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CONTINUING EDUCATION ARTICLE

Sensory Processing and Mental Health During the COVID-19 Pandemic

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ABSTRACT

Occupational therapists are important members of the team in assessing and intervening for children and adults with mental health challenges. Many children and adults with mental health diagnoses may also have sensory processing difficulties. As we continue to see effects from the COVID-19 pandemic, OTs have a crucial part in helping clients who may have additional needs. The purpose of this article is to illustrate the implications for OTs working in various settings and how they can apply different frameworks to effectively evaluate and intervene with clients across the lifespan having both mental health and sensory differences.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Recognize the potential relationship between sensory processing difficulties and mental health.
2. Explain the importance of evaluating for sensory differences in mental health practice and vice versa.
3. Describe the Person Environment Occupation (PEO) model as applied to structure occupational therapy interventions for clients with sensory processing differences and potential mental health impacts.
4. Identify a variety of sensory tools, strategies, and/or occupations that can be used when working with clients with mental health difficulties resulting from potential sensory processing differences.

INTRODUCTION

Sensory integration (SI) is generally defined as the brain organizing sensory information for use in daily tasks (Ayres, 1972). A. Jean Ayres developed the theory of SI to explain the necessity of adequate processing and integration of sensory information for adaptive behavior and functional skills (Schaaf & Miller, 2005). While the prevalence of sensory integration and processing issues varies across different diagnoses, it is estimated that 1 in 20 to 1 in 6.25 children in the U.S. general population have sensory processing issues (Crasta et al., 2020). Literature supports the relationship of difficulty with sensory integration and performance in ADLs (Schaaf et. al, 2018), and SI interventions are frequently used by occupational therapists (OTs). According to Schaaf et al. (2018), more than 95% of pediatric OTs use Ayres Sensory Integration® (ASI®) in clinical practice.

Watling & Hauer (2015) classified OT using an SI approach into two primary categories: ASI® and sensory-based interventions (SBIs). While ASI® is based on Ayres' original principles of clinic-based intervention that uses specialized equipment in a play-based environment to facilitate active child engagement, SBIs

typically include sensory modalities being applied to a child (e.g. weighted vests, brushing) and applying adult-directed activities to help with short-term attention, self-regulation, and behavioral organization (Watling & Hauer, 2015). For the purposes of this article, both intervention approaches are considered when discussing the overlap between SI and mental health, as both intervention approaches have roots in Ayres' original constructs.

While Ayres initially developed the theory of SI to explain differences contributing to difficulties with academic and motor learning (Bundy & Lane, 2020), evidence shows that difficulties with sensory processing may sometimes be a result of, and/or contribute to, mental health conditions (Champagne & Koomar, 2012). The World Health Organization (WHO, 2018) describes mental health as an "integral and essential component of health" and states that "mental health is a state of well-being in which an individual realizes his/her abilities, can cope with the normal stresses of life, can work productively, and is able to contribute to his or her community" (para. 2). Families frequently report that behaviors associated with sensory processing differences in their children contribute to social isolation for them and their child (Schaaf et al 2014). Furthermore, children with motor learning difficulties, one of the core issues in dyspraxia, a sensory-based motor disorder, may have significant difficulties with self-care and decreased participation in sports and regular physical activities; lack of involvement in these typical childhood occupations contributes to difficulties with social participation, which can lead to social isolation and decreased self-worth. In turn, low self-esteem is one of the factors that can lead to increased mental health conditions such as anxiety and depression (Draghi et al., 2020). In addition, there is evidence that demonstrates specific kinds of sensory processing dysfunction in adults with psychiatric and/or mental health disorders, thereby supporting the use of SI theory to plan aspects of a comprehensive OT intervention plan (Champagne & Pfeiffer, 2020).

Another emerging area of study is the impact of traumatic events on mental health and the concept of trauma-informed care. The U.S. Department of Veterans Affairs reports that about 15% to 43% of girls and 14% to 43% of boys go through at least one trauma in childhood. Of those children and teens, 3% to 15% of girls and 1% to 6% of boys develop post-traumatic stress disorder (PTSD). As adults, about 8% of the population will have PTSD at some point in their lives (US Department of Veteran Affairs, 2019). In addition, while most people who experience traumatic events do not meet the full diagnostic criteria for PTSD, many can suffer from post-traumatic stress symptomology, which can include increased arousal, low registration, and avoidance of activities associated with the traumatic events (Engel-Yeger et al., 2013). Some researchers are looking at the overlap in symptoms between individuals experiencing PTSD and difficulties with sensory processing, specifically sensory modulation disorder, as well as the use of SI interventions to treat those with PTSD and PTSD-related symptomology (Harold et al., 2016).

In March 2020, the coronavirus disease 2019 (severe acute respiratory syndrome [SARS]-Cov-2; COVID-19) pandemic resulted in a worldwide shut down, leading to dramatic changes in people's daily routines and occupational engagement. COVID-19 is an infectious viral disease that results in a wide range of symptoms, from mild symptoms to severe illness and death. Due to the high infectiousness, novelty, and serious risks of COVID-19, necessary public health measures, including isolation and social distancing, were enacted to limit the spread of the virus. While it is obvious that COVID-19 has and continues to impact the physical health of millions of people, research over the past year also highlights the impact of COVID-19 on mental health. Health care workers and individuals with pre-existing psychiatric disorders have reported increased psychiatric symptoms throughout the pandemic, including increased symptoms of PTSD, anxiety, and/or depression (Vindegaard & Benros, 2020). Additionally, the general public has reported increased anxiety and depression, and decreased psychological well-being, while individuals with confirmed positive COVID-19 report high post-traumatic stress symptoms and depression (Vindegaard & Benros, 2020).

Engagement in the occupations of physical activity and socialization are widely viewed as supportive for mental health; however, the pandemic led to significant occupational disruption, with individuals reporting decreased engagement in these occupations, especially in the early stages of shutdown (Meyer et al., 2020). Further, individuals who did not meet physical activity recommendations, increased their screen time, and were self-isolated reported increased negative impacts on mental health (Meyer et al., 2020). Increased screen time and decreased physical activity are thought to impact arousal level, attention, and motor skills, which are outputs of sensory processing. While there are trends in the impact of COVID-19 on mental health, it is important to recognize that individuals uniquely experienced the pandemic shutdown and the transition to reopening, including varied perspectives on positive changes and feelings of loss. For example, autistic adults have reported increased anxiety and depression during the pandemic; however, they also reported positive changes of reduced sensory and social overload while simultaneously having trouble with the loss of social contact (Oomen et al., 2021).

THEORETICAL FRAMEWORKS

Sensory Integration and Processing

Initially termed sensory integrative dysfunction (Ayres, 1989), the sensory integration frame of reference continues to evolve as research in this area progresses. A. Jean Ayres' original paradigm ultimately described sensory integrative dysfunction contributing to functional problems through her work developing the Sensory Integration and Praxis tests (Schaaf and Davies, 2010). In 2007, Miller and colleagues proposed a paradigm shift in their development of a diagnostic nosology based on Ayres' empirical and theoretical information. To distinguish between different functional subtypes of SI dysfunction, their nosology uses the term *sensory processing disorder* (SPD) to describe the diagnosis of difficulty processing sensory input, which results in functional disturbances. The nosology includes three categories

of SPD: Sensory Modulation Disorder (SMD), Sensory-Based Motor Disorder (SBMD), and Sensory Discrimination Disorder (SDD) (Miller et al., 2007). While a detailed discussion of the characteristics of each proposed pattern and its respective subtypes is outside the scope of this article, it is useful to recognize the complexity of SPD and how disturbances in sensory processing may present in very different ways depending on the individual's sensory differences.

Lane and colleagues (2020) describe the evolution of Ayres' original work through the years, ultimately determining that the core constructs of the original theory (i.e., the linkage of brain processing and observable behaviors) remain consistent throughout the various published models. Many SI scholars have expanded on the original work in their areas of interest, sometimes using pieces of the original framework coupled with other theories to best serve children and families. Fisher and Murray (1991) combined pieces of SI theory and the Model of Human Occupation (MOHO) in their Spiral Process of Self-Actualization (Bundy & Lane, 2020). In this spiral process of SI, there is an added emphasis on the psychosocial pieces of the brain's difficulty integrating sensations for successful participation in meaningful occupations and how that may contribute to decreased feelings of self-worth for the individual. This model postulates that when sensory processing difficulties result in participation issues, it is impossible to separate the psychosocial pieces (e.g., anxiety or overarousal, decreased self-efficacy) which can then lend themselves to future issues with integrating sensation, or vice versa (Bundy and Lane, 2020). When assessing clients using the spiral process of self-actualization, a therapist may look at the different aspects of the environment, sensory processing, and volition to better understand the pieces contributing to, or resulting in, poor mental health.

Person Environment Occupation Model

The Person Environment Occupation (PEO) Model provides one theoretical basis for the treatment of persons with mental health problems. Under this theory, the occupational therapy practitioner examines the fit between the person and the environment, with the expectation that a better fit improves occupational performance. The therapist is very mindful of the impact of the environment, functioning under the theoretical assumption that changing the environment is the most appropriate method to increase the fit (Law et al., 1996). When looking at the role of sensory processing in persons with mental health difficulties, an OT using the PEO model would first examine the *environment*. Modifications to the *sensory* environment can allow for the fit between the person and the environment to reach a more optimal level, thus increasing occupational performance. Assessment of a *person's* ability to process sensory information helps determine the fit or discrepancy between the sensory *environment* and the *person's* sensory processing. Once there is an understanding of both the sensory features of the environment and the sensory processing abilities and needs of the individual, the occupational therapist can design interventions that modify the sensory environment to better suit the sensory processing of the person. As *occupational performance* improves through this intervention model, the person will have increased independence in daily activities and tasks, presumably leading to improved self-efficacy.

Trauma-Informed Care

The concept of trauma-informed care (TIC) was recognized on a wide scale after the Adverse Childhood Experiences (ACE) study highlighted the long-term negative health effects of living through abuse, domestic violence, and other traumatic experiences in childhood (Felitti et al., 1998). More recent research has aimed to define the tenets of TIC for all agencies and organizations that potentially serve clients with these backgrounds. A history of trauma in childhood is known to influence the mental health, behavior, cognition, and emotional development of a person (Cross et al., 2017). While there is not one definitive definition of the term, the overarching concept aims to create a safe environment that recognizes the biological and physiological impacts of trauma while providing care and resources to support the recovery and resilience of all parties involved (Hanson & Lang, 2016).

There is emerging research regarding OT's role in treating persons with trauma, more specifically post-traumatic stress disorder in adults (Edgelow et al., 2019; Torchalla et al., 2019). These studies highlight the negative impacts of trauma on participation in daily roles, routines, and habits for both children and adults. Though the role of the OT is not to treat the trauma itself, providing interventions around and education about the effects of trauma on ADLs, school performance, and social participation falls within the OT scope of practice. Examples of these interventions include community programs to encourage health promotion and prevention on a public health level (Gronski et al., 2013) and sensory-based interventions to improve trauma processing physically in the body (McGreevy & Boland, 2020). Felitti et al. (1998) found that 64% of adults experienced at least one adverse childhood experience, leading all health care providers, including occupational therapy practitioners, to assume most of the children and adults they see have lived through a potentially traumatic experience.

OCCUPATIONAL THERAPY PROCESS

The *Occupational Therapy Practice Framework: Domain and Process* (4th ed.; *OTPF-4*; American Occupational Therapy Association [AOTA], 2020) describes the three main interdependent parts (evaluation, intervention, and target outcomes) used to deliver client-centered occupational therapy services. While many health professionals use this three-component process, OT practitioners focus on the therapeutic use of occupations to promote health, wellness, and participation across the lifespan during each step of the process.

Evaluation

During the evaluation, the OT completes the occupational profile, analysis of occupational performance, and synthesis of the evaluation process (AOTA, 2020). For the occupational profile, the OT completes a semi-structured interview with the client

and/or caregivers to summarize the client's history, experiences, and patterns of daily living activities. This interview may also include an analysis of a client's sensory processing abilities, needs, and differences. Ultimately, the OT seeks to understand the client's unique pattern of meaningful occupations and the barriers or challenges for participation and/or performance in these occupations. It may also be important to ask about potential history of trauma, as this is an area some clients or caregivers may be reluctant to bring up on their own. The OT then uses the occupational profile to determine specific occupations and context (including the sensory environment and tools) that must be addressed during the analysis of occupational performance.

The analysis of occupational performance includes an activity analysis while observing a client's occupations, preferably in a natural context. In addition, the OT selects and administers standardized assessments (AOTA, 2020) to help measure client factors (including sensory needs and differences) that may impact performance patterns and participation in meaningful occupations as well as overall mental health. It is also important for the OT to assess the client's environment to determine supports and barriers present that are influencing the client's mental and physical health and ability to participate in meaningful occupations.

Following the occupational profile and analysis of performance, the OT synthesizes the information to develop a hypothesis of occupational strengths and deficits and targeted outcomes to guide the intervention process. Finally, the OT selects outcome measures that will be used to determine progress towards the intervention goals. Goal Attainment Scaling (GAS) has been identified as a strong outcome measure for sensory integration intervention (Mailloux et al., 2007). GAS is a method of generating client-centered goals that can measure often subjective progress in a quantitative manner. It has been shown to be effective for identifying measurable goals that are meaningful for the client and the client's projected outcome. It is often used in both mental health programming and in sensory integration (Schaaf et al., 2018).

Intervention

The intervention process includes an intervention plan, intervention implementation, and intervention review (AOTA 2020). The clinical decisions for the intervention plan are based on the comprehensive evaluation findings and the guiding theoretical models used by the OT. For example, when the PEO model has been chosen, the intervention will focus on the overlap of the person, the environment, and occupation as discussed earlier. Similarly, with an SI focus, the OT will use principles of SI theory and the information gathered in the evaluation about the client's ability to process sensory information to help structure the environment and activities during intervention to support the client's sensory needs. The intervention should be occupation-centered, client centered, and enablement focused. The interventions that are chosen should be based on the best available evidence (AOTA, 2020). The intervention review process facilitates continually monitoring the client's response to treatment with the use of outcome performance measures.

Target Outcomes

Target outcomes, or goals, in OT should be measurable and tangible items that demonstrate improved occupational performance. In general, outcomes should be related to health, well-being, and engagement in occupation (AOTA, 2020). During the evaluation, based on the occupational profile and an assessment of occupational performance, the client and the OT collaboratively identify meaningful client-centered goals related to occupational participation. Goals should be specific, measurable, attainable, relevant, and time-bound (SMART) to ensure they can be monitored throughout the intervention process. Well-developed goals are essential components of the OT process, allowing for accurate monitoring of progress and effectiveness of the intervention. Trends in client progress toward their goals help the therapist understand the client's response to intervention and determine when modifications to the treatment plan may be warranted.

Goal attainment scaling (GAS) is one method to evaluate outcomes of intervention that captures the individualized nature of occupational therapy goals. GAS, first identified by Kiresuk and Sherman (1968), began as a method of evaluating outcomes with adults in community mental health and is now used frequently in research across practice areas, including psychosocial interventions for autistic individuals (Ruble et al., 2012) and sensory integration (Schaaf et al., 2014). When using GAS, a specific measurable goal is developed collaboratively with the client and set on a 5-point scale with measurable outcomes for each numerical value. The scale ranges from least favorable outcome (-2) to most favorable outcome (+2) with 0 as the likely treatment outcome. The OT must thoughtfully consider the measurable outcome for each part of the scale, as the challenge to progress from one point of the scale to another (e.g., 0 to 1, 1 to 2) should be equal. An occupation-based goal using GAS might specify sequencing a morning routine with 3 verbal cues as the likely treatment outcome (0), with adjustments to the number of verbal cues for other parts of the scale (i.e., -2, -1, +1, +2).

THEORETICAL FOUNDATIONS THROUGHOUT THE OCCUPATIONAL PROCESS

Assessment

The PEO and SI models can contribute to a comprehensive OT process for clients with mental health and sensory processing challenges. There is evidence that clients with some forms of mental illness may have difficulty registering, processing, and responding to sensory information from the environment using an adaptive response (Fraser et al., 2017). In addition, clients in this population are not always consciously aware of their sensory-based triggers or preferences and, therefore, lack strategies for responding to these triggers (Andersson et al., 2020). OT can bridge the gap between a client's knowledge of sensory processing and the client's and caregiver's awareness of basic sensory needs.

When structuring intervention for clients using the PEO model, the OT may adapt the *environment* to match the sensory needs of the *person* to maximize the *occupational* performance during the session and throughout daily activities outside of

intervention. In addition, there is evidence that increased awareness of one's sensory patterns during daily occupation may lead to more optimal participation (Champagne & Stromberg, 2004). Using this framework, the OT can help the client better understand their sensory differences and needs as well as identify and implement sensory strategies that will facilitate more optimal engagement in ADLs across different environments. The COVID-19 pandemic has set off a series of life disruptions for our clients (Hammel, 2020) in most lived environments. Research has shown that engagement in occupation promotes order, routine, and structure but occupational disruption can lead to an altered sense of belonging, connectedness, routine, and predictability within our life occupations. OT practitioners have a role in working with our clients with mental health challenges to build resilience and restore a sense of control while living in the new normal, using sensory-based strategies.

For the client with mental health challenges, the altered social and occupational environment during the COVID-19 pandemic was not the only factor that may have contributed to occupational disruption. Evidence has shown that atypical sensory processing in general, such as poor awareness of sensory needs, poor stress responses, difficulty with processing sensory information, and exaggerated behavioral responses to sensory input for clients with mental illness have been associated with difficulty in occupational engagement (Bailliard & Whigham, 2017). This disengagement could lead to occupational deprivation. It is important that occupational therapists and occupational therapy assistants recognize the consequences and changes that have occurred in the client's ability to access resources during lockdowns, meet everyday living needs, and communicate with social supports (World Federation of Occupational Therapists, 2021). Each of these barriers to participation can become stressors on clients' health and well-being. For example, the work of Andersson et al. (2020) has shown that social occupations are challenging for the mental health population who experience sensory deficits. These challenges can be exacerbated when the form of social interactions must change from face to face to a technological platform.

The association between mental health, sensory processing difficulties, and occupational engagement challenges is concerning because Cole and Tufano (2020) point out that dysfunction in the sensory system often cannot resolve on its own and cannot be controlled internally or automatically by the client with mental illness. OT practitioners can collaborate with the client with mental health and sensory processing challenges to guide and grade sensory input or adapt the environment or occupation to meet sensory needs, promoting engagement in meaningful occupations.

Person. During the initial assessment, the OT gains an understanding of the client's occupational experiences and related challenges, taking note of the client's awareness of the association between sensory processing, behavior, and occupational performance. In addition, the OT can determine the sensory needs of the client and how those needs may be impacting mental health and participation in meaningful occupations. When evaluating the *person*, it is important to evaluate the client's self-awareness of sensory processing style and how other people and the environment can influence the client's feelings (Champagne, 2019). Information obtained using self-rating tools, semi-structured interview, observations, and standardized assessments can be used to identify sensory preferences, as well as which sensory stimuli to avoid or increase to support participation in occupation (Bailliard & Whigham, 2017).

Environment. The environment also needs to be assessed as it can affect an individual's ability to achieve optimal occupational performance (Koomar, 2009). It is important to consider the sensory qualities of both the physical and the social environments. The OT can complete an analysis of the sensory qualities of the physical environment. The Participation and Environment Measure for Children and Youth and the Participation and Sensory Environment Questionnaire are two assessment options for the pediatric population (Pfeiffer et al., 2018).

Occupation. The sensory characteristics of the activity and occupation need to be evaluated to complete a comprehensive assessment. The occupation can be evaluated by observing the client engaging in specific occupations, preferably in the natural context, that are required for the client's social and occupational role to determine the kind and tolerance level to sensory stimulation (Cole & Tufano, 2020). The OT can conduct an activity or occupational analysis of the type and intensity of sensation that would be required for successful completion of the occupation. In addition to determining strengths and challenges in terms of occupational performance, the OT needs to determine the supports and barriers that are present that influence occupational performance.

Intervention

Person. A synthesis of information from the occupational profile, assessment of the client's self-awareness, sensory preferences, coping strategies, physical and social environmental factors, and supports and barriers guide the development of the intervention plan. The PEO framework can also guide the intervention process. The co-creation of the plan, with the OT and the client working together, promotes empowerment and ownership for the client (Williamson & Ennals, 2020). One option to provide treatment for sensory challenges in the mental health population is to use the Sensory Modulation program (Champagne, 2019). The program establishes some general important principles for intervention that can be taken into consideration when addressing the person factors of the PEO model. The initial priority of the program is to help the client feel safe and stabilized. The therapist and the client explore sensory options that are calming versus alerting for the client, and determine how sensory strategies can support participation. A second component of the program involves the OT working with the client to improve the client's self-awareness of how the nervous system responds to sensory input. The practitioner needs to help the client make a connection between the client's sensory processing style and occupational participation. It is important for the client to understand how a sensory processing challenge can negatively influence the client's safety, behavior, social relation-

ships, and occupational participation. By the end of the sensory education portion of intervention, it is important that the client has a clear understanding of how OT sensory-based intervention can be helpful to their occupational goals (Champagne, 2019). After the client has developed an awareness of their own sensory pattern and preferences and how these responses influence participation, intervention can focus on developing strategies to respond to sensory input and on making personal and environmental adaptations (Champagne, 2019; Williamson & Ennals, 2020). The OT can instruct the client on sensory modulation strategy options that match the client triggers, warning signs (Champagne, 2019), and preferences to assist the client in more effectively self-regulating when exposed to uncomfortable sensory stimuli (Andersson et al., 2020).

Environment. The creation of a sensory diet that includes sensory-enriched preparatory and occupation-based activities embedded in the client's daily routine has also been found to be effective for prevention, participation, and crisis de-escalation (Champagne, 2019). The OT can consider sensory-based modalities, equipment, and tools that are sensory supportive. Evidence shows that intervention focused on environmental factors is important for participation for the client with mental illness (Bailliard & Whigham, 2017). The sensory qualities of the physical environment can be adapted to promote occupational engagement for adults with mental illness. The OT and client can collaborate to determine environmental enhancements and modifications to increase feelings of safety, self-regulation, self-care, and social participation (Champagne, 2019).

In addition to the physical environment, intervention geared toward the social environment is also important. Martin & Suane (2012) found that well-designed education programs on sensory principles in an inpatient mental health facility increased the use of sensory rooms and carts by the health professional team members. Similarly, in the Sensory Modulation program, caregivers are educated on the client's sensory-based needs, goals, and strategies and their relationship to the client's goals (Champagne, 2019). Education that includes the level of support needed and how to continue the sensory diet at discharge location is also recommended.

Occupation. The sensory qualities of the occupation need to also be considered in the attempt to improve the fit between the person, environment, and occupation. The OT can collaborate with the client on adapting and modifying relevant internal and environmental sensory aspects of occupation, activity, and task to enhance participation (Cole & Tufano, 2020). The OT also monitors the intensity of the sensory input to grade activity and environmental stimuli (Champagne, 2019). There may need to be adaptation of both the task and the environment to achieve an optimal arousal state for the client (Cole & Tufano, 2020).

Clinical Application: Soraya, Age 8 Years

Soraya was referred to occupational therapy by her pediatrician after a well-child check-up. While Soraya's parents had always noted her difficulty with attention at times, she had always done well in school and had several friends that she played with in their social bubble. However, since the start of the pandemic and the change in schooling models, Soraya's parents had been concerned with Soraya's frequent fights with her small group of friends, decreased independence with daily routines (e.g., needing her mom to stay in her room to help her sequence getting dressed, and reminders for each step of morning routine), and increased pickiness with eating and sitting during family meals. They also expressed concerns with Soraya's decreased interest in things she previously enjoyed, including riding her scooter and reading for pleasure.

Soraya was a third grader in a regular education classroom and had recently returned to in-person learning 5 days a week after 10 months of virtual school during the COVID-19 pandemic. During virtual school, Soraya had difficulty staying seated in her dedicated "study corner," frequently taking her computer around the house, and often missing out on important aspects of her teacher's lessons due to this constant movement. When school reopened to in-person learning, Soraya was failing math and having frequent episodes of crying and angry outbursts at school and home. She often had to go to the clinic to take off her mask and continued to miss out on learning in the classroom due to these breaks. In addition, she had difficulty interacting with her friends on the playground during recess, wanting things to be done her way and refusing to participate in the socially distanced games her friends were now playing such as running races and taking walks on the track.

Based on the initial screening call, the evaluating therapist asked Soraya's parents to complete the Sensory Processing Measure-Home form (SPM) which indicated "definite dysfunction" in the areas of social participation, touch, body awareness, balance, and motion; and "some problems" in the areas of hearing, vision, and planning and ideas. During the initial evaluation, the therapist used the Structured Observations of Sensory Integration-Motor (SOSI-M) to assess Soraya's proprioceptive and vestibular processing, motor planning, and postural control. She also completed a structured interview with Soraya and her parents to develop a client-centered treatment plan and to write goals using GAS. The results of the initial evaluation revealed potential motor planning difficulties resulting from poor tactile discrimination, poor postural control, and difficulty with vestibular processing. The interview revealed significant anxiety and decreased self-esteem resulting from Soraya's awareness of her deficits, and frustration with all the changes during the pandemic. Soraya's parents gained a better understanding of Soraya's sensory differences, the overall impact on her mental health, and an appreciation for how these difficulties were negatively impacting her daily routines and interactions in school and with peers. Together, the therapist worked with the family to develop goals that would focus on these areas through a combination of family and client training, OT using an SI approach with a focus on sensory motor activities, and social-emotional programming to support Soraya's self-efficacy during different occupations throughout her day.

Clinical Application: Jan Michael, Age 35 Years

Jan Michael was an attorney at a commercial law firm with a history of PTSD due to a childhood trauma. He had a history

of major depression and generalized anxiety and had received intermittent counseling services to help him throughout his adult life. Jan Michael lived alone but often got together with his parents, older sister, and her family. Since the start of the COVID-19 pandemic, he had been working remotely and had limited socially distanced visits with his family members due to his own asthma and his parents' health issues. He had recently started counseling again, and his therapist suggested he look for an occupational therapist to help him understand his sensory differences and how they may be impacting his mental health.

Prior to his first OT visit, Jan Michael completed the Adult Sensory Profile in which he was scored to be "much more" than others in the areas of sensory sensitivity to visual, auditory, and taste and smell input; and sensory avoiding to tactile and auditory input. During his first OT appointment (via telehealth), Jan Michael's OT also completed a semi-structured interview to learn how Jan Michael's daily routines and habits had been impacted since the start of the COVID-19 pandemic as well as to understand how he viewed his own sensory needs and differences. The OT also learned about Jan Michael's trauma background and worked with him to identify how his childhood occupations and experiences had impacted his adult occupations and possibly how his sensory needs had contributed to his difficulty with processing auditory and tactile input in certain social events such as large gatherings. Jan Michael had never explored his sensory needs and was very interested to learn how he could use his newfound understanding to support himself during events that had been difficult in the past.

After Jan Michael understood how his sensory preferences influenced his behavior, the next session focused on collaboration with the OT on the need to evaluate the sensory characteristics within his home-work environment. He expressed how being able to work as an attorney helped to alleviate his symptoms and to provide him with a sense of purpose. He had struggled with matching his new home-work space to the structured environment that he had experienced at the office. The OT met Jan Michael in his home and evaluated sensory properties such as the room lighting, seating, and computer glare, and completed an occupational analysis of Jan Michael as he worked. Once the analysis was completed, Jan Michael and the OT collaborated on the fit between his personal sensory characteristics (person), his work demands (occupation), and his home-work environment (environment). A goal was established to improve the fit between his sensory characteristics and the home-work environment to accommodate his sensory processing style. The OT and Jan Michael also developed a sensory diet that he could use daily to assist him with regulating his emotional and sensory state, which in turn would allow him to focus better on his work demands. One final topic that was addressed was the need to explore social supports for ongoing support after discharge. Jan Michael had a better understanding of his sensory preferences' influence and was willing to share that information with his family.

CONCLUSION

Occupational therapy practitioners have a comprehensive set of tools and a unique skill set to help clients with mental health and sensory processing differences. Using a client-centered approach to assessment, intervention, and target outcomes can help our clients in various settings have more meaningful engagement in occupation throughout their lives.

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Sensory Processing and Mental Health During the COVID-19 Pandemic

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Learning Level: Intermediate

Target Audience: Occupational Therapists and Occupational Therapy Assistants

Content Focus: Category 2: Occupational Therapy Process; Evaluation, Intervention, and Outcomes

1. There is evidence that an increased awareness of one's sensory patterns during daily occupation may lead to more:

- A. Participation
- B. Anxiety
- C. Sensory processing
- D. TDysregulation

2. The OT can collaborate with the client with mental health and sensory processing challenges to _____ to promote engagement in meaningful occupations.

- A. Guide and grade sensory input and/or adapt environment or occupation
- B. Diagnose the mental health condition and how it impacts sensory processing
- C. Move to a different living situation
- D. Figure out appropriate medications

3. When applying the PEO model to address the sensory needs of a client with mental health challenges, the OT begins by:

- A. Conducting a comprehensive evaluation of the client's sensory preferences through self-rating forms and occupational/activity analysis
- B. Determining environmental adaptations to match the client's sensory preferences
- C. Determining sensory activities that can be included in a sensory diet
- D. Monitoring the intensity of the sensory input of the occupation to improve the fit between the person, environment, and occupation.

4. All the following are examples of adapting the environment to facilitate a better sensory fit between the person, environment, and occupation *except*:

- A. Creating a quiet study corner with various seating options for a child with difficulties modulating auditory input and maintaining postural control for long periods of time in a standard chair.
- B. Providing OT using a sensory integrative approach 1x a week.
- C. Removing wall hangings and other clutter from an office for an adult with difficulties modulating extraneous visual input.
- D. Allowing a person to wear headphones with calming music in an environment that is too loud for them.

5. Which of the following programs was initially developed to provide treatment for sensory challenges in the mental health population?

- A. The Sensory Modulation Program
- B. The Zones of Regulation
- C. The ALERT programs
- D. TPEO

6. A. Jean Ayers developed the theory of SI to explain:

- A. The necessity of adequate processing and integration of sensory information for adaptive behavior and functional skills.
- B. The reason people cannot attend for long periods of time during certain activities.
- C. The relationship between the person, environment, and occupation
- D. The relationship between sensory processing and mental health

7. Goal Attainment Scaling is one method to evaluate:

- A. The fit between the person, environment, and occupation
- B. The level of trauma a client experienced in childhood
- C. The outcomes of intervention that capture the individualized nature of OT goals
- D. The outcomes of intervention that are based on increased strength and ROM

8. All the following are theoretical frameworks that may contribute to a comprehensive intervention plan for a client receiving OT services, *except:*

- A. Sensory Integration
- B. PEO
- C. The Zones of Regulation
- D. Trauma Informed Care

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9. In case example 1, Soraya's OT used the SOSI-M to assess:

- A. Soraya's proprioceptive and vestibular processing, motor planning, and postural control
- B. Soraya's emotional regulation strategies during times of increased stimulation
- C. Soraya's sensory preferences throughout her daily routines
- D. The sensory characteristics of Soraya's home and school environments

10. In case 2, all the following contributed to Jan Michael's routine disruption during the COVID-19 pandemic *except*:

- A. Loss of a structured work environment which helped him feel a sense of control
- B. Decreased social contact with his family
- C. A poor home-work environment fit with his sensory needs, which contributed to difficulty completing routines
- D. His dog passed away

11. The three main interdependent parts used to deliver client-centered occupational therapy are:

- A. Person, Environment, and Occupation
- B. Evaluation, Intervention, and Target Outcomes
- C. Evaluation, Goal Attainment Scaling, and Environmental Analysis
- D. Evaluation, Assessment, and Intervention

12. Under the PEO model, the use of rocking chairs as an alternative form of seating to increase movement is an example of an intervention targeting

- A. The person
- B. The environment
- C. The occupation
- D. The caregiver

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