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School of Occupational Therapy

Designing and Implementing Sensory Modulation Rooms for Inpatient Psychiatric Adolescent Units

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Under the direction of the faculty capstone advisor:

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A Capstone Project Entitled

Designing and Implementing Sensory Modulation Rooms for Inpatient Psychiatric Adolescent Units

Submitted to the School of Occupational Therapy at University of Indianapolis in partial fulfillment for the requirements of the Doctor of Occupational Therapy degree.

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Date

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Abstract

The purpose of this doctoral capstone project was to design and implement sensory modulation rooms for a male adolescent unit and a female adolescent unit within an inpatient psychiatric facility. In order to accomplish this, I collected donated sensory equipment and created a formal procedure/staff training protocol for the sensory modulation rooms to be utilized successfully and safely. Once the sensory modulation rooms were complete, the policies formalized and the staff trained/educated, the adolescent patients began to utilize the sensory equipment within the sensory modulation rooms in high distressed states. The main findings of the research project were a significant decrease in patient distress/arousal levels in high crisis states with use of the sensory modulation rooms. The findings of the research project also showed that patient perceptions of the sensory modulation rooms were mostly positive, whereas, staff perceptions were relatively mixed. Overall, the sensory modulation rooms yielded positive patient outcomes and served as a new form of holistic intervention that is rooted in occupational therapy foundations. This doctoral capstone experience (DCE) takes place at the NeuroDiagnostic Institute (NDI), an inpatient psychiatric hospital, serving adolescent patients, both male and female. NDI is a part of a statewide initiative to integrate the Trauma Informed Care Model into psychiatric care (FSSA, 2021). The Trauma Informed Care Model includes various principles, but most significant in regards to the current DCE project is the principle of inter-professional care (Raja et al., 2015). NDI is currently not employing any occupational therapists or implementing any sensory modulation interventions to adolescent patients. To help NDI achieve the mission of integrating the Trauma Informed Care Model, my DCE project is to create two sensory modulation rooms with sensorybased equipment to fulfill the principle of inter-professional care by introducing the therapeutic benefits of occupational therapy.

In the current literature on the benefits of sensory modulation interventions for mental health populations, there is a known gap in the research on using these specific interventions with adolescent populations (Bobier et al., 2015). However, research conveys that using a sensory modulation room for adolescent patients is an effective intervention in reducing arousal and reducing restraints/seclusion tactics (Bobier et al., 2015). Creating sensory modulation rooms at NDI on the adolescent units would expand the literature on these topics to increase further knowledge across the the scope of mental health care. Additionally, there is a steady decline in the presence of occupational therapy in mental health settings, although the research shows that occupational therapy interventions improve occupational performance and well-being amongst the mental health populations (Ikiugu et al., 2017). This decline in the presence of occupational therapy in mental health network of occupational therapy interventions at their facility (FSSA, 2021).

This project idea is to benefit NDI by helping the facility achieve the goal of using the Trauma Informed Care Model in practice and by providing a new form of holistic intervention for adolescent patients to improve overall patient outcomes.

Background

Currently, there is a reduction in occupational therapy practitioners within the mental health setting, although occupational therapy interventions have shown to be significantly effective in improving occupational performance and well-being for mental health populations (Ikiugu et al., 2017). More specifically, the occupational therapy practice of sensory integration has shown to be effective for mental health populations due to the sensory modulation deficits those with mental illness typically have (Bailliard, 2015). Through a phenomenological research study, Bailliard (2015) identified that people report negative mental health states following sensory experiences incongruent with their patterns and preferences of sensing and that people use sensory anchors to produce positive mental states. Furthermore, through a scoping review of the literature, Bailliard and Whigham (2017) found that adults with mental illness often have impairments in sensory processing that impact their social cognition, social participation, cognitive performance, task attention and selfregulation. Current evidence shows that not only do those diagnosed with mental illness have sensory dysfunction, but they also have different sensory patterns dependent upon their condition or diagnosis. Brown et al. (2020) used the Adolescent/Adult Sensory Profile (A/ASP) on participants with various psychiatric conditions and found that typical sensory patterns amongst those with mental illness are sensory sensitivity, low registration and sensation avoiding. Through a quasiexperimental, comparative research design, Pfeiffer et al. (2014) identified individuals with serious mental illness (SMI) who self-reported high levels of low registration and sensory sensitivity identified less occupational participation, reduced quality of life and less perceived potential for recovery. Through a literature review of the current research, the evidence shows that those diagnosed with severe mental illness have sensory deficits that impact their occupational

participation, attention, engagement and performance and could benefit from guided sensory interventions to create therapeutic change.

The current research conveys the effectiveness of using occupational therapy sensory modulation interventions to target sensory deficits for those with mental illness to improve overall occupational performance and engagement through self-regulation. Through a non-experimental, two-group research design, Knight et al. (2010) identified that using sensory-based interventions in conjunction with traditional mental health interventions is the most effective form of treatment for improving engagement and performance. The researchers also found that participants with mental illness preferred sensory-based interventions that utilized sensory equipment, such as squeezable items, rocking chairs, visual activities and music (Knight et al., 2010). Furthermore, Andersen et al. (2017) found the use of sensory modulation interventions in an inpatient psychiatric unit reduced rates of seclusion and restraint by promoting adaptive regulation of arousal and emotion compared to a control unit receiving normal mental health treatment. Similarly, Champagne and Stromberg (2004) identified the effectiveness of using sensory-based interventions in an inpatient psychiatric setting in facilitating self-organization, self-care and positive therapeutic change. The researchers also found the use of sensory-based interventions in an inpatient psychiatric setting adheres to the trauma-informed care model by addressing the individual needs of the patients and strengthening the therapeutic relationship (Champagne & Stromberg, 2004). The use of sensory-based occupational therapy interventions in an inpatient mental health setting helps to address individual patient sensory deficits and to improve occupational engagement and performance through a client-centered, innovative approach to mental health treatment.

The current evidence conveys the most effective occupational therapy sensory-based intervention used for the mental health population in an inpatient psychiatric setting is a multisensory room or a sensory modulation room. Dorn et al. (2020) evaluated the use of a sensory room within an adult mental health rehabilitation unit and through a collection of arousal data found there was a significant and consistent reduction in arousal levels for patients post sensory room experience. Similarly, Wiglesworth and Farnworth (2016) explored the use of a sensory room in a forensic mental health setting and found forensic patients experience stress-relieving benefits from the use of the sensory room and staff members perceive most forensic patients to engage with the sensory room as a way to relax and de-escalate. Barbic et al. (2019) used semi-structured interviews with mental health providers in an acute inpatient psychiatric setting to identify health provider perceptions of sensory modulation rooms. The researchers found health providers perceived sensory modulation rooms as empowering patients to self-manage their care experience and help patients down-regulate their emotions (Barbic et al., 2019). Bobier et al. (2015) identified a gap in the literature due to most of the current evidence on sensory modulation rooms in mental health settings targeting mostly adult populations. Through the exploration of a sensory modulation room in a child/adolescent psychiatric inpatient unit, the researchers found this sensory-based intervention increased patient and staff rated levels of energy, helped patients manage distress and agitation, and reduced seclusion and restraints (Bobier et al., 2015). Additionally, Seckmen at al. (2017) identified the use of a sensory modulation room on an inpatient adolescent psychiatric unit helped to increase patient and staff members' sense of safety. The current and previous evidence supports the designing and implementation of sensory modulation rooms at NDI for the adolescent units.

The occupational theory/model I chose to guide my doctoral capstone experience (DCE) is the Ecology of Human Performance (EHP). The conceptual emphasis of EHP focuses on the role of a person's context and how the features from this environment impact a person's task performance (Cole & Tufano, 2008). My main project idea for my DCE at the NeuroDiagnostic Institute (NDI) was to modify the physical environment for patients by creating sensory modulation rooms to increase patient outcomes and occupational engagement or according to EHP, task performance. Additionally, EHP focuses on a variety of environments, such as physical, social and cultural (Cole & Tufano, 2008). By creating sensory modulation rooms for adolescents patients at NDI, I'm modifying their physical environment, as well as their social environment, by providing a place to connect with other patients in a space geared toward their sensory preferences. EHP also provides five therapeutic interventions to help clients meet performance needs, including establish/restore, alter, adapt, prevent and create (Dunn et al., 1994). The use of this model guided my DCE through the therapeutic intervention lenses of adapt and create. I created sensory modulation rooms to promote more adaptable performance within their context of an inpatient psychiatric hospital and I adapted a piece of their context by providing a new environment for self-regulation to then improve task performance to meet daily demands (Dunn et al., 1994).

The frame of reference (FOR) I chose to guide my DCE is Sensory Integration (SI). To better understand adolescent patient sensory preferences/patterns at NDI, I utilized an adapted sensory diet activity checklist created through the lens of the SI FOR (Cole & Tufano, 2008). Currently, there is limited research on the use of sensory modulation interventions for adolescents with mental illness, which is a part of my clinical reasoning behind creating sensory modulation rooms at NDI for my DCE project. In creating successful sensory modulation rooms, the SI FOR guided my implementation by ensuring the adolescent patients' sensory preferences were adequately met and the sensory interventions were grounded in evidence-based research. Additionally, the use of the SI FOR helped me to identify the sensory equipment within the sensory modulation rooms and what sensory systems the equipment helps to modulate.

Both EHP and SI are frequently used together in practice because both place an emphasis on how environmental modifications can impact overall engagement and performance. With the use of this model and FOR, I was able to design and implement sensory modulation rooms that helped to reduce the gap in the literature and improve patient outcomes for adolescent patients at NDI through appropriate sensory interventions.

Project Design and Implementation

This current DCE project was to design and implement sensory modulation rooms on two psychiatric adolescent units to introduce a new form of intervention and to promote positive patient outcomes by reducing arousal/distress levels in periods of escalation and psychiatric crises. In order to complete this project successfully and accurately, the design of the sensory modulation rooms and the sensory equipment needed had to be considered. To begin the process, I created donation flyers with sensory equipment determined collaboratively by youth nursing directors to disperse around NDI, personal social media and the University of Indianapolis' Occupational Therapy department to receive donations for sensory room implementation due to limited funding from the facility (see Appendix A). Brown et al. (2020) suggests that those with psychiatric conditions have varying sensory preferences and patterns. Due to this evidence, I adapted and utilized the Sensory Diet Exploration: Activity Checklist to assess patient sensory activity preferences prior to the use of the sensory modulation rooms to guide interventions and remain client-centered (Champagne, 2011) (see Appendix B). This measure was selected for sustainability purposes, as NDI does not currently have an occupational therapy department, meaning the assessment measure selected had to be easy to administer by all professions. To measure arousal/distress levels of patients prior to and after use of the sensory modulation rooms as an outcome measure, the Subjective Units of Disturbance scale (SUDS) was adapted and utilized within each sensory room session (Kim et al., 2008). The adapted distress measure was integrated into a guest check in sheet, along with additional sensory modulation room use information to be filled out by a staff member with each patient use of the room (see Appendix C). Prior to the sensory modulation rooms being made available for use by patients, a thorough policy/procedure for the sensory rooms needed to be developed. I created two sensory room binders, one for each adolescent unit. The sensory room binders contained the guest check in measure mentioned above, each current patients' sensory activity preferences, a policy/procedure document collaboratively written by nursing, unit and medical directors, a

training/educational PowerPoint presentation and an inventory list of all the sensory equipment. As a part of the policy/procedure created collaboratively amongst youth staff, the decision was made to have sensory rooms with equipment deemed safe and sensory carts with equipment deemed unsafe. Each adolescent unit had a sensory room with an associated sensory cart where the sensory binder was stored. Additionally, youth staff had to be thoroughly trained on sensory modulation, the purpose of the sensory rooms and the safety protocol/procedure of the sensory rooms. With minimal time and limited ability to gather all necessary staff at once, I created an easy to understand, in-depth training/educational PowerPoint presentation for youth staff to review and an associated formal document for youth staff to sign and submit to their unit director/service line manager acknowledging their training was complete. Additionally, a survey was created throughout the formal implementation of the sensory modulation rooms for youth staff to submit their perceptions of the sensory rooms and make suggestions for improvements.

Project outcomes

The development and implementation of two sensory modulation rooms on the adolescent units at NDI yielded various beneficial results, including the first two formal sensory modulation rooms to be designed at NDI (see Appendix D). Prior to the youth patients accessing and utilizing the sensory modulation rooms, I assessed their sensory activity preferences to identify a foundational understanding of each patients' sensory processing patterns. This evaluation step was deemed important based on the research of Champagne (2011) in which she conveys the importance of accurate assessment of each individuals' sensory processing patterns due to patients with mental illness having escalated symptoms to varying degrees from one another. Therefore, relying on the extensive research of Champagne (2011), I adapted and utilized *the sensory diet exploration: activity checklist* to easily assess youth patient's sensory preferences/patterns through an interview (see Appendix B). This measure was also chosen for sustainability purposes in which any staff member could assess patients utilizing the measure due to the facility not having an occupational therapy department. The sensory activity measure yielded various apparent outcomes. Youth patients identified various sensory activities as being regulating to them, however, a few were commonly noted by each patient; rocking in a rocking chair, bouncing on an exercise ball, the use of a weighted blanket, the use of various fidget toys/stress balls, the use of varying scents, dim lighting, the use of an MP3 player, therapeutic heat and visual fixating on rainbow colors. Additionally, a guest check in measure was created and adapted utilizing the subjective units of disturbance scale (SUDS), which has been shown to have sound psychometric properties in measuring distress levels and used in prior, similar evidence-based research (Kim et al., 2008; West et al., 2017). The adapted guest check in measure identified the patients' initials, the staff initials/position, the time/date, the patients' distress levels prior to and after the sensory modulation room use, the sensory equipment used and additional reflections with every sensory modulation room use (see Appendix C). Within 4 weeks, the sensory modulation rooms were used on 9 different occasions by 3 different patients (2 female adolescents, 1 male adolescent). However, staff were inconsistent with completing the guest check in measure, resulting in these final results underestimating the total use of the sensory modulation rooms and the number of patients utilizing the sensory modulation rooms. Through patient interactions, it was found that at least 3 other patients utilized the sensory modulation rooms and on multiple occasions. The guest check in measure utilizing an adapted version of the subjective units of disturbance scale (SUDS), identified a reduction in distress and arousal levels for patients 80% of the time with use of the sensory modulation rooms. However, the other 20% in which distress levels increased with use of the sensory modulation rooms were determined to be occasions in which the patients verbalized no reduction in distress, but staff identified an observational reduction in patient distress levels despite this verbalization. The guest check in measure also identified that the sensory equipment used most often within the sensory modulation rooms to be essential oils, exercise/peanut balls, fidget toys, sound machine, heated stuffed animal, galaxy projector, rocking chairs, scented and non-scented bubbles, soft pillows and various tactile floor tiles. Across gender, both male and

female adolescent patients were identified to be utilizing the sensory modulation rooms an equal amount of the time. Through reflections listed on the guest check in measure, as well as verbalizations through patient interactions, positive patient perceptions of the sensory modulation rooms were identified. After one occasion utilizing the sensory modulation room, patient A stated "I like the room! I almost feel too calm." Upon discussion with patient B, they shared "I love having this option because it really helps calm me" after use of the sensory modulation room. Through a created survey and various staff interactions, mixed staff perceptions of the sensory modulation rooms were identified as well. Upon discussion with a special attendant (SA), they shared "the sensory rooms have become an important part of the patients' days." However, a psychiatrist on one of the units also shared "the sensory rooms are being slightly underutilized due to some staff not wanting to learn how to integrate this new intervention into the daily routine." Overall, both sensory modulation rooms have shown positive outcomes to some varying degree and continue to be used daily to improve individual patient outcomes.

Summary

The aim and associated positive project outcomes of this doctoral capstone research aligned consistently with previous and current evidence-based research. The current research stresses the importance of occupational therapy on the interdisciplinary team in mental health settings to improve patient outcomes overall through various interventions, such as sensory modulation rooms (Ikiugu et al., 2017). Additionally, Bobier et al. (2015) identified the use of sensory modulation rooms with adolescent patients in psychiatric settings to have a positive impact on reducing arousal levels and reducing need for restraints/seclusion. The introduction of sensory modulation rooms to the youth units at NDI facilitated similar outcomes in which patients were shown to have a reduction in distress/arousal levels following use of the sensory modulation rooms. However, NDI youth staff perceptions of the sensory modulation rooms were found to be slightly different than previous and current research. Barbic et al. (2019) found staff perceptions of sensory modulation rooms to be

overwhelmingly positive, however, most of the previous research on sensory modulation rooms include an occupational therapy department to oversee the process and outcomes. This doctoral capstone project was conducted in a facility in which an occupational therapy department was absent, which resulted in the introduction and use of the sensory modulation rooms being a new form of intervention and experience for the facility. This could very well be the reason staff perceptions of the sensory modulation rooms in this doctoral capstone research were mixed compared to mostly positive perceptions in previous research. Additionally, there is a well-known gap in the current research on the benefits of sensory modulation rooms for specifically adolescent and youth patients (Bobier et al., 2015). The positive outcomes of this research help to bridge that literature gap and to increase knowledge throughout the mental health care community on the benefits of sensory modulation rooms for not just adults, but adolescents as well.

Conclusion

Throughout the 14-week long doctoral capstone experience, two sensory modulation rooms were designed and implemented within a male adolescent psychiatric unit and a female adolescent psychiatric unit. Through this project implementation, NDI as a facility gained a new form of holistic, client-centered intervention for their adolescent populations. Though due to unfamiliarity with occupational therapy and sensory modulation room interventions, the sensory modulation rooms were slightly underutilized. The findings of the sensory modulation rooms showed significant benefits in reducing patient distress/arousal levels in escalated states, yielding positive outcomes overall. In order for the sensory modulation rooms to be sustainable at the facility, I recommended the employment of at least one occupational therapist. The creation of an occupational therapy department has been proven to be a necessity at this facility based on the positive outcomes of this doctoral capstone project and the increasing demand of high quality care needed for positive patient outcomes in this setting. For future implications, continued research on the benefits of sensory

modulation rooms for adolescent psychiatric patients is necessary for this form of intervention to become a well-established norm within psychiatric hospitals.

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Appendix A

Sensory Equipment Donation Flyer



Appendix B

Sensory Diet Exploration Activity Checklist

Go Vision/Looking Sensory Diet Exploration: Activity Checklist The following is a checklist of things people may use or do in order to help decrease &/or o Ocean waves o Flowers o Sunset or sunrise to prevent distress. Each of these activities employs most of the sensory areas. They are Looking through o Reading o Snow falling categorized to help you identify some of the specific sensorimotor qualities you may o Animal watching picture books o Rain showers want to focus on. Looking through o Rainbow colors o Fish in a tank o Autumn leaves different colored o Slowly flashing Movement (proprioceptive &vestibular) sunglasses lights o Art work • A bubble lamp Cloud formations o Stars in the sky o Running or o Rocking yourself o Hula hooping Building things o Shaking out jogging o Walking/ hiking Olfactory/Smelling feet/hands o Yoga Dancing 0 • Gardening o Jumping on a o Scented candles o Flowers o Citrus fruits o Stretching o Bouncing on a ball trampoline o Essential oils o Mint leaves o Lifting weights o Smell of freshly o Cologne/perfume cleaned laundry o Coffee o Baking/cooking o Scented lotions o Herbal tea "Different Types of Touch & Temperature (tactile) o Freshly cut grass o Weighted blanket o Hot/cold shower o The feel of certain o Holding/chewing Hand washing fabrics • Gustatory/Tasting/Chewing ice Using a stress ball o Using lotions o Soaking in a hot Fidgeting with o Warm/cold cloth to • Chewing gum o Drinking coffee/ o Red hot candies bath something the head/face o Crunchy foods hot chocolate o Chewing on a o Using arts/craft Twirling your own o Petting/holding an o Sour foods o Drinking herbal straw supplies hair o Chewing ice animal tea o Yawning o Potterv Going barefoot o Mints o Deep breathing Blowing bubbles Auditory/Listening What kind of music is calming to you? o Enjoying the o Whistling • A cat purring quiet Ocean • Use of a MP3 player Do you prefer bright or dim lighting when feeling distressed? The sound of sounds Listening to musical water fountain o Rain instruments What are some of the most calming activities for you that we discussed today? The sound of a

- fan
- People talking
- White noise

- o Birds chirping Ticking of a

- clock
- Wind chimes
- Singing o Humming Relaxation/meditation
- music

Adapted from Wilbarger, 1995 and Williams & Shellenberger 1996; Champagne, 2004

Appendix C

Guest Check in Measure

Subjective Units of Distress: The Stress Thermometer

Name: ______

Date, Time: _____

Before Sensory Room:



After Sensory Room:



What sensory equipment was used:

Reflections:

DESIGNING AND IMPLEMENTING SENSORY MODULATION ROOMS

Appendix D

Sensory Modulation Rooms on Youth Units



Appendix E

DCE Timeline

Week	DCE Stage (orientation, screening/evaluation, implementation, discontinuation, dissemination)	Weekly Goal	Objectives	Tasks
1	Orientation	1) Complete orientation to facility	Meet with site mentor/ other faculty/ patients to establish my project and what I will be doing for 14 weeks while I am here Orient self to the facility	Fill out orientation paperwork Complete a building tour Bridge Building (defense and de- escalation techniques)
2-3	Screening/evaluation	1) Build therapeutic rapport with adolescent patients	Attend groups (on unit and off unit) Meet with youth faculty pertaining to the sensory room	Faculty meetings Familiarize self with the space available for the sensory rooms Attend groups
4-5	Screening evaluation	 Establish sensory rooms Assessing patient sensory preferences 	Meeting with youth nursing Create sensory equipment donation flyer Create sensory room materials	
6-9	Implementation	1) Collect sensory room donated equipment/set up rooms	Organize donated equipment amongst two rooms Begin setting up rooms Finalize sensory room materials Create policy/procedure document	
10	Implementation	1) Finalize sensory rooms to be opened	Create education/training powerpoint Organizing sensory room equipment for rooms and sensory carts	
			Finalizing sensory room materials Add materials to shared folder in shared drive Patient groups to go over rules/equipment in sensory rooms	
11	Implementation	 Staff training Open sensory rooms/collect data 	Collect signed document stating staff viewed the training powerpoint Sensory room "open houses" for staff Open sensory rooms Collect data via sensory room binders	
12-13	Implementation/discontinuation	 Collect data via sensory rooms Prepare for discontinuation 	Fix issues within sensory rooms Prepare future roles of sensory rooms for sustainability Create interventions for use in sensory rooms Record educational/training presentation for new employee orientation	
14	Dissemination	 Disseminate project Prepare for leaving 	Give dissemination presentation to relevant parties Ensure rooms are sustainable Meetings with staff on youth units Goodbyes with patients/staff	