5-4-2024

Play, Splash, Ride: A Multidimensional Approach to Occupational Therapy Intervention for Sensory Processing Difficulties

Britney A. Bradwisch
University of South Dakota, britney.bradwisch@coyotes.usd.edu

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UNIVERSITY OF SOUTH DAKOTA
SCHOOL OF HEALTH SCIENCES

Britney Bradwisch, OTS
Faculty Advisor: Mackenzie Feldhacker, OTD, OTR/L, CLT-LANA
Site Mentor: Cassie Bastian, OTD, OTR/L

BACKGROUND & PURPOSE

- **Sensory processing disorders:** "patterns of behavior that are associated with sensory processing differences and difficulty modulating sensory input, discriminating distinct types of sensory input, and sensory-based motor disorders" (AOTA, 2023).
  - Between 5 and 16.5 percent of the population has atypical sensory reactivity patterns (AOTA, 2015).
  - SPD affects up to 90% of clients with a disability including ASD, ADHD, and learning disabilities (Hoffman et al., 2022).
- Occupational therapists are equipped to treat sensory processing difficulties using occupation-based and sensory-based approaches, environmental modifications, and compensatory techniques.
- **Aquatic therapy** can be used as a tool for occupational therapy intervention.
  - Aquatic therapy provides a sensory-rich environment through vestibular, proprioceptive, tactile, visual, and olfactory input (Kumar et al., 2014).
  - However, there is a lack of evidence for the use of aquatic therapy for a wide population of children with sensory processing disorders.
- **Equine assisted therapy** can also be used as a tool for occupational therapy intervention.
  - Equine assisted therapy can provide vestibular, proprioceptive, tactile, visual, and auditory input (Koca & Ataseven, 2015; Roux, 2020).
  - However, there is limited evidence on how the specific sensory components of equine assisted therapy can be used to treat children with sensory processing difficulties.

Purpose statement: The purpose of the capstone project was to explore the effectiveness of multiple occupational therapy interventions for children with sensory processing difficulties.

REFERENCES

METHODS & ACTIVITIES

Procedures & Activities

- **Goal 1 – Gain in-depth clinical experience in interventions for children with sensory processing difficulties.**
  - Deliverables: pre-test summary of the Sensory Profile-2 (SP-2), post-test summary of the SP-2, outcomes report of the SP-2, equine assisted therapy continuing education, aquatic therapy continuing education, educational case series, competency checklist in equine assisted therapy, competency checklist in aquatic therapy, and intervention toolkit.
- **Goal 2 – Educate clients, families, and staff on the use and benefits of sensory integration techniques related to sensory processing difficulties.**
  - Deliverables: client education handouts, staff education handouts, OTA lunch and learn presentation, and educational website.
- **Goal 3 – Develop a program to teach parents sensory integration strategies to use in the aquatic environment and in their everyday lives.**
  - Deliverables: needs assessment with SWOT analysis with interview and survey guides, resource development, pilot session plans, parent satisfaction survey, program manual, and program evaluation.

Participants

- Participants included were pediatric clients ranging from ages 2 to 18 years old with sensory processing difficulties and their parents/caregivers.
- In-depth clinical practice was completed with 50-60% of the case load (12 clients).
- 20 participants filled out the Sensory Profile at pre-test and post-test.
- 3 COTA's and 1 OTD participated in staff interviews and the presentation.

Assessment Instruments

- *Sensory Profile-2:* Used to determine the children's sensory processing difficulties at pre-test and post-test.
- *Staff Interviews*: Conducted to determine the need for a parent/caregiver aquatic therapy program.
- *Parent/Caregiver Surveys:* Used to determine education and training needs related to sensory-based techniques and to determine the need for increased education.

THEORETICAL FOUNDATIONS

Sensory Integration (SI) & Sensory Processing (SP) (Ayres, 1974; Dunn, 2001)

- SI believes that children have an inner drive to seek out sensation through experiences. Deficits can be remediated by reorganizing the brain through integration of sensory input (Ayres, 1974).
  - Occupational therapy can focus on exposure to a variety of sensory input using different environments (sensory gym, aquatic, & equine).
  - These provide sensory experiences to help integrate proprioceptive, vestibular, tactile, visual, olfactory, oral, and auditory input and increase participation.
- SP believes children have a specific sensory threshold they aim to meet to participate which can be sensory-seeking, sensory-avoiding, sensory sensitivity, and low registration (Dunn, 2001).
  - These labels were used to categorize participants based on their sensory preferences and develop interventions.
  - This framework also guided the use of the Sensory Profile-2 as an outcome tool.

The Ecology of Human Performance Model (EHP) (Dunn et al., 1994)

- EHP believes that contexts affect participation and the range of tasks one can perform and guides intervention to maximize occupational performance (Dunn et al., 1994).
  - EHP helped guide the use of different intervention contexts to increase participation among children with sensory processing difficulties.
  - It also guided intervention within these environments by altering, creating, and adapting the context to include a more comprehensive and sensory-based approach.

DISCUSSION

- Use of multiple intervention tools and environments can create a more comprehensive approach to occupational therapy intervention.
- The Sensory Profile-2 can give a good explanation on client's sensory preferences and help with intervention planning.
- The physical and sensory properties of water and the unique movement provided by equine assisted therapy can provide a sensory-rich environment.
  - The findings demonstrate a need for further research on how they can be used to specifically treat sensory processing difficulties.
- Parent/caregiver education and training is crucial for home programming and to support the client's outcomes.
  - Further research is needed on how parent/caregiver involvement can impact occupational therapy practice for sensory processing.
- The needs for increased exploration with intervention tools and increased parent/caregiver education and training were addressed and met through the completion of the project.
- The capstone student:
  - Developed knowledge and skills in advanced clinical practice in the lens of sensory processing and sensory integration.
  - Gained clinical skills in using aquatic therapy and equine assisted therapy as intervention tools.
  - Increased skills and knowledge in providing educational materials and teaching parents/caregivers using client-friendly language.
  - Gained skills in interprofessional practice and leadership through working and communicating with other disciplines.

IMPLICATIONS

- Sensory processing difficulties impact client's ability to participate in occupations and therefore, it is part of occupational therapy's scope to treat the client's deficits so the clients can better participate.
- Occupational therapists should consider trying a different intervention environment or use a comprehensive approach to sensory interventions to create the best outcomes for the clients.
- Aquatic therapy and equine assisted therapy should be considered by occupational therapists as a tool for specifically targeting sensory processing difficulties.
- Occupational therapists should utilize the Sensory Profile-2 or other outcome tools that measure their clients sensory processing to better understand their preferences and complete intervention planning.
  - The SP-2 should be used to track any changes rather than determine progress as it does not indicate strengths or weaknesses (Dunn, 2014).
- Occupational therapists play a critical role with this population, and they should not only focus on their intervention methods but also their ability to be an educator and a teacher.

RESULTS

Advanced Clinical Practice

- Caseload: 50-60% (12 clients)
- Continuing education: 2 aquatic therapy and 1 equine assisted therapy
- Educational case series: 3 clients with sensory processing difficulties including an in-depth look at client profiles, their SP-2s, interventions, and parent reports/observations
- Competency checklists: creation and completion of equine checklist and aquatic checklist
- Intervention planning: intervention toolkit with emphasis on sensory

Sensory Profile-2

- Administration at pre-test to 20 clients and 19 clients at post-test
- Resulted in changes of the participant's scores from pre-test to post-test seen in Figure 1, 2, and 3.

Figure 1.

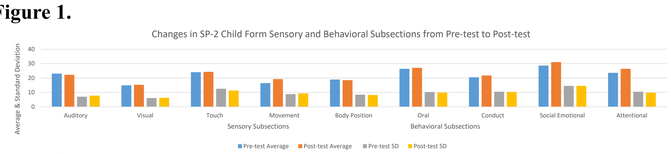


Figure 2.

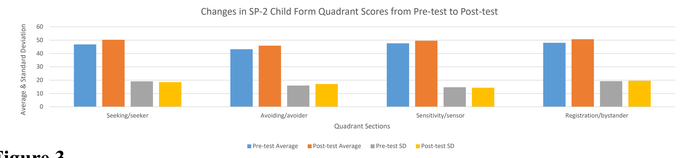
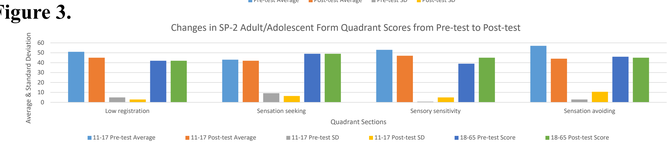


Figure 3.



Education

- Client education handouts: creation and marketing of 1 informative handout and 7 sensory diets
- Staff education handouts: creation and marketing of 7 sensory diets and distribution of 2 sensory handouts throughout the clinic
- OTA lunch and learn presentation: completion of 15-minute presentation and a 15-minute hands-on component
- Educational website: creation of 7 informative pages and 1 resource page. Distribution and marketing throughout the clinic.

Program Development

- Resource development: creation and marketing of 1 informative handout and 3 sensory diets. Creation and marketing of 3 staff handouts distributed in aquatic environment.
- Program manual: development of a 6-week parent/caregiver aquatic program with session plans and handouts.
- Program evaluation: development of 7 program evaluation outcome methods.

Needs Assessment

- Staff interview: interview guide completed with 100% (N=4) of the staff indicating need for increased parents/caregiver involvement and aquatic program
- Parent/caregiver interest/knowledge survey: completed with 11 parents/caregivers. 73% (N=8) reported yes to using sensory techniques at home. Parents rated their knowledge on sensory techniques on scale of 1 (lowest) to 5 (highest) (M=3.45;SD=0.69). Rated interest in completing program with same scale (M=4.36;SD=0.81).

Pilot Sessions

- Parent/caregiver satisfaction survey: completed with 100 % (N=2) of participants.
  - 100% (N=2) answered yes on increased knowledge questions.
  - Parents rated education and training 1 (lowest) to 5 (highest) (M=4.5;SD=0.71).
  - Rated future participation on same scale (M=4.5;SD=0.71).