer had more than one floor or playground equipment, which could be beneficial to children that are movement-avoidant and facilitate their participation.

### **Visual**

Children that are visual sensory avoiders are often sensitive to bright, flashing, moving and fluorescent lights as they can be difficult to process. These individuals are more likely to stay at home to avoid these environments. (Parmar et al., 2021). More than half of the businesses had

flashing lights, bright artwork, and accent lighting, which could inhibit the participation of children that are visual-avoiding. Different elements of the grounds of the businesses, such as gaps in the floor or uneven flooring, may be difficult for some children to visually process. Most of the businesses had uneven flooring, and this may inhibit participation for visual-avoiders as it can be difficult to visually perceive the raises in flooring. Many businesses also had people moving throughout the business, and this can also inhibit participation for children who have difficulty visually processing this movement around them. Overall, there was an abundance of visual stimuli throughout the businesses that could inhibit participation for children that are visually sensory-avoidant.

### **Auditory**

Investigating the opportunities for sound within businesses allows families to understand factors inhibiting or facilitating their child's participation in those environments. Auditory avoiders tend to prefer quiet environments with low background noise and little repetitive, high-pitched, or unexpected sounds. (Twenty-One Senses Team, 2021a). All businesses had some type of background noise, and this typically came from music, televisions, traffic, and other people and echoes. This may be inhibiting for children who are auditory avoidant as they may have difficulty processing an abundance of noise. Many businesses also had random noises, and these were often unexpected and loud. This noise may be perceived as frightening for children that are auditory-avoidant, and this could inhibit their participation in these environments. In 3/9 businesses, the sound level was lower in the bathroom, and this could facilitate the participation of a child that is sensory avoidant by providing them a quiet place to self-regulate. Overall, the businesses had a variety of consistent and random sounds that could inhibit the participation of children that are auditory avoidant.

The minimum, maximum, and average decibel readings could be used to determine a child's success within the businesses. On average, the businesses' decibel reading of about 60 dB is about the level of background music or normal conversations (Hearing Health Foundation, n.d.). The maximum decibel readings from each business was on average over 70 dB. This is about the level of landscaping equipment and vacuum cleaners (Hearing Health Foundation, n.d.). Sound levels that are above 70dB can potentially harm hearing over time, showing the impact of these noises (Hearing Health Foundation, n.d.). The loudness of the maximum decibel reading may negatively impact the participation of children that are auditory avoidant. Additionally, the large difference between the average and maximum decibel readings shows the randomness of the noises within the businesses and may inhibit participation for children that are auditory avoidant.

### **Tactile**

Children that are tactile avoidant often dislike getting dirty, and these children avoid activities that involve tactile experiences (Twenty-One Senses Team, 2021B). There were few businesses that had experiences with a variety of tactile sensory experiences including sand, dirt, and paint, which could facilitate participation for children that are tactile avoidant. Additionally, all but 1/9 businesses had an opportunity for clean-up near tactile experiences such as hand sanitizer and bathrooms. Having an option to wash off after tactile experiences may support a child that is tactile avoidant to participate in the activities. Overall, there was little opportunity for tactile feedback within the local businesses, and there were resources to support children that are tactile avoidant which may facilitate their participation in the businesses.

### **Participation**

The current study's findings of sensory factors, such as movement, visual, and auditory stimuli, that inhibit participation in the community may impact a child's overall health, personal feelings of well-being, and identity (Silverman & Tyszka, 2017). Pfeiffer et al. (2017) identified community involvement as a meaningful outcome to improve quality of life for children with sensory needs. Silverman and Tyszka (2017) identified accommodations to increase participation in museums that included having smaller crowds, fewer lights and sounds, and a cool-down space. These accommodations resulted in longer museum visits, increased quality of visits, and an increased sense of well-being for families with sensory needs. Although 0/9 businesses had these sensory accommodations available, the current study's findings will allow businesses to understand factors that are impacting the participation of children with sensory needs.

### **Conclusion**

The experience and participation of children that generally avoid sensory stimuli in local businesses is dependent on the match between a child's unique needs and the sensory factors within the environment. The SSBA was able to capture the sensory factors in local businesses to access the impacts on access for children with sensory needs. Overall, many of the businesses had potentially overwhelming movement, visual, and auditory experiences, and few had opportunities for tactile experiences. Businesses oriented for children often use stimuli to draw the attention of children and excite them to participate in the activities. However, the lights, noises, and other stimuli may negatively impact the experiences of children with sensory needs. Few businesses had resources for children with sensory needs, such as headphones, fidget toys, and calm spaces. Most businesses were open to learning about how they can support children with sensory needs, such as using sensory friendly hours to accommodate the needs of their community. Providing families with resources about the sensory experiences within their

community may allow them to better prepare and select businesses that meet their child's needs. The results of this study can be used to examine the sensory factors within businesses in the Seacoast New Hampshire area.

### **Limitations**

Two factors may have impacted the results of this study. First, the businesses were often visited during "slow" hours to allow better collaboration with the staff within the businesses. This may have impacted results as slower hours decreases the stimuli of other people within the environments. However, many families with children with sensory needs may prefer participating in the community during slower hours to accommodate the needs of their child and thus findings may be contextually relevant. Second, the data were collected when some businesses had Coronavirus pandemic restrictions, including limiting the number of people allowed in the businesses and discontinuing some activities. This limited the understanding of the businesses during non-pandemic times. The goal of the project was to capture an authentic experience within the businesses to understand a typical visit, regardless of external factors impacting the experiences.

### **Acknowledgements**

I would like to thank Danielle Heaton and Twenty-One Senses for allowing me the opportunity to pilot this assessment tool and for assisting me with this project. This project also could not have been possible without the ongoing support from my faculty research advisor Sarah Smith. Also, I would like to thank the businesses for their openness to learning about how they can support children with sensory needs.

### References

- Choi, Y. & Jung, H. (2021). Sensory processing as a predictor of leisure participation in early adolescents. *MDPI Children*, 8. <https://doi.org/10.3390/children8111005>
- Crasta, J., Salzinger, E., Lin, M., Gavin, W., Davies, P. (2020). Sensory processing and attention profiles among children with sensory processing disorders and autism spectrum disorders. *Frontiers in Integrative Neuroscience*, 14(22).  
<https://doi.org/10.3389/fnint.2020.00022>
- Dean, E., Little, L., Tomchek, S., & Dunn, W. (2018). Sensory processing in the general population: Adaptability, resiliency, and challenging behavior. *American Journal of Occupational Therapy*, 72(1). <https://doi.org/10.5014/ajot.2018.019919>
- Dellapiazza, F., Vernhet, C., Blanc, N., Miot, S., Schmidt, R., & Baghdadli, A. (2018). Links between sensory processing, adaptive behaviors, and attention in children with autism spectrum disorder: A systematic review. *Psychiatry Research*, 270, 78-88.  
<https://doi.org/10.1016/j.psychres.2018.09.023>
- Kirby, A., Williams, K., Watson, L., Sideris, J., Bulluck, J., & Baranek, G. (2019). Sensory features and family functioning in families of children with autism and developmental disabilities: Longitudinal associations. *American Journal of Occupational Therapy*, 73(2). <https://doi.org/10.5014/ajot.2018.027391>
- Little, L., Ausderau, K., Sideris, J., & Baranek, G. (2015). Activity participation and sensory features among children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 45, 2981-2990. <https://doi.org/10.1007/s10803-015-2460-3>.

- Martin, M. (2019). *Intentional strategies that build self-regulation in preschoolers* (Thesis, Concordia University, St. Paul). Retrieved from [https://digitalcommons.csp.edu/teacher-education\\_masters/16](https://digitalcommons.csp.edu/teacher-education_masters/16)
- May-Benson, T. A., Lopes de Mello Gentil, J., & Teasdale, A. (2020). Characteristics and prevalence of gravitational insecurity in children with sensory processing dysfunction. *Research in Developmental Disabilities, 101*, article 103640.  
<https://doi.org/10.1016/j.ridd.2020.103640>
- Parmar, K. R., Porter, C.S., Dickinson, C.M., Pelham, J, Baimbridge, P., & Gowen, E. (2021) Visual sensory experiences from the viewpoint of autistic adults. *Frontiers in Psychology, 12*. <https://doi.org/10.3389/fpsyg.2021.633037>
- Pfeiffer, B., Clark, G., & Arbesman, M. (2018). Effectiveness of cognitive and occupation-based interventions for children with challenges in sensory processing and integration: A systematic review. *American Journal of Occupational Therapy, 72*(1).  
<https://doi.org/10.5014/ajot.2018.028233>.
- Pfeiffer, B., Piller, A., Giazzoni-Fialko, T., & Chainani, A. (2017). Meaningful outcomes for enhancing quality of life for individuals with autism spectrum disorder. *Journal of Intellectual and Developmental Disability, 42*, 90–100.  
<https://doi.org/10.3109/13668250.2016.1197893>
- Silverman, F., & Tyszka, A. C. (2017). Centennial Topics- Supporting participation for children with sensory processing needs and their families: Community-based action research. *American Journal of Occupational Therapy, 71*, 7104100010.  
<https://doi.org/10.5014/ajot.2017.025544>

Twenty-One Senses. (2021, January 6). *Mission and Background*.

<https://www.twentyonesenses.org/mission-background/>

Twenty-One Senses Team. (2021A). *How to support auditory avoiders*.

<https://www.twentyonesenses.org/2021/01/18/how-to-support-auditory-avoiders/>

Twenty-One Senses Team. (2021B). *How to support auditory seekers*.

<https://www.twentyonesenses.org/2021/01/18/how-to-support-auditory-seekers/>

Twenty-One Senses Team. (2021C). *How to support tactile avoiders*.

<https://www.twentyonesenses.org/2021/01/18/how-to-support-tactile-avoiders/>

Twenty-One Senses Team. (2021D). *How to support visual avoiders*.

<https://www.twentyonesenses.org/2021/01/18/how-to-support-visual-seekers/>