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Danielle Daoud
Western Michigan University

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Integrating Occupational Therapy Strategies in Autism Community Programs

Danielle Daoud

Department of Occupational Therapy, Western Michigan University

OT 7202: Capstone Experience & Project

Dr. Holly Grieves OTD, OTRL

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Abstract

The purpose of this 14-week Doctoral Capstone Experience (DCE) was to implement Occupational Therapy (OT) strategies into already existing Autism community programs. The capstone project took place at The Joanne and Ted Lindsay Foundation Autism Outreach Services (OUCARES) under the mentorship of Kristin Rohrbeck, M.A., Director of OUCARES. This project's concentration area was in program and policy development, and although these programs were already established, there was a need for Occupational Therapy based strategies and recommendations to further enhance them. OUCARES offers a wide variety of programs focused on everyday life skills for individuals with Autism of all ages, along with their parents and caregivers. The purpose of this capstone was to attend these programs to work on critical skills with participants, create recommendations for staff members based on observing the programs, and to create an educational presentation on the benefits of Occupational Therapy for individuals with Autism. This project will be sustained as the staff will continue to have access to the recommendation sheets created, as well as the recorded presentation that can be accessed by parents, caregivers, and staff for training purposes, while also allowing for advocacy for the Autism Community and the profession of Occupational Therapy.

Introduction

My capstone project took place at The Joanne and Ted Lindsay Foundation Autism Outreach Services (OUCARES) and had a concentration in program and policy development. This project served individuals with autism, their parents, caregivers, and OUCARES staff, and took place in classroom and recreational center settings at Oakland University in Rochester, Michigan. My site mentor was Kristin Rohrbeck, who is the director of OUCARES and oversees all of the staff and programs. Kristin ensures that all needs are met in current programs, while also planning for future programs and participants.

OUCARES offers quality and comprehensive programs for individuals with Autism across all ages by implementing Seasonal Programs, Summer Camps, Employable Skills Training Programs, and Parent/Caregiver Programs. Seasonal programs are divided into three age groups: ages 4-5, ages 6-12, and teens/adults. These programs offer a safe and supportive environment where individuals are able to improve their social, communication, and motor skills. Summer Camps are split into four groups: Pee Wee Camp ages 3-6, Summer Day Camp ages 7-12, Gaming Camp ages 11-14, and Teen Life Skills Camps ages 11-14 and 15-18. These camps provide academic, athletic, and social opportunities in order to promote independence skills. As for employable skills training, OUCARES offers a Pre-Employment Skills Training (PEST) program which is an intensive program for adults with autism to develop interpersonal skills, to understand employment, and to learn independent living skills. Parent and caregiver programs are designed to train parents and caregivers on techniques to support children with autism in their home and community environments. Overall, all of these programs offer individuals and families with autism a structured and welcoming environment with highly trained staff to improve everyday living skills based on individual ages and needs.

Literature Review

Autism, also known as Autism Spectrum Disorder (ASD), is a neurodevelopmental disorder that affects approximately 1 in every 36 children along with their families, caregivers, and loved ones (Center

for Disease Control and Prevention, 2022; Matthews et al., 2015). Autism Spectrum Disorder presents differently in those who are diagnosed and has no known cause (Centers for Disease Control and Prevention, 2022). It is typically detected before the age of three, and although symptoms may improve over time, autism continues throughout an individual's lifespan (Centers for Disease Control and Prevention, 2022). Individuals with ASD often experience many obstacles of daily living due to limitations in social skills, restricted and repetitive behaviors, and dysregulated sensory experiences (Kuhaneck & Watling, 2015).

Occupational therapy (OT) services are often used for individuals and families with autism to address a variety of skills, often including both sensory and motor needs (Volkmar et al., 2014). Occupational Therapy services are meant to focus on goals that are specific to the client and their families in order to prioritize their unique needs and wants (Kuo et al., 2012). Due to its client centered and holistic scope, occupational therapy addresses individual client factors and occupational performance skills in areas of daily living including play, social participation, sleep, family routines, independent living, and employment (Kuhaneck & Watling, 2015). The purpose of this capstone is to understand the barriers that individuals with Autism face due to deficits in the skills needed for everyday occupations and activities and how integration of Occupational Therapy interventions are beneficial to increase functional performance especially in regard to life skills, social skills, employment skills, motor skills, behaviors, self-regulation, and sensory processing.

Life Skills

Individuals on the autism spectrum can struggle with obtaining the life skills needed for self-care and domestic living, recreation and leisure, employment, and community participation (Chiang et al., 2017). These limitations are due to cognitive deficits that can be associated with autism, but can improve through the use of life skills training programs during school aged years (Chiang et al., 2017). Occupational therapists can work with individuals with autism to enhance their life skills by

implementing services focused on social skills, communication, play and leisure, and restricted and repetitive behaviors (Tanner et al., 2015).

Matthews et al. (2015) examines the negative correlation between age and adaptive functioning skills in individuals with ASD. Adaptive functioning is a term used to describe the skills needed for age-appropriate independent living and can be assessed for individuals with autism using the Vineland Adaptive Behavior Scales (Matthews et al., 2015). These scales measure and quantify skills in communication, daily living skills, socialization, and motor skills—all of which impact independent living (Matthews et al., 2015). Matthews et al. (2015) also discusses the importance of lifelong intervention on adaptive functioning, since autism is a life lasting condition.

Social Skills and Participation

Orsmond et al. (2013) considers how social participation impacts overall quality of life by increasing fulfillment and productivity. Unfortunately, the social limitations that individuals with autism face often lead to social isolation, decreased relationships with peers, increased levels of anxiety, and trouble in school and work settings (Orsmond et al., 2013). Often times, social isolation in individuals with autism can be more prevalent due to lower abilities to converse, decreased functional skills, and reduced abilities to live independently (Orsmond et al., 2013). Interventions in cultivating social and communication skills are beneficial in order to combat social isolation and increase quality of life (Orsmond et al., 2013). Along with this, providing education to families, friends, and providers can further address and prioritize socialization for individuals with autism (Orsmond et al., 2013).

Employment skills

Due to impairments in social and communicative functioning, individuals with autism also have some of the lowest rates of employment (Burke et al., 2010). Typically, job training is not set up to be productive for individuals with autism and instead tends to actually be counterproductive (Burke et al., 2010). Often times, individuals with ASD face barriers to employment due to needing assistance with job

applications, remembering and following instructions, communicating, and integrating into the work environment (Scott et al., 2019). Employers may also be less likely to hire someone with ASD because of potential accommodation costs and additional supervision required (Scott et al., 2019). Due to this, interventions focusing on supporting and improving job skills can help individuals with ASD find and maintain employment (Burke et al., 2010). Interventions should focus on the individual's strengths, support for potential barriers, and advocacy for inclusive workplaces and environments in order to increase job readiness for ASD.

Motor Skills

Colombo-Dougovito & Block (2019) review how individuals with autism can develop motor skills differently, and usually at a delayed rate, in comparison to peers. Common motor impairments in individuals, particularly children, with ASD include both gross and fine motor skills (Ming et al., 2007). For example, low tone, motor apraxia, reduced ankle mobility, gross motor delay, and toe walking can all be prevalent (Ming et al., 2007). Motor skill interventions not only increase developmental skills and abilities, but also can increase the ability to participate in physical activities and the ability to be involved in more social situations (Colombo-Dougovito & Block 2019). In order to promote function, Colombo-Dougovito et al. (2019) focused on task modifications that can be used with individuals with autism who have decreased motor skills and found that using verbal and visual prompts, grading tasks to participants' abilities, and repetition of tasks all had a positive impact on the ability to perform motor tasks.

Behaviors and Self-Regulation Skills

Commonly reported behaviors among individuals with autism include noncompliance, disruptive behaviors, elopement, self-injurious behaviors, and aggression (Watling & Spitzer, 2018). Noncompliance is demonstrated when an individual does something against what an authority figure has requested, which in turn decreases engagement in productive tasks, limits success and learning, and

poses safety risks (Watling & Spitzer, 2018). Disruptive behaviors are those that interrupt peers, and ultimately, the individual's own engagement (Watling & Spitzer, 2018). Some examples include emotional outbursts, distractibility, and overactivity (Watling & Spitzer, 2018). Elopement describes when an individual leaves an area without permission or supervision from a trusted individual (Watling & Spitzer, 2018). Self-injurious behaviors are actions that are damaging to the individual self, with examples including head banging, self-pinching, and hair pulling. On the other hand, aggression includes behaviors that injure other people and property (Watling & Spitzer, 2018). It is important to note that individuals with ASD do not necessarily have the intent to harm others, but instead are responding to internal feelings of stress and overstimulation (Delahooke, 2019).

Occupational therapists utilize different strategies for interventions that improve behaviors for individuals with autism and lead to increased performance in everyday occupations. One method is to address the physiological aspects of regulation, which focuses on health and medical variables that could contribute to disruptive behaviors (Lillas et al., 2018). This includes interventions addressing positive sleep, eating, and internal body function awareness (also known as interoceptive awareness) (Lillas et al., 2018). Next are interventions addressing sensory factors and providing environmental modifications that are effective for functional performance (Lillas et al., 2018). This also includes promoting habits and routines for increased structure and predictability (Lillas et al., 2018). Additionally, OTs address emotional aspects of regulation by using therapeutic use of self to create trust and safety with clients, while also using the client's own interests and occupations to promote successful participation (Lillas et al., 2018). Furthermore, OTs address the cognitive aspects of regulation to empower understanding and self-awareness of regulation, while also educating clients on self-implementing mindful interventions, sensory modifications, and problem-solving skills in their everyday environments to increase generalization (Lillas et al., 2018).

Sensory Processing

Sensory Processing Disorder, SPD, is a neurological condition in which sensory stimuli is not recognized or organized correctly by the brain and therefore can cause abnormal responses (Greutman & Kostelyk, 2018). Individuals with autism are at an increased risk for SPD (Greutman & Kostelyk, 2018). Sensory Processing Disorder can be broken down into three different classifications: Sensory Modulation Disorder, Sensory Based Motor Discrimination, and Sensory Discrimination Disorder (Greutman & Kostelyk, 2018). Sensory modulation disorder is when an individual has difficulty regulating the intensity and nature of their emotional and behavioral responses to incoming stimuli, leading to the avoidance of certain occupations due to the potential of encountering said stimuli (Greutman & Kostelyk, 2018). Sensory modulation disorder is further broken down into sensory over-responsivity, in which an individual is hypersensitive to stimuli; under-responsivity, in which an individual requires more sensory input than normally to react to a stimulus; and sensory craving, in which an individual seeks out sensory stimuli (Greutman & Kostelyk, 2018). Sensory based motor disorder is when an individual has difficulty controlling their body movements and can be presented by increased clumsiness, poor motor skills (dyspraxia), difficulty with postural control, and ultimately difficulty with activities of daily living (Greutman & Kostelyk, 2018). Sensory discrimination disorder is when an individual has difficulty understanding sensory input and can be exhibited by putting too much or too little force on an object, poor balance, and difficulty distinguishing between sounds (Greutman & Kostelyk, 2018).

Occupational Therapists first address sensory integration patterns in relation to sensory perception (Mailloux & Roley, 2018). OTs incorporate sensory modifications during treatments in order to encourage functional performance, and through trial and error find what works for each unique individual (Mailloux & Roley, 2018). They then educate the client and their loved ones on how to incorporate sensory modifications into their home and the community (Mailloux & Roley, 2018). Furthermore, OTs address primitive reflex integration, which are automatic movements or actions that

are present from birth to the first few years of life for survival and development, and are triggered by sensations (Mailloux & Roley, 2018). If these reflexes are not integrated in infancy, OTs work with clients through intervention activities to promote reflex integration (Mailloux & Roley, 2018).

Conclusion

Individuals with autism often face many challenges in their everyday life due to limitations in life skills, social skills, employment skills, motor skills, behaviors and self-regulation and sensory processing. Through the use of Occupational Therapy based interventions, participation and functional performance in daily activities can increase. It is essential that OT interventions are incorporated in new and existing programs and services that aim to promote independence and increase quality of life for individuals of all ages with Autism Spectrum Disorder.

Needs Assessment

Prior to beginning my 14-week capstone experience, I completed an analysis on OUCARES based on its strengths, weaknesses, opportunities, and threats, also known as a SWOT analysis, see Figure 1. I completed interviews with participants of OUCARES programs and OUCARES staff members. Through this I was able to assess what benefits OUCARES offers and what needs could still be met.

The SWOT analysis results indicated that OUCARES provides a safe and caring space for participants of all ages and different backgrounds in order to enhance their development in life skills, social skills, employment skills, and overall problem-solving skills. Staff is highly trained in autism, not only to meet participant needs, but also the needs of their families and caregivers. OUCARES staff report great receptiveness to new ideas and are open to feedback from the population they serve, and furthermore participate in grant writing in order to continue to offer and improve services.

Although OUCARES is already meeting needs and establishing programs that few other agencies do, they still face limitations. Major barriers to OUCARES programs include limited space, resources, and staffing. The programs take place in Oakland University classrooms and recreation center spaces that

have to be scheduled out in advance, and unfortunately, space is not always available or even the right fit for the types of programs held. Greater and individualized spaces could increase the likelihood for the creation of programs focused greater on activities of daily living and sensory spaces with equipment suitable for both children and adults. However, recommendations provided with an OT scope of practice based on current OUCARES resources in regard to modifying environments and tasks, as well as recommendations for tools that can be obtained within the current budget, allows staff to continue to implement activities that enhance participant independence in critical living skills.

Many of the OUCARES programs incorporate Applied Behavior Analysis (ABA) services and are facilitated by or assisted by the ABA clinic that is also located on campus. With that being said, there were no services offered that were developed with an Occupational Therapy (OT) scope of practice. Since many of the programs serve to enhance participant independence, it is beneficial to provide OT based services especially in regard to the barriers to independence individuals with autism face based on social and communication skills, motor skills, behaviors and self-regulatory skills, and sensory processing skills. Another main factor of the occupational therapy scope of practice is the ability to advocate for clients as well as the profession as a whole. Providing OT strategies into existing OUCARES programs increases both advocacy and the opportunity to teach participants self-advocacy skills to use in their own community environments.

Figure 1

SWOT Analysis OUCARES

Strengths	Weaknesses
<ul style="list-style-type: none"> • Provides a safe and caring space for participants • Works with participants on all types of skills, especially life, social, employment, and problem solving skills • Staff is highly trained • Offers a wide range of programs to meet families' needs • Monthly webinars for caregivers • Provides ABA services • Connection with medical school students for volunteer opportunities • Provides financial aid for programs 	<ul style="list-style-type: none"> • Lack of space and resources (kitchen, laundry room, ADL type rooms) • Need more staff and program facilitators • Could have more services for older individuals who "age out" of other services
Opportunities	Threats
<ul style="list-style-type: none"> • Listen to feedback from families and open to new ideas • Ability to write grants to improve services • One of few agencies that put out programs like this 	<ul style="list-style-type: none"> • Need to stay in budget • Need to find a way to tie in/attract more volunteers: examples can be from local churches & commerce • Using other facilities spaces causes some groups to be cancelled or rescheduled

Objectives Achieved

Throughout my capstone experience I met three individualized objectives. The first objective was to attend and work with OUCARES programs for individuals with autism to work with participants on critical skills. Throughout my capstone experience I attended many of the seasonal programs to observe and work with individuals on social, communication, and motor skills. These programs included Soccer, Basketball, Bowling, Gaming Club, Movie Club, Robotics, and an After Hours Adult Social. Along with the seasonal programs I attended the Pre-Employment Skills Training Program (PEST) where I led and assisted with four activities a day, along with movement and small talk breaks, all focused on employment skills, interpersonal skills, independent living skills, social and communication skills, and behaviors and regulation skills.

Along with attending the programs, I met the objective to provide recommendations on modifications and compensatory strategies using the occupational therapy scope of practice that could be implemented into already existing programs to meet participants' unique needs, see Appendix A. While observing the seasonal program sessions I was able to develop recommendations surrounding sensory modifications, behaviors and regulation, gross and fine motor skills, social skills, communication skills, and overall participation. I created handouts to provide to all staff members on balance, bilateral coordination, and crossing midline, see Appendix B, along with calming strategies for sensory over-response individuals, see Appendix C, and strategies for sensory seeking individuals, see Appendix D. Due to my increased attendance at the PEST program, I was able to work directly with participants to better understand what recommendations would be beneficial to their success and trail strategies based off that. Next, after evaluating participant history and observations completed by other staff members, I created overall recommendations for the four Summer Camps: Pee Wee Camp ages 3-6, Summer Day Camp ages 7-12, Gaming Camp ages 11-14, and Teen Life Skills Camps ages 11-14 and 15-18, see Appendix E. Recommendations were made based on the needs provided by participants' parents and

caregivers and included social skills, play, fine motor skills (specifically handwriting, clothing management, and feeding), sensory modifications including information regarding the interoceptive sensory system, and regulation techniques. Within this, I created a list of adaptive and learning tools that would increase participation in activities of daily living.

The third objective I met was to create an educational presentation on the benefits of Occupational Therapy (OT) services for individuals with Autism for parents, caregivers, & staff, see Appendices F-G. After conducting evidence-based research on the topics, I created a recorded slideshow to be used in the OUCARES training process for future staff members and to be posted to be viewed by parents, caregivers, and current staff members. In this presentation I discussed the roles of Occupational Therapy, described everyday occupations and activities of daily living, explained factors contributing to occupational performance and common OT interventions for individuals with autism, and explained the different sensory systems and strategies used for individuals with Sensory Processing Disorder (SPD).

Implications

This project has provided an Occupational Therapy (OT) based perspective on working with individuals with autism across the lifespan in everyday critical skills. As I attended programs, I was able to collaborate with other members of the OUCARES team to make recommendations on ways to develop accommodations for both individuals and the groups as a whole. Through evidence-based research, I was able to create recommendations that will be used for current and future pre-employment skills training sessions, seasonal programs, and summer camps.

These recommendations were based on improving social and communication skills among participants, addressing developmental milestones for both gross and fine motor skills, explaining commonly reported behaviors, and describing how sensory processing affects individuals with autism. The activity handouts, recommendation sheets, and recorded educational presentation on the benefits of occupational therapy for individuals with autism have all been provided to OUCARES to sustain this

project moving forward. These will be accessed by parents, caregivers, and current and future staff for training purposes.

This project has allowed me to advocate not only for the autism community, but for the field of Occupational Therapy as a whole. Being the only individual with an occupational therapy background has shown me the need for helping others become more knowledgeable on the occupational therapy approach to treatment, especially in regard to autism. In addition to this, as I led activities in the Pre-Employment Training Program, I was able to explain to adults with autism the importance of being able to self-advocate in community settings.

Conclusion

The purpose of this project was to incorporate Occupational Therapy strategies into OUCARES programs in order to enhance services for the participants of all ages and their families. Through this, I was able to accommodate the needs for participants during programs while working with them on critical life skills, develop recommendations and hand-outs for staff to integrate into their programs, Appendices A-E, and create an educational presentation advocating for Occupational Therapy benefits for Autism Appendices F-G.

Autism prevalence rates are continuing to increase, meaning there is still a high need for services and program development (Centers for Disease Control and Prevention, 2022). This project could be furthered by shifting gears and focusing on program development for instrumental activities of daily living (IADLs) for adults with Autism. Based on collaboration with OUCARES faculty and current adult participants, there is still a great need for programs to promote independent living skills in the adult population. OUCARES currently runs an intensive Pre-Employment Skills Training (PEST) program with highly trained staff who work directly with adults to develop work related skills. To further this, developing programs in areas corresponding to home management, community participation, adult

relationships, and financial management could continue to close the gap for adults with autism seeking services.

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Appendix A

OT Strategies to Enhance Independence and Functional Performance in Existing Programs

The strategies below were created with an Occupational Therapy scope of reference in order to increase participant independence and functional performance during existing OUCARES programs. Occupational Therapy works to provide recommendations, accommodations, and modifications in order to enhance independence in activities of daily living. For the Autism population some examples can include strategies for sensory needs, behaviors, social skills, and motor skills. With that being said, these strategies can take some trial and error to determine what works best for each individual, along with the group as a whole. One size does not fit all and being observant of how participants react (whether positive or negative) is a good way to gauge if these strategies are helpful to them, or if a different strategy would be more beneficial.

Pre-Employment Skills Training:

*Note: individual recommendations provided on final evaluations for session 25 participants

Participant History: If possible, get more history from participants and their parents/caregivers about sensory needs, accommodations/strategies they use at home, and other important information to better understand their behaviors and how we can transfer their skills between different environments.

Instructions: Email activity instructions home incase participants want to review prior to session. More visual/written out instructions and times posted on the board.

Behavior Plans/Sensory Systems: If token economy is taking place, give equal opportunities for rewards to all participants, also ensure that they are age appropriate. Try mindfulness and self-motivational

techniques to reduce disruptive behaviors, rather than adding/taking away breaks and device time. Also, it is very important to note that many behaviors are the result of sensory processing difficulties, whether it be sensory over responsivity, sensory under responsivity, or sensory seeking behaviors.

Self-Advocacy: Continue to instruct participants on what self-advocacy is and how they can use it in the workplace. It may be a good idea to go into more specific details on what accommodations they could request and how to request them.

Basketball/Soccer:

Visual Schedules: Providing a visual schedule of the session's activities ahead of time can allow the participant to review what to expect. They can also begin practicing certain drills/activities at home to feel more prepared. Repetition is key, and since we only have a limited amount of time per week with participants, having the opportunity to practice would be helpful. Visual schedules should also be printed out at the sessions for cueing and prompting for participants who may need it. It helps ease the transition from task to task without the fear of not knowing what is next.

Rule Sheet: It could be helpful to provide a visual rule sheet and go over it on the first day in order to decrease disruptive behaviors. This can even be set up as a social story.

Timers/activity breakdowns: Another way to ease the transition and maintain engagement during each activity would be providing how long each activity will take and setting visual timers. Participants can oftentimes feel fatigued or want to be done before an activity ends and seeing a timer may motivate them to continue until the time is completed.

Shorter Activities: Shortening the length of each activity, or even each session as a whole, might be beneficial in avoiding activity fatigue especially with the younger crowds. It has been observed that they

begin to get antsy and want to go home early. When an individual activity is too long, they may begin to lose interest and could benefit from the constant stimulation of trying a new activity.

Name Tags: Provide different color name tags and allow participants to choose which color they want, followed by them writing their own name. This increases their feelings of independence and could be a motivator to wear the name tags, as some have demonstrated hesitancy towards them. The hesitancy could be due to a sensory need, but it might not hurt to try this method.

Sensory Modifications: Continue to use headphones (earplugs could work too but tend to fall out) for those who experience overstimulation by auditory stimuli. Increase proprioceptive and vestibular stimuli prior to and between activities to promote grounding and regulation. Some common examples can include spinning, running, push-ups, skipping, and rocking movements. Another grounding technique would be to use ankle/wrist weighted cuffs during activities (they make these in different sizes and would vary from each participant, but a good starting point could be 0.5-2lbs).

Gross motor skills: Initiate more balance, bilateral coordination tasks, and midline crossing tasks.

Midline crossing involves crossing your right side of the body over to your left and vice versa, meanwhile bilateral coordination involves using both sides of your body at the same time. All are important for the development of using both sides of the body together and improving overall coordination and the connection of the left and right sides of the brain.

Virtual Clubs: Movie and Gaming:

Virtual rules: Continue establishing and reminding participants of rules for being online (ex. mute when not speaking, allow others time to speak, have camera on if possible for greater engagement, etc.)

Technology issues: Provide a general overview (before first day or on first day) of how to get logged on, mute/unmute, turn on and off camera, use the chat, divide into breakout rooms, etc. Information on how to lower/increase volume and brightness, along with how to use talk to text could be beneficial for those with sensory needs or those who do not demonstrate functional motor skills for typing. This could be a quick video that is sent out to participants or a step-by-step visual sheet. A number for tech help could also be included.

Session Time: For movie club, it may be beneficial to increase the length of each session. This would allow for more time to hear from each participant and allow more room for small talk/socialization.

Socialization: Providing participants with small talk time and topics can increase their social engagement with each other and hopefully allow them to build greater connections. Continuing with breakout rooms to allow participants to have a choice in what they want to socialize on is also a great strategy that I saw. A fun way to incorporate socialization into gaming club would be to ask the participants to incorporate certain social topics into the game they are playing. For example, they could be asked to build their ideal/dream house on Minecraft and then present it to their peers. Also, when playing different games during one session it could be helpful to have a breakout room for each game to avoid confusion or participants talking over one another.

Bowling:

Session Length: It has been observed that many participants begin to fatigue towards the end of the sessions and may benefit from shorter sessions overall.

Bowling Instructions: On the first day it could be beneficial to provide instructions to participants, especially first timers, on how to hold/roll a bowling ball, what scores mean, and how turn taking works.

Written down/visual instructions can be helpful to pass out and go over with participants individually if more of the group has already attended bowling and knows the basics.

Socialization: Increasing socialization at bowling between the participants can allow them to increase social skills and build stronger connections. Providing them with small talk topics and encouraging small talk during down times are good ways of facilitating this, especially when participants are waiting for their turns. Setting up challenges/games between lanes can be a fun way to get everyone engaged and avoid activity fatigue. An example can be a competition to see which team can be the first to get a strike, which team can have the overall highest score, etc.

Robotics:

Overall: From observing robotics, most, if not all, participants seem to be very independent in their gross/fine motor abilities and abilities to follow directions. Providing the visual timer each week, along with the breakdown of the session's schedule is very beneficial in letting the participants know what to expect. This is also a program where everyone may be on a different step in their building process, and everyone is able to ask for help as needed. There was a pretty even staff/participant ratio (about 1 staff, for every 1-2 participants) which ensured that everyone got the assistance they needed.

Socialization: This group could benefit from setting time aside for small talk and group activities.

Providing them with small talk topics and encouraging them to share could build their social engagement skills and help them to form deeper connections. Group games would also help them with these skills. Some examples could be having participants add Lego pieces one after the other to build something, or having one person describe an object that they built while the rest of the group tries to build it without looking at the object.

Appendix B

Gross motor examples:

Static & Dynamic Balance:

- Static balance: Balance while staying in one position/place
- Dynamic balance: Balance while moving

Static Balance Examples:

- Standing on unstable objects (ex. pillows and wobbleboards)
- Standing on one foot (eyes opened and eyes closed)
- Lifting/holding objects while standing in place



Dynamic Balance Examples:

- Hopping on one foot
- Animal walks (ex. crab walk and bear walk)
- Hoping on targets or hopscotch
- Walking in a straight line (advance up to walking in a straight line holding an egg or by using a balance beam)
- Yoga poses



Bilateral Coordination:

- Moving both sides of the body at the same time
- Both hemispheres of the brain working together to initiate fluid movement
- Examples:
 - Using both hands to throw/catch a ball
 - Climbing activities

- Holding paper with one hand and writing with the other hand
- Arts and craft activities: include using scissors, glue, rulers
- Putting on/off clothing and accessories
- Tying shoes
- Popping bubbles with both hands at the same time
- Lifting objects
- Clapping activities
- Stretching/yoga

Crossing Midline: Crossing one side of the body over to the other/across the midline of the body

- Examples:
 - Writing from one side of the whiteboard to the other while standing in place
 - Hand clapping games with a peer (ex. patty cake)
 - Catch and throw (or kicking) ball from different directions
 - Balloon tap activity
 - Twister
 - Bubble popping
 - Yoga/stretching
 - Connecting dots on poster-board/whiteboard

**It is important to incorporate these examples into play and other motivational activities. Below are some links for more information and ideas. Also, important to remember that these activities can be used and modified for individuals of all ages. Many websites target children, but it is important to work on these skills with adults who may still need help mastering them.

<https://www.theottoolbox.com/balance-activities-for-kids/> <https://www.theottoolbox.com/crossing-midline-march-gross-motor/> <https://www.theottoolbox.com/bilateral-coordination-activities/>

Appendix C

Calming Strategies for Sensory Over-Responsive Individuals

Reduce Clutter



Dim Lighting



Headphones and/or Calming Music



Written/Simple Instructions



Scent Free Environment



Have Preferred Foods



Sensory Break



Mindfulness Techniques

5 Senses Exercise	5 things you can see
4 things you can feel	3 things you can hear
2 things you can smell	1 thing you can taste

Emotional Regulation

What Zone Are You In?			
Blue	Green	Yellow	Red
Sick Sad Tired Bored Moving slowly	Happy Calm Feeling Okay Focused Ready to Learn	Frustrated Worried Silly/Wiggly Excited Loss of Some Control	Mad/Angry Mean Yelling/Hitting Disputed Out of Control

Appendix D

Strategies for Sensory Seeking Individuals

Scented Play Materials



Weighted Vests



Weighted Lap Pad



Gum or Crunchy Foods



Chewlery



Chewable Pencil Toppers



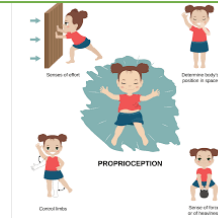
Hands on Activities/Sensory Play



Fidgets



Heavy Work



Movement Breaks



Alternate Seating Options



Appendix E

Camp Recommendations

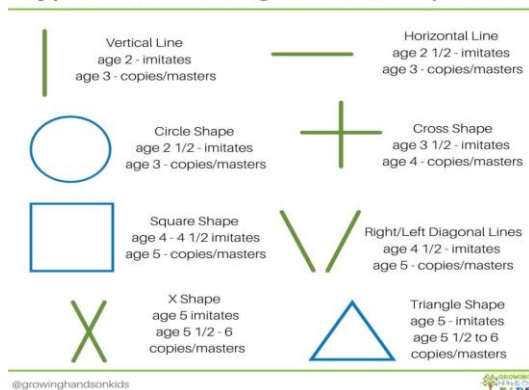
After reading through the participant background information, the following categories are prevalent for most, if not all, participants. Below I have created a list of recommendations with an occupational therapy perspective to help the participants grow in their skills during summer camps. At the end there is a list of links for some really great tools.

- Socialization/play
 - Many of the participants (and their parents) are looking for a safe environment to foster greater social connections with peers. For the younger crowds, play is where most socialization happens. The stages of play include unoccupied, playing alone, onlooker, parallel (2-3 years old), associative (3-5 years old), and cooperative (4-6 years old). Most of the participants in the younger camps seem to need help in the cooperative stage of play; however, it is important to ensure they have met the other stages in order to be motivated to play cooperatively with others. Some ways to encourage cooperative play between peers are to demonstrate play as a role model, encourage role playing, create social stories on playing with others, and presenting group-based ideas like building blocks, follow the leader, and Simon Says. If a child is hesitant, try setting a timer to play a game for 2-3 minutes then slowly increase the time during the next play opportunity when the child is more comfortable. Try ideas that are personally motivating to the child to encourage them to participate. Also allowing them to just observe other children or play near them is a great stepping-stone to encouraging them to get involved.
 - As for the older crowds, socialization can still be difficult, but there can be more mature ways to stimulate peer to peer interactions. A good example for this is setting aside

specific time for small talk and presenting them with small talk topics. This method is used in the PEST program and allows individuals the time and opportunity to get to know their peers. Some other good examples are again using team-based activities like role playing scenarios, group work, scavenger hunts, and group trivia quizzes on topics of interest to try and spark information. Creating “get to know each other” games with Jenga pieces or through 20 questions allows participants to learn about their peers' common interests.

- Fine Motor Skills: Handwriting, Clothing Management, Self-Feeding
 - Many of the participants in the younger camps struggle with handwriting and are still developing the skills needed for writing their names. One important thing to keep in mind is pre handwriting skills development (image attached). These shapes are helpful building blocks in developing a participant’s handwriting skills. If they are struggling with one shape, try mastering the shape before and work their way up. Another strategy is to use mini pencils/golf pencils to make holding the pencil with a dynamic tripod grasp more manageable. Tracing letters/numbers also encourages learning and practicing the motions for writing. This can be done on print out worksheets, apps, or on the alphabet board linked below (which I have seen many children love).

Typical Pre-Writing Line Development



- Clothing management (zipping, buttoning, fastening, and shoe tying) can involve a lot of fine motor skills and coordination. A great way to practice this skill is by practicing one step at a time, mastering that step, then moving to the next one. Along with this practicing on a doll or tabletop can be a good starting point before practicing while the article of clothing is donned. Below is a list of links for handy tools for all of these things.
- Self-feeding including opening containers, cutting food, and managing utensils also require fine motor skills and coordination that I noticed could be worked on for a lot of participants. Repetition, modeling, and hand over hand assistance are great strategies here. Another strategy that the younger crowd especially would enjoy is practicing using utensils to cut, scoop, and pick up play-doh. To make it more challenging you could try different level strength thera-putty. Finally, built up handles are helpful for individuals who struggle to maintain grasp of utensils.
- Interoceptive System: How our bodies feel
 - I noticed a lot of participants' parents reported that their children (all ages and in all camps) need frequent reminders to use the bathroom and to eat a snack. They also do not always notice unsafe situations around them. This all can be tied into the interoceptive system, which is a sensory system in charge of us knowing our internal body processing. A great way to work on this is to continue frequently reminding participants to take a moment and see how they feel (whether hungry, needing to use a restroom, rapid heartbeat, feeling pain, or how they feel emotionally to name a few) and teaching them what internal signs to feel for. Handouts can be really helpful tools here.

- Breathing/self-coping
 - Taking deep breaths, walking away, having a calm conversation about the situation, and discussing the differences between little vs big problems were all coping mechanisms that I read helped many of the participants (especially the older crowd). A lot of the time participants who are older may already have set strategies that work so listening to their needs is imperative.
- Here are some final thoughts on common trends throughout all of the camp participants that would be beneficial
 - Discuss personal hygiene and boundaries with participants
 - Provide visual schedules and timers
 - Encourage flexibility by making slight changes to the schedule and explaining the reasoning ahead of time, then making note of how the participants react
 - Give reminders before transitioning to a new task
 - Allow for movement and sensory breaks (swinging, jumping, running, spinning)
 - Offer sensory strategies (headphones, fidgets, calming music, dimmed lights, weighted lap pads, wobble disks/alternate seating options)
 - Allow processing time for decisions
 - Start with choices then move to open ended options
 - Incorporate decisions into everyday topics (ex. If talking about whether ask if they like the summer or winter...if they master choices ask what their favorite weather is)
 - Provide opportunities to follow 1-2 step directions
 - Use visual, written, and verbal directions
 - Short, concise directions

- Work on sequencing of steps (example in picture)
 - Ask them to put steps in order
 - Start with shorter step tasks and move to more complex ones

Links:

Mini golf pencils: [https://www.amazon.com/Half-Pencils-Eraser-Classroom-Sharpened/dp/B011N17778/ref=asc_df_B011N17778/?tag=hyprod-](https://www.amazon.com/Half-Pencils-Eraser-Classroom-Sharpened/dp/B011N17778/ref=asc_df_B011N17778/?tag=hyprod-20&linkCode=df0&hvadid=198063871433&hvpos=&hvnetw=g&hvrnd=7397891688925683310&hvpon e=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9016970&hvtargid=pla-350744037822&psc=1)

[20&linkCode=df0&hvadid=198063871433&hvpos=&hvnetw=g&hvrnd=7397891688925683310&hvpon e=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9016970&hvtargid=pla-](https://www.amazon.com/Half-Pencils-Eraser-Classroom-Sharpened/dp/B011N17778/ref=asc_df_B011N17778/?tag=hyprod-20&linkCode=df0&hvadid=198063871433&hvpos=&hvnetw=g&hvrnd=7397891688925683310&hvpon e=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9016970&hvtargid=pla-350744037822&psc=1)

[350744037822&psc=1](https://www.amazon.com/Half-Pencils-Eraser-Classroom-Sharpened/dp/B011N17778/ref=asc_df_B011N17778/?tag=hyprod-20&linkCode=df0&hvadid=198063871433&hvpos=&hvnetw=g&hvrnd=7397891688925683310&hvpon e=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9016970&hvtargid=pla-350744037822&psc=1)

[350744037822&psc=1](https://www.amazon.com/Half-Pencils-Eraser-Classroom-Sharpened/dp/B011N17778/ref=asc_df_B011N17778/?tag=hyprod-20&linkCode=df0&hvadid=198063871433&hvpos=&hvnetw=g&hvrnd=7397891688925683310&hvpon e=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9016970&hvtargid=pla-350744037822&psc=1)

Alphabet board: [https://www.amazon.com/Apfity-Magnetic-Alphabet-Educational-Preschool/dp/B07WBW6V95/ref=asc_df_B07WBW6V95/?tag=hyprod-](https://www.amazon.com/Apfity-Magnetic-Alphabet-Educational-Preschool/dp/B07WBW6V95/ref=asc_df_B07WBW6V95/?tag=hyprod-20&linkCode=df0&hvadid=366343531140&hvpos=&hvnetw=g&hvrnd=2930143592903573351&hvpon e=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9016970&hvtargid=pla-819983557868&psc=1&tag=&ref=&adgrpid=81881571808&hvpon e=&hvptwo=&hvadid=366343531140&hvpos=&hvnetw=g&hvrnd=2930143592903573351&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9016970&hvtargid=pla-819983557868)

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Thera-putty: https://www.amazon.com/Premium-Quality-Therapy-Putty-Exercise/dp/B01BLYNWIU/ref=sxin_16_pa_sp_search_thematic_sspa?content-id=amzn1.sym.77fb2c04-2466-444a-b28b-02979f4340a7%3Aamzn1.sym.77fb2c04-2466-444a-b28b-02979f4340a7&crd=3KXJWXPWATKK&cv_ct_cx=theraputty&keywords=theraputty&pd_rd_i=B01BLYNWIU&pd_rd_r=4d3d1712-a468-4a3c-a35b-a3f666a20363&pd_rd_w=k9bVR&pd_rd_wg=wM7Y8&pf_rd_p=77fb2c04-2466-444a-b28b-02979f4340a7&pf_rd_r=PX17HYN1RDSFFMD181EE&qid=1680303168&s=books&sbo=RZvfv%2F%2FHxD F%2BO5021pAnSA%3D%3D&srefix=thera+putty%2Cstripbooks%2C120&sr=1-1-1fa5bb29-8495-43da-8896-6cda87f207d0-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEzNzNFUkhXTTMwUlhaJmVuY3J5cHRIZElkPUeW Nzl5NjA5MjIjIDTjIWR0ZjMUpNOCZlbnNyeXB0ZWRBZEIkPUeWNTI5NzU0MzRZVFBES0FESEeWUSZ3aWRnZ XROYW1IPXNwX3NIYXJjaF90aGVtYXRpYyZhY3Rpb249Y2xpY2tSZWRpcmVjdCZkb05vdExvZ0NsaWNrPXRy dWU=

Built up foam tubes for utensils: https://www.amazon.com/tubing%EF%BC%8CBuilt-Utensils%EF%BC%8CFoam-Grip%EF%BC%8CCylindrical-Foam%EF%BC%8CSilverware-Hands%EF%BC%8CUtensil/dp/B08P9MFPM9/ref=sr_1_6?hvadid=410039137132&hvdev=c&hvlocphy=9016970&hvnetw=g&hvqmt=e&hvrnd=16417108167788521953&hvtargid=kwd-330407177401&hydadcr=21853_11240875&keywords=build+up+utensils&qid=1680303345&sr=8-6

Appendix F

OUCARES Occupational Therapy Benefits for Autism Recording and Slides: <https://www.youtube.com/watch?v=oj0oDQLFdiY>

Occupational Therapy Benefits for Autism

Danielle Daoud, OTS
 Occupational Therapy Doctoral Student
 The Jeanne and Ted Lindsay Foundation Autism Outreach Services (OUCARES)
 Oakland University

1

Objectives:

1. Discuss the roles of Occupational Therapy (OT)
2. Describe everyday occupations and activities of daily living
3. Explain factors contributing to occupational performance and common OT interventions
4. Explain sensory systems & strategies

2

Occupational Therapy According to Occupational Therapy Practice Framework:

“The therapeutic use of everyday life occupations with persons, groups, or populations (i.e., the client) for the purpose of enhancing or enabling participation”
 (American Occupational Therapy Association, 2020, p. 1).



3

Occupational Therapy:



(American Occupational Therapy Association, 2020)

4

Occupational Therapy Domains:

Occupations	Contexts	Performance Patterns	Performance Skills	Client Factors
Activities of daily living (ADLs) Instrumental activities of daily living (IADLs) Health management Rest and sleep Education Work Play Leisure Social participation	Environmental factors Personal factors	Habits Routines Roles Rituals	Motor skills Process skills Social interaction skills	Values, beliefs, and spirituality Body functions Body structures

(American Occupational Therapy Association, 2020)

5

Occupations: Activities of Daily Living (ADLs) & Instrumental Activities of Daily Living (IADLs)

ADLs:

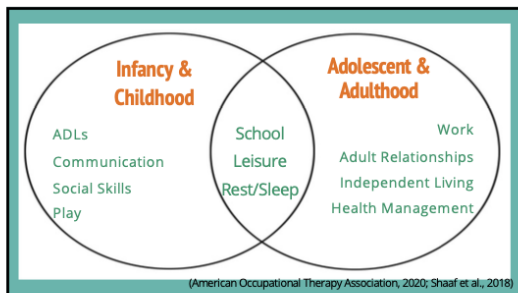
- Bathing/showering
- Toileting and toilet hygiene
- Dressing
- Eating and Swallowing
- Feeding
- Functional mobility
- Personal hygiene and grooming
- Sexual activities

IADLs:

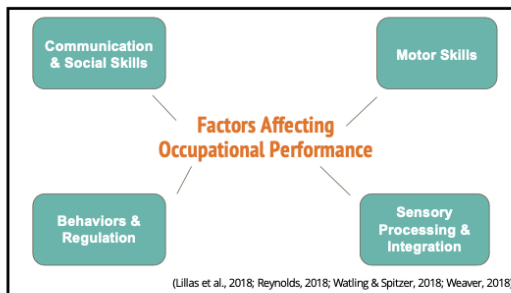
- Caring for others
- Caring for pets
- Communication management
- Driving and community mobility
- Financial management
- Home establishment and management
- Meal prep and cleanup
- Religious and spiritual expression
- Safety and emergency maintenance
- Shopping

(American Occupational Therapy Association, 2020)

6



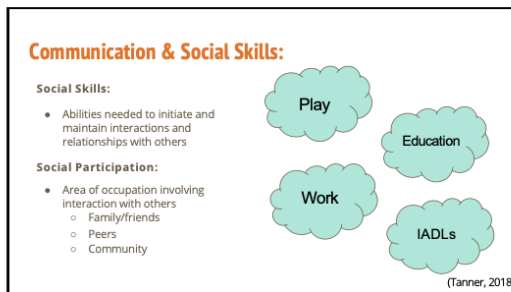
7



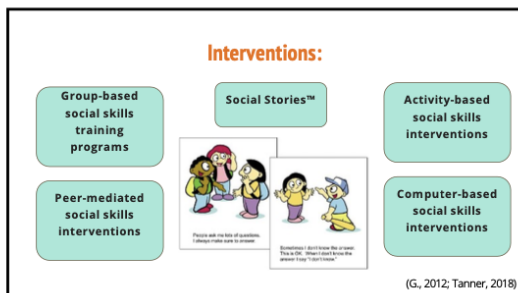
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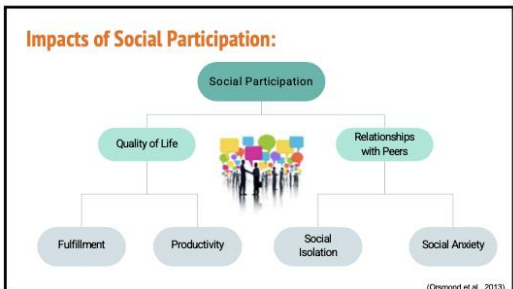
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11



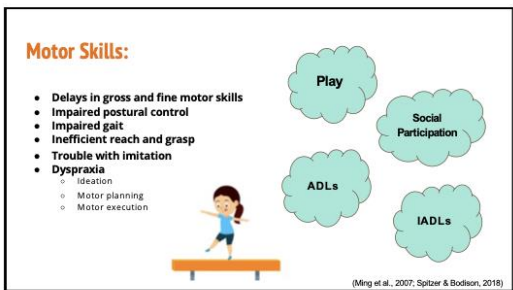
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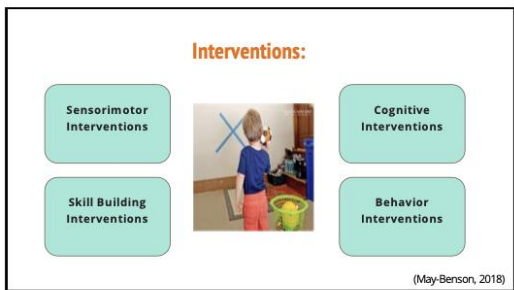
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14



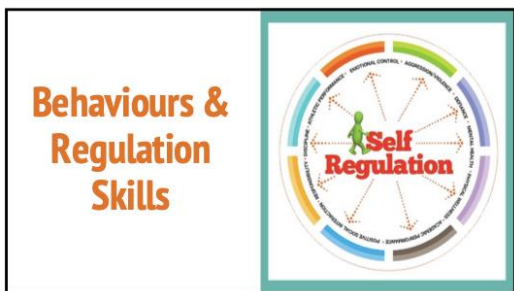
15



16



17



18

Commonly Reported Behaviors:

Noncompliance Disruptive Behaviors

Elopement

Self-Injurious Behavior Aggression

(Watling & Spitzer, 2018)

19

Beyond Behaviors:

"Before we respond to behavior, we need to understand its origin"

(Delahooke, 2019, p. 27).

Beyond Behaviors
Using Brain Science and Compassion to Understand and Solve Children's Behavioral Challenges
Mona Delahooke, PhD

20

Understanding Behaviors

"Many of our approaches falsely assume that children can self regulate their emotions and behaviors, when in reality they do not yet have that ability."

(Delahooke, 2019, p. 14)

- Top down vs bottom up behaviors
- Autonomic pathways
 - Dorsal Vagal System
 - Sympathetic Nervous System
 - Ventral Vagal System
- Individual differences
 - Sensations
 - Feelings
 - Thoughts
- Contributors
 - Sensory stimuli
 - Gastrointestinal problems
 - Sleep disturbances
 - Anxiety

(Delahooke, 2019)

21

Interventions:

Address Physiological Aspects of Regulation

Address Emotional Aspects of Regulation

Address Sensory-Motor Aspects of Regulation

Address Cognitive Aspects of Regulation

(Lillas et al., 2018)

22

Sensory Processing

23


Sensory Processing

- Sensory Preferences
 - Individual, unique preferences
 - Interpret new input and respond appropriately
- Sensory Processing Disorders (SPD)
 - Neurological disorder
 - Unable to interpret new input and abnormal responses

Sensory Modulation Disorder Sensory Based Motor Disorder Sensory Discrimination Disorder

(Greutman & Kostelyk, 2018)

24

Sensory Modulation Disorder:	Sensory Based Motor Disorder:	Sensory Discrimination Disorder:
<ul style="list-style-type: none"> • Sensory Over-Responsivity • Sensory Under-Responsivity • Sensory Craving 	<ul style="list-style-type: none"> • Dyspraxia • Postural Disorder 	<ul style="list-style-type: none"> • Visual • Auditory • Tactile • Taste/Smell • Position/Movement • Interoception


(Greutman & Kostelyk, 2018)

25

Interventions:

Address Sensory Integration Patterns

Home and Community Integration




Incorporate sensory modifications during treatment

Primitive Reflexes

(Greutman & Kostelyk, 2018; Mailloux & Roley, 2018)

26

Sensory Processing Explained: A Handbook for Parents and Educators




(Greutman & Kostelyk, 2018)

27

Visual System:

- Responsible for detection and processing of visual stimuli
- Difficulty with tracking & scanning
- Squinting & sensitive to lights
- Omit or reversal of letters, numbers, & words




- Reduce visual clutter
- Different colors for directions
- Dim & brighten lights
- Use a "window" to focus on words
- Visual schedules & timers

(Greutman & Kostelyk, 2018)

28

Auditory System:

- Responsible for hearing, listening, interpreting, localizing sound, and filtering sounds
- Difficulty discriminating sounds
- Difficulty following directions
- Upset by loud or soft noises
- Talks off topic




- Minimize sound distractions
- Calming music/ soft metronome
- Headphones
- Simplify directions
- Written instructions

(Greutman & Kostelyk, 2018)

29

Olfactory System:

- Responsible for detection of smell and whether a smell is safe/dangerous
- Distracted due to smells being overwhelming
- Smells everything
- Avoiding rooms/areas
- Gags & throws up




- Offer scent free spaces
- Offer scented play materials
- Avoid perfumes & scented lotions
- Avoid essential oils

(Greutman & Kostelyk, 2018)

30

Gustatory System:

- Responsible for oral tastes and sensations
- Sweet, salty, bitter, sour, and umami (savory)
- "Picky eater" & refusal to trying new foods
- Licks & chews on inedible objects



Do not force individual to eat something

Chewing gum & crunchy foods

Chewery


Chewable pencil toppers

(Greutman & Kostelyk, 2018)

31

Tactile System:

- Responsible for touch and feel
- Increased exploration with touching people/objects
- Delayed fine/gross motor skills
- Aversion to certain objects
- Difficulty focusing



Fidgets

Sensory Play

Hands-on Activities

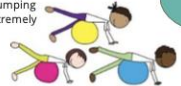
Never force individual to touch objects

(Greutman & Kostelyk, 2018)

32

Vestibular System:

- Responsible for detecting changes in gravity, body position, and balance
- Always in motion & does not get dizzy
- Shaking, rocking, spinning, jumping
- Fearful, extremely cautious



Movement breaks

Alternative seating options

Fidgets


Do not force movements or activities

(Greutman & Kostelyk, 2018)

33

Proprioception System:

- Responsible for where and what your body is doing (joints, muscles, ligaments)
- Clumsiness & poor body awareness
- Too much pressure/strength
- Chewing on objects
- Stomping



Movement and heavy work

Weighted vest

Crossing midline tasks


Chewing gum/tools

(Greutman & Kostelyk, 2018)

34

Interoception System:

- Responsible for understanding what is happening internally
- Bodily functions & emotional regulation
- Challenges with determining weather appropriate clothing
- Bladder/bowel accidents
- High/low pain tolerance



Teach and label emotions

Teach about weather related clothing

Frequent bathroom breaks

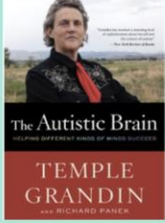
Reminders for snack breaks

(Greutman & Kostelyk, 2018)

35

"Over the decades, I've seen... few studies on sensory problems—probably because they would require researchers to imagine themselves looking at the world through an autistic person's jumble of neuron misfires"

(Grandin & Panek, 2013, p.72)



THE AUTISTIC BRAIN
WITH ILLUSTRATIONS BY TEMPLE GRANDIN
TEMPLE GRANDIN
AND RICHARD PANEK

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Appendix G

OUCARES Occupational Therapy Benefits for Autism Transcript

Slide 1:

Hello, my name is Danielle Daoud and I have created this educational presentation to explain the benefits of occupational therapy for individuals and families with autism. As a doctoral student in occupational therapy, I've spent many years and much time developing my OT expertise working with individuals with autism spectrum disorder.

Slide 2:

Before we dive in, I wanted to take a moment to go over our objectives for this presentation. First, there will be an overview of the role of occupational therapy. Next, I will describe everyday occupations and activities of daily living that can be improved with occupational therapy. Then I will go over contributing factors to occupational performance for individuals with autism and what interventions occupational therapists incorporate to increase function. And finally, I will explain the different sensory systems and some strategies that can be used to help individuals. All the references I used throughout the presentation will be listed at the end.

Slide 3:

The Occupational Therapy Practice Framework, 4th edition, defines occupational therapy as, “the therapeutic use of everyday life occupations with persons, groups or populations, (i.e., the client) for the purpose of enhancing or enabling participation.” In other words, as occupational therapists, we help individuals become more independent in their everyday tasks, and a lot of the time, it's for the things we take for granted.

Slide 4:

Occupational therapists do this by taking 5 domains into consideration-these being occupations, contexts, performance patterns, performance skills, and client factors-through an observation and evaluation process in order to create an individualized intervention for the patient or client.

Occupational therapists take great care in providing unique, client centered care and measure the outcomes for short- and long-term goals in order to ensure that their treatment is benefitting the client to become more independent in their everyday activities and to work towards promoting engagement in occupations.

Slide 5:

And now we're going to dive into those different domains that I just mentioned, starting with occupations. Occupations are our everyday activities of daily living (ADLs) and instrumental activities of daily living (IADLs), which we will discuss more in the next slide, but to summarize, these are the tasks we do every day to take care of ourselves and to be a part of the community. As we see in the chart, health management, rest and sleep, education, work, play, leisure, and social participation are all also considered occupations. These will come more into play as we continue to discuss occupations for the autism community. We determine which occupations and activities are important to our clients and how we can increase functional performance and independence by understanding their environmental and personal factors, habits, roles, rituals, routines, motor skills, processing skills, social skills, values, body functions, and body structures as laid out in this table. All these domains can make an impact on our ability to be independent in our everyday roles and help determine what treatment options are best.

Slide 6:

So then on this next slide I broke down the difference between activities of daily living (ADLs) and instrumental activities of daily living (IADLs), which are both huge factors in OT. A good way to differentiate the two is by thinking of ADLs as things we do to take care of ourselves and our bodies, and IADLs as advanced activities we do that involve our home and community participation. As we see some examples of ADLs include bathing, toileting, dressing, eating, mobility, hygiene and grooming, and sexual activities. Whereas IADLs include caring for others (this can be children, grandchildren, pets),

communication management, driving and mobility, financial management, home management, meal prep, religious and spiritual expression, safety and emergency maintenance, and shopping.

Slide 7:

Occupational therapy can serve individuals with autism across the lifespan. Although symptoms may improve overtime, autism continues throughout an individual's lifespan affecting their activities of daily living and sensory experiences. Commonly targeted areas for the pediatric population are the different ADLs we talked about, communication and social skills, and play, whereas for the older crowd, occupational therapists can help individuals with work skills, adult relationships, independent living, and health management. Everyone is unique and these skills can be targeted at any age, but I wanted to provide a general rundown. I also wanted to note some different activities or occupations that are seen in both age groups, and these are school, leisure, rest & sleep.

Slide 8:

In this slide we are going to discuss the different factors that affect occupational performance specifically for individuals with autism. I broke it down into 4 main categories, these being communication & social skills, motor skills, behaviors & regulation, and sensory processing & integration.

Slide 9:

We will begin with communication and social skills.

Slide 10:

Social skills are the abilities needed to initiate and maintain interactions and relationships with others and these skills are therefore needed for social participation, which is an area of occupation involving interaction with others. This could be family, friends, peers, and just the general community. Some common occupations that are affected when communication and social skills are decreased include: play, education/school, work, and the instrumental activities of daily living. And I just want to note,

these are not the only occupations affected; in fact, many occupations can be affected, but these are some of the common ones across the lifespan.

Slide 11:

And so now the question is, how can occupational therapy services help. There are many interventions that can be used to increase communication and social skills and we are going to go over some of the common ones. The first one is group-based social skills training programs. These programs teach social skills to a group of patients or clients and typically takes place in clinics, schools, and summer camps for school aged children or young adults. The goals of these groups are to teach what social skills are, to practice incorporating social skills through role playing techniques, and to promote the generalization (or transfer of skills) by practicing these skills in a more natural environment outside of just the group based social skills programs. Another intervention strategy is peer-mediated social skills interventions. This is where therapists decide that a peer, rather than a professional, would make a good role model for the client. A common example of this is having a child's older sibling demonstrate appropriate social behaviors to allow the participant to learn from their skills. This can take place in more of a natural environment, typically in a participant's home. Next, we have activity based social skills interventions, and this is where therapists use an activity and typically a client's preferred interest to teach social skills. These activities can naturally foster social participation and should be structured with specific roles for the participants. All participants work towards a collective purpose, so an example could be building a Lego set and giving everyone a specific goal and working towards the goal of creating a tower or a building, while fostering those social skills naturally throughout the activity. Next, we have computer based social skills interventions as another strategy and this strategy uses computer interactions rather than peer interactions. This strategy creates a safe space and minimizes social anxiety for participants. Some examples of this can be using virtual reality programs or video modeling which again is very popular and is where you can watch videos to learn to do certain skills. And lastly there are social

stories. These are narratives that describe social situations and targeted social behaviors. They consist of a main topic, details, and reinforcement of the main concept. I added a very short, simple example on this slide, but they could be even longer or more in depth. But you want to make sure that the main concept is established and then reintroduced.

Slide 12:

There are also assistive technology strategies that aid in the development of social and communication skills for both verbal and nonverbal individuals. Assistive technology ranges from low to high assistive tech, depending on the need for the individual. Some common assistive tech strategies, in no particular order include: visual supports which are visual representations of important information; video modeling, which was touched on in the previous slide-this is where we use videos to teach appropriate social behaviors; Augmentative and Alternative communication also known as AAC devices which are typically used for individuals with more severe communication impairments as a supplement to a person's speech; social narratives which describe social situations, cues, and appropriate responses; and also scripts that are verbal and written descriptions about skills and situations.

Slide 13:

So, you may be asking "how social participation can impact an individual's life?" To answer that question, I created this chart. Research shows social participation impacts overall quality of life by increasing fulfillment and productivity in individuals. Unfortunately, the social limitations individuals with autism face often lead to decreased relationships with peers, social isolation, and increased levels of anxiety. This also leads to difficulty in work and school settings which can be more prevalent due to lower abilities to converse, decreased functional skills, and reduced abilities to live independently. To conclude, cultivating social and communication skills are beneficial in order to improve occupational engagement and increase quality of life. Along with this, it is important to provide education to families, friends, and providers to further address and prioritize socialization for people with autism.

Slide 14:

Now we are going to shift gears to motor skills.

Slide 15:

Our motor skills are the skills that allow us to move and plan future movements; however, this is another area that individuals with autism could face difficulty with. This includes both gross motor skills (meaning large body movements) like walking and jumping, and lifting and smaller body movements involving the hands and fingers like writing, cutting, and using manipulating utensils. Individuals with autism may also experience impaired postural control by demonstrating difficulty with balance and maintaining an upright position due to low muscle tone. As for gait, or walking, studies show that individuals with autism could demonstrate toe walking, atypical body movements and strides, stiffness, and difficulty walking in a straight line. There can also be impairments in reach and grasp, which could be caused by slower initiation of movements, variability in arm movements, and decreased grip strength. Individuals may demonstrate trouble with imitation of movements, so copying another person's movements, which has been studied to be related to motor and sensory perception deficits, decreased attention, motivation and relationships. Last, but not least, is dyspraxia. In the word dyspraxia is praxis and that is the ability to conceptualize and plan successful motor actions through the use of three concepts. Ideation is one and that is creating a goal, motor planning which is organizing the motor actions for the goal, and motor execution which is executing the end product or the end goal. Therefore, dyspraxia is when an individual experiences difficulty with these steps. Now we're going to get into some of the occupations that are affected, but again I want to note that these are only naming a few and there can be many different ones. But the ones I have here are play, social participation, ADLs or activities of daily living, and IADLs or instrumental activities of daily living.

Slide 16:

Now we are going to discuss what Occupational Therapists can do to help. One strategy is by using sensorimotor interventions to target motor performance. This is done through sensory related activities that build up motor skills and praxis for skill development. An example of this is using a musical or light up toy to encourage a baby to reach for buttons, while providing visual and auditory stimuli. Later in this presentation we will dive deeper into the different sensory systems and sensory processing strategies, but I wanted to give a brief example of that here. The next intervention strategy is known as skill building. This is where occupational therapists train clients or patients in how to perform an action or movement, then have the client repeat the action to practice and refine it. Repetition and creativity are both key here. OTs can grade and modify the tasks to make them more motivating and manageable for the client. Next are cognitive interventions which include problem-solving techniques to bring attention to a task and strategies for how to perform it. Lastly, are behavior interventions where occupational therapists adapt the environment to meet the client's needs in order to increase function.

Slide 17:

On this slide I wanted to go over specific examples of types of movements and motor skills occupational therapists target. We discussed postural control, and this image related it back to the ADL, or the activity of daily living, of eating. This person is practicing proper postural control during mealtime which in turn increases their ability to independently feed themselves. Next is bilateral coordination, which is where individuals use both sides of their body at the same time. Some examples of this include buttoning a shirt, stabilizing a paper with one hand and using scissors with the other hand to cut, and a throwing and catching game with a ball. Next are sequencing skill activities and the example here is a breakdown of the different steps to make a peanut butter and jelly sandwich. The client would be assessed on their ability to put the steps in order and plan which step goes first, second, third, and fourth in order to create the peanut butter and jelly. The final area I wanted to touch on is ocular motor control, or the

ability to control eye movements. This is an area that occupational therapists aid in and the example here shows a worksheet where the person would have to track the lines from the top to the bottom. I wanted to reiterate for all these interventions, and for occupational therapy as a whole, there will be a lot of grading and modifications to the interventions to make sure they are producing the best possible outcomes for that specific patient because we focus a lot on unique, client centered care. It is also important that the patient is given many opportunities for repetition, both in and outside of the sessions.

Slide 18:

Let's shift gears now to behaviors and regulation skills.

Slide 19:

I wanted to begin this section by introducing some commonly reported behaviors among individuals with ASD. There is noncompliance which is when an individual does something against what an authority figure has requested, which in turn decreases engagement in productive tasks, can limit success & learning, and can pose safety risks. There are disruptive behaviors that interrupt peers and ultimately, the individual's own engagement. Some examples of this can include different emotional outbursts, distractibility, and overactivity. Next, is elopement which is when an individual leaves an area without permission or supervision from a trusted adult or individual. Self-injurious behaviors, which are actions that are damaging to the individual self, including head banging, self-pinching, and hair pulling; and aggression which includes behaviors that injure other people or property. It is important to note that individuals with autism may not have the intent to harm others, but instead are responding to different feelings of stress and overstimulation.

Slide 20:

When talking about behaviors, it is important to understand the "why" before addressing the "what can we do." This quote reads "Before we respond to behavior, we need to understand its origin." It is from

the book called “Beyond Behaviors” by Mona Delahooke and it’s a wonderful resource for parents, caregivers, and staff. I use it as a reference in this presentation and I highly recommend it for anyone who is trying to understand different behaviors that their child or someone they are working with may demonstrate and it’s also a great resource to find potential solutions.

Slide 21:

Speaking of the book, another noteworthy quote is “many of our approaches falsely assume that children can self-regulate their emotions and behaviors, when in reality they do not yet have that ability.” Delahooke describes the difference between top down and bottom-up behaviors. Top-down behaviors are those that are intentional and planned and this approach of behavior is used when an individual can control, learn, reflect, plan, and pursue behaviors and goals. Whereas on the other hand, bottom-up behaviors are those that are not intentional, but rather an instinctive drive for self-protection. When children demonstrate disruptive behaviors, they typically are in the bottom up, stress response approach. Along with that, there are three autonomic pathways discussed in this text regarding behaviors and feelings of safety. The first is the dorsal vagal pathway. This pathway is used when we protect ourselves from a threat by shutting down. The next is the sympathetic nervous system which is responsible for the fight or flight reaction for survival. Lastly is the ventral vagal system which is active when an individual is happy, relaxed, and has different supports for social engagement and connection with others. Our individual genetic and environmental differences also influence how we respond to the world around us and how we process different sensations, feelings, and thoughts. For autism, contributing factors to behaviors can include sensory stimuli, gastrointestinal problems, sleep disturbances, and anxiety.

Slide 22:

So occupational therapists utilize different strategies to improve behaviors for individuals with autism that ultimately lead to increased performance in everyday occupations. One method is to address the

physiological aspects of regulation, which focuses on health and medical variables that could contribute to disruptive behaviors. This includes interventions addressing positive sleep, eating, and internal body awareness (also known as interoceptive awareness). Next are interventions addressing sensory factors. This includes providing environmental modifications that are effective for functional performance and promoting habits and routines for increased structure and predictability. We will address the individual sensory systems in greater detail in the next couple of slides. The next strategy is to address emotional aspects. An important way that occupational therapists do this is by using therapeutic use of self, meaning they create trust and safety with their clients. It is important to use the client's own interests and occupations to promote successful participation. Lastly, occupational therapists address the cognitive aspects of regulation where they empower understanding and awareness of regulation and educate clients on self-implementing mindfulness interventions, sensory modifications, and problem-solving skills.

Slide 23:

As mentioned, we will now start discussing sensory processing and sensory integration.

Slide 24:

We all have sensory preferences. For example, I cannot stand flashing lights or when fruits are too ripe or too mushy. Some people cannot tolerate intense smells; everyone has their own unique preferences. However, when these sensitivities are more severe and overwhelming, this leads to a bigger issue than just trying to avoid them as it then decreases engagement in everyday occupations. This is known as sensory processing disorder (SPD), which is a neurological condition in which sensory stimuli is not recognized or organized correctly by the brain and therefore can cause abnormal responses. Individuals with autism are at an increased risk for sensory processing disorder. SPD can be broken down into 3 different classifications: Sensory Modulation Disorder, Sensory Based Motor Discrimination, and Sensory Discrimination Disorder.

Slide 25:

Sensory modulation disorder is when an individual has difficulty regulating the intensity and nature of their emotional and behavioral responses to incoming stimuli and it is broken down into sensory over-responsivity-in which an individual is hypersensitive to stimuli, under responsiveness- in which an individual requires more sensory input than normal to react to a stimuli, (so this can be having a high tolerance to pain or a high tolerance to extreme temperatures), and sensory craving-in which an individual seeks out sensory stimuli. Sensory based motor disorder is when an individual has difficulty controlling their body movements. This can include clumsiness, poor motor skills (dyspraxia), difficulty with postural control, and ultimately difficulty with activities of daily living. Finally sensory discrimination disorder is when an individual has difficulty understanding sensory input. This can look like putting too much or too little force on an object, having poor balance, and difficulty distinguishing between sounds.

Slide 26:

Occupational therapists first address sensory integration patterns in relation to sensory perception. Occupational therapists incorporate sensory modifications during treatments in order to encourage functional performance, and through trial and error, find what works for each unique individual. They then educate the client and their loved ones on how to incorporate sensory modifications into their home and the community. I also wanted to make note of primitive reflex integration that OTs incorporate into treatment. These reflexes are automatic movements or actions that are present from birth to the first few years of life for survival and development and are triggered by sensations. If these reflexes are not integrated in infancy, occupational therapists will work with clients through activities to promote reflex integration.

Slide 27:

This is another helpful tool for parents and educators and is called "Sensory Processing Explained: A Handbook for Parents and Educators" by Heather Greutman and Sharla Kostelyk. I use this source a lot

in this PowerPoint presentation, and it is a great resource to break down the different sensory systems and to learn what strategies can be used.

Slide 28:

Let's start with the visual system. This is responsible for the detection and processing of visual stimuli. Individuals may demonstrate difficulty with tracking or scanning when they're trying to read, and may start skipping words or skipping lines. It can also be demonstrated by squinting and sensitivity to lights, or even when individuals omit or reverse letters, numbers, and words. Some strategies could be reducing visual clutter in a room, having different colors for different directions in order to help break them down for the individual, being able to dim or brighten lights depending on the individual's needs, and using a "window" to focus on words. A lot of times you can cut out a little hole in an index card, and have individuals scan the index card as they're reading so they're able to focus just line by line. Another example that's commonly used with individuals with autism are visual schedules and visual timers-these breakdown how much time they're going to spend on a task and then what comes next. They add that level of predictability, which also helps to calm the body down because individuals know what's going to happen next. And again, to note, there are tons and tons of strategies for all these different systems, but I wanted to point out some common ones used.

Slide 29:

Next is the auditory system, which is responsible for hearing, listening, interpreting, localizing sound and filtering sound. You may see that an individual has difficulty discriminating sounds and difficulty following directions. They may get upset by loud or even soft noises, and they may talk off topic. One way to help these individuals is to minimize sound distractions. If there is a lot of sound in the room, we can find strategies to lower the distractions and help them focus on the activity that they're doing. Playing calming music or a soft metronome, offering noise canceling headphones, simplifying directions especially with individuals who need longer time to process and providing written instructions to allow

individuals to have something to look back to if they couldn't process all the directions at once when they were given verbally are all helpful strategies as well.

Slide 30:

Next is the olfactory system which is responsible for the detection of smell and whether a smell is safe or dangerous. Individuals with autism might be distracted due to smells being overwhelming. They might smell everything around them to see what they smell like, or they might avoid certain rooms or areas that have certain smells to them. Smells could even lead to them gagging or throwing up. A strategy to help these individuals could be to offer scent free spaces-spaces without perfume or essential oils-just a very neutral smell. Whereas if they're seeking smells and smell everything around them, you can offer scented play materials (scented markers or scented Play-doh). I already touched on this but again avoid using certain perfumes, scented lotions, or essential oils that can be triggering for an individual.

Slide 31:

Next is the gustatory system and this is responsible for oral taste and sensation, while being able to taste sweet, saltiness, bitterness, sourness, and umami (savory). Often, we hear the term "picky eater" when individuals refuse to try new foods and that's a common symptom among individuals with autism. Where on the other hand, another common one is licking or chewing on all different kinds of objects. We want to remember not to force an individual to eat something if they are refusing. Instead, we can find different strategies in order to help introduce new foods in a more comfortable setting. We can also offer chewing gum and crunchy foods if they like to chew on inedible objects and they're seeking that movement in their mouth. Another strategy could be chewlery or chewable jewelry (chewlery necklaces or bracelets), or even chewable pencil toppers.

Slide 32:

Next is the tactile system which is responsible for touch and feel. Some common things that we may see with individuals with autism and sensory processing disorder could be increased exploration with touching people and objects, delayed fine and gross motor skills, aversion to touching certain objects, and then ultimately difficulty focusing on the task at hand. We can offer fidgets for that increased movement; different types of sensory play (ex. Play-doh), materials with different types of textures, and anything that can help them explore different feelings (hands on activities: different types of crafts or even science projects). Again, we never want to force an individual to touch something that they are refusing to touch, but instead, we want to introduce them in a calm, comfortable way.

Slide 33:

Now we're going to get into the systems that we don't really hear about every day, one being the vestibular system. This is responsible for detecting changes in gravity, body position, and balance. We may see individuals with autism who always like to be in motion. They don't get dizzy and like to shake rocks, spin and jump. On the other hand, because everybody's different, some individuals may be fearful and extremely cautious of different movements. One strategy that could be used for those who are seeking a lot of movement are movement breaks between tasks which can include walking, going on a play set, and climbing. Another example is different alternative seating options to maintain focus on a task tabletop. This can include bouncy chairs, standing at a higher-level table, or sitting on a wobbly disk. Again, fidgets are important here because they can help get some of that movement and motion out. For those who are fearful or extremely cautious, again, we don't want to force movements or activities.

Slide 34:

Next is the proprioceptive system which is responsible for telling your body where it is and what your body is doing. We feel this in our joints, muscles and ligaments. A lot of times we may see individuals with autism who demonstrate clumsiness or poor body awareness; they could even put too much

pressure or strength into things. They may seek to chew on different objects and stomp when they walk. Some strategies for this, again similar to the vestibular system, because these two systems can work hand in hand, includes movement and heavy work. It can be simple activities like doing wall push-ups to really increase that pressure into the wall and then back into the muscles, jumping jacks, carrying groceries, carrying laundry baskets, going on walks, etc. Tools like weighted vest or lap pads can be really comforting to individuals who are seeking that deep pressure in their joints and muscles, tasks that involve crossing midline, so crossing your right arm over to your left side or your left arm over to your right side, and then again, similar to what we've mentioned before, chewing gum and chewing tools can be really helpful for those needing that movement/pressure in their mouths.

Slide 35:

Last, but not least, is the interoception system, which is responsible for understanding what is happening internally in our bodies. This goes over both bodily functions and emotional regulation. Some challenges with this are determining appropriate clothing for different types of weather, bladder or bowel accidents, and having a really high or really low pain tolerance. We want to teach and label emotions, teach about weather related clothing and what's appropriate and what isn't, offer reminders and prompts for frequent bathroom breaks, how we can tell if we need to use the bathroom, reminders for snack breaks, and how our body feels when it's hungry.

Slide 36:

Then one more book I wanted to make note of that helped me in this presentation is "The Autistic Brain: helping different kinds of minds succeed" by Temple Grandin who is a famous individual who has autism herself. In this book she states, "Over the decades, I've seen...few studies on sensory problems—probably because they would require researchers to imagine themselves looking at the world through an autistic person's jumble of neuron misfires." So, it could be hard for somebody who doesn't experience these things to be able to understand the why behind a lot of the different behaviors or the

different sensory needs, but it's important that we continue to listen and meet those needs in order to help individuals with autism succeed and become more independent. It's important to find resources where individuals with autism are advocating for themselves in order to better our skills to advocate for them as well.

Slides 37-39:

Here are the references that I used if anybody wanted to take a look at any of them for the information presented in this PowerPoint. Thank you so much for your time and for learning about occupational therapy and individuals with autism.