

Interdisciplinary Staff Perceptions and Utilization of a Snoezelen Multisensory Environment in a Special Education Setting: A Cross-Sectional Study

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ABSTRACT:

Background:

Multisensory environments such as Snoezelen Complex Centers are designed to provide controlled sensory input and are widely used to support individuals with developmental needs. Their effectiveness may depend on interdisciplinary implementation and staff perceptions. In the educational settings, consideration must be taken to not only provide access to the Multisensory environments but also provide supports to fully take advantage of the capabilities that Multisensory environments offer to special students.

Objectives: To evaluate the educational staff's perceptions, utilization, and barriers to use of the Multisensory environment, Snoezelen Complex center.

Methods: Sixty-seven interdisciplinary staff in a special education setting with an established Snoezelen Complex center completed a 20-item Likert-scale questionnaire to assess perceptions, utilization, and barriers.

Key Results: Overall, staff reported favorable experiences with the Snoezelen Complex, with mean ratings across items generally in the agree-to-strongly-agree range. Differences in perceived experience were observed across roles, with classroom-based and direct-care staff (e.g., paraprofessionals, teachers) reporting higher ratings compared with some other roles. The main barriers to Snoezelen utilization reported was infrastructure to maintain the equipment.

Conclusion: Multisensory environments, such as Snoezelen Complex centers are positively received by educational professionals. The center supports special education students in their sensory regulation and teachers in supporting their students. However, infrastructure is needed within educational settings to support the maintenance and use of the Snoezelen Complex center.

Keywords: Snoezelen, multisensory environment, special education, interdisciplinary, implementation

1. Introduction

Multisensory environments (MSEs), commonly referred to as Snoezelen® complexes, are purposefully designed spaces that provide controlled sensory stimulation through visual, auditory, tactile, olfactory, and proprioceptive modalities. Snoezelen® complexes originated in the Netherlands in the 1970s. Initially, they were developed to promote relaxation and engagement among individuals with profound intellectual and developmental disabilities (IDD) (Hogg et al., 2001). Over the past several decades, their application has expanded into educational, clinical, and rehabilitative settings, including special education schools, where they are increasingly used to support students with autism spectrum disorder (ASD), sensory processing differences, and complex behavioral needs (Fava & Strauss, 2010; Lotan & Gold, 2009).

Within special education contexts, Snoezelen complexes are often implemented to enhance self-regulation, reduce maladaptive behaviors, and facilitate engagement in learning and therapeutic activities. Sensory-based interventions align with broader neurodevelopmental and behavioral frameworks, including principles of arousal modulation and reinforcement, suggesting that individualized sensory input can function as both antecedent supports and reinforcing consequences (Ayres, 1972; Champagne & Stromberg, 2004). Emerging evidence indicates that MSE use may be associated with reductions in agitation, anxiety, and stereotypy, as well as improvements in attention, mood, and social interaction (Fava & Strauss, 2010; Kaplan et al., 2006). However, findings across studies remain mixed, and methodological variability, including small sample sizes, lack of control conditions, and inconsistent outcome measures, limits the strength of causal conclusions (Lotan & Gold, 2009). Additionally, relatively few studies have systematically evaluated interdisciplinary staff perceptions, utilization, and barriers to utilization of Snoezelen environments within school-based settings. Existing research has largely focused on clinical outcomes or caregiver perspectives, with limited attention to the viewpoints of frontline

educational and therapeutic staff who are responsible for day-to-day implementation (Carter & Stephenson, 2012; Fava & Strauss, 2010). Understanding these perceptions is essential for informing training models, optimizing utilization, and ensuring that Snoezelen environments are integrated effectively within individualized education and behavior support plans.

The present study aims to evaluate interdisciplinary staff perceptions of a Snoezelen complex within a special education setting and to examine whether these perceptions differ across professional roles. Additionally, this study evaluated the educational staff's utilization and barriers to utilizing the Snoezelen Complex. By identifying potential differences in perceptions among staff positions, this study seeks to inform more targeted implementation strategies, enhance interdisciplinary alignment, and ultimately improve the effectiveness and sustainability of multisensory interventions for students with complex needs.

2. Methodology

Design

A cross-sectional, survey-based study design was used to evaluate interdisciplinary staff perceptions of the Snoezelen Complex within a special education setting. The study employed a 20-item electronic questionnaire to assess perceived utility, frequency of use, barriers to implementation, and an optional open response. This design is consistent with observational approaches commonly used to evaluate staff perceptions and implementation characteristics of clinical and educational interventions (Creswell & Creswell, 2018).

Participants/Sample

Participants were interdisciplinary educational staff employed within a special education program serving students with complex developmental and behavioral needs. Eligible participants included teachers, paraprofessionals, behavior technicians, therapists (e.g., occupational, speech), registered nurses, and other direct-care or instructional personnel who

had access to or experience with the Snoezelen Complex.

A convenience sampling approach was used, whereby all eligible staff members were invited to participate via institutional email distribution lists. Participation was voluntary, and no incentives were provided. Inclusion criteria required that participants be (a) currently employed in the program and (b) have at least minimal exposure to the Snoezelen Complex. No exclusion criteria were applied beyond non-employment in the setting.

Instruments

A 20-item electronic questionnaire was developed to assess interdisciplinary staff perceptions of the Snoezelen Complex. The instrument was designed to capture three primary domains: perceived effectiveness (e.g., impact on student behavior, engagement, and self-regulation), utilization patterns (e.g., frequency and appropriateness of use), and barriers to implementation (e.g., time constraints, access, training, and confidence in use). Item development was informed by a review of the multisensory environment literature and consultation with subject matter experts in applied behavior analysis, special education, and sensory-based interventions, ensuring content relevance and ecological validity within a school-based setting.

All items were rated using a 5-point Likert-type scale, where 1 indicated strongly disagree, 2 indicated disagree, 3 indicated neutral, 4 indicated agree, and 5 indicated strongly agree. Participants were instructed to rate the extent to which each statement reflected their experiences with the Snoezelen Complex. Higher scores reflected more favorable perceptions of the Snoezelen Complex and fewer perceived barriers, depending on item directionality. Negatively worded items were reverse-coded prior to analysis to ensure that higher scores consistently represented more positive perceptions across all items.

Procedure

The questionnaire was administered electronically using a secure online survey platform. The survey link was distributed via email to eligible staff, accompanied by an informational statement outlining the purpose of the study, voluntary nature of participation, Institutional Review Board approval, and confidentiality assurances.

Data collection occurred over a predefined 1-week period with one to two reminder emails sent to maximize response rates. All responses were stored in a secure, password-protected database accessible only to the research team.

Data Analysis

The primary outcome variable was the overall perception score, calculated as the mean of all 20 questionnaire items, treated as a continuous variable. This composite score was intended to reflect participants' overall perceptions of the Snoezelen Complex, with higher scores indicating more favorable views and fewer perceived barriers following reverse coding of negatively worded items. Secondary measures included domain-specific subscale scores representing perceived effectiveness, utilization patterns, and barriers to use, each computed as the mean of their respective items. Professional role (e.g., teacher, paraprofessional, therapist, registered nurse, behavior technician) was included as a categorical independent variable to examine differences in perceptions across disciplines. Additionally, self-reported frequency of Snoezelen Complex use was included as an ordinal variable, when available, to contextualize perception scores and explore patterns of utilization across roles.

The researchers completed qualitative thematic coding for the open response question. The responses were categorized into like themes and assigned a code. Two coders agreed on the coding system, resulting in 100% agreement.

3. Results

A total of 67 participants completed the survey assessing experiences with the Snoezelen Complex. Respondents represented a range of interdisciplinary roles, including Behavior

Technicians, Job Facilitators, Paraprofessionals, Registered Nurses, Teachers, and Therapists. Across all roles, respondents reported consistently positive experiences with the Snoezelen Complex. Overall mean scores (averaged across all survey items per respondent) fell within the “Agree” to “Strongly Agree” range (Likert scale: 1–5). Overall, variability within roles was low to moderate, suggesting relatively consistent perceptions within professional groups.

A chi-square test of independence revealed no significant association between staff role and frequency of Snoezelen Center use ($\chi^2(15) = 6.60$, $p = .968$). This indicates that patterns of use were statistically similar across roles, with no role demonstrating a meaningfully different utilization distribution. However, interpretation is limited by small and uneven group sizes, with several roles represented by a single respondent, reducing statistical power and increasing the likelihood of Type II error.

Highest-Rated Domains

Overall, respondents reported highly favorable perceptions of the Snoezelen complex, with mean scores ranging from 3.99 to 4.70, indicating strong agreement across most domains. The highest-rated item was the importance of attending to students’ nonverbal cues ($M = 4.70$, $SD = 0.63$), reflecting a strong emphasis on behavioral observation and responsiveness. Closely related items included beliefs about the role of staff emotional regulation in influencing student outcomes ($M = 4.66$, $SD = 0.62$) and the value of the Snoezelen complex in balancing academic and emotional needs ($M = 4.64$, $SD = 0.69$).

Respondents also reported high levels of perceived administrative support ($M = 4.61$, SD

$= 0.78$), accessibility of the complex ($M = 4.57$, $SD = 0.72$), and confidence in supervising students within the environment ($M = 4.57$, $SD = 0.72$). Items related to staff behavior, such as maintaining calm, predictable energy ($M = 4.57$, $SD = 0.70$) and being mindful of communication style ($M = 4.55$, $SD = 0.70$), were also rated highly.

Environmental and Instructional Utility

Participants endorsed the Snoezelen environment as supportive without being overstimulating ($M = 4.55$, $SD = 0.72$) and as facilitating improved student–staff connection ($M = 4.51$, $SD = 0.75$). Additionally, respondents indicated that use of the complex contributed positively to classroom management ($M = 4.51$, $SD = 0.79$) and aligned with student learning objectives ($M = 4.30$, $SD = 0.85$). Knowledge and procedural clarity were also rated favorably, including understanding how to use equipment effectively ($M = 4.51$, $SD = 0.70$) and clarity of protocols ($M = 4.52$, $SD = 0.70$).

Operational and Logistical Considerations

Moderately high ratings were observed for scheduling and coordination, including the ability to find time for use ($M = 4.49$, $SD = 0.82$), smooth coordination with staff ($M = 4.40$, $SD = 0.85$), and availability of the complex at optimal times ($M = 4.40$, $SD = 0.84$). Transitioning students to the complex was also rated positively ($M = 4.40$, $SD = 0.79$).

The lowest-rated item, though still near agreement, was related to maintenance and equipment functionality ($M = 3.99$, $SD = 1.12$), suggesting greater variability in perceptions of the physical condition of the environment. Table 1 summarizes these results.

Table 1. Mean (SD) ratings of staff perceptions of the Snoezelen complex (N=67).

Item	Mean (SD)
Nonverbal cues importance	4.7(0.63)
Staff emotional regulation	4.66(0.62)
Balances academic/emotional needs	4.64(0.69)
Administrative support	4.61(0.78)

Accessibility	4.57(0.72)
Confidence supervising	4.57(0.72)
Calm predictable energy	4.57(0.7)
Avoids overstimulation	4.55(0.72)
Communication mindfulness	4.55(0.7)
Clear protocols	4.52(0.7)
Knowledge of equipment	4.51(0.7)
Improves connection	4.51(0.75)
Improves classroom management	4.51(0.79)
Time availability	4.49(0.82)
Aligns with student needs	4.42(0.84)
Scheduling coordination	4.4(0.85)
Student transitions	4.4(0.79)
Availability timing	4.4(0.84)
Learning objectives alignment	4.3(0.85)
Maintenance	3.99(1.12)

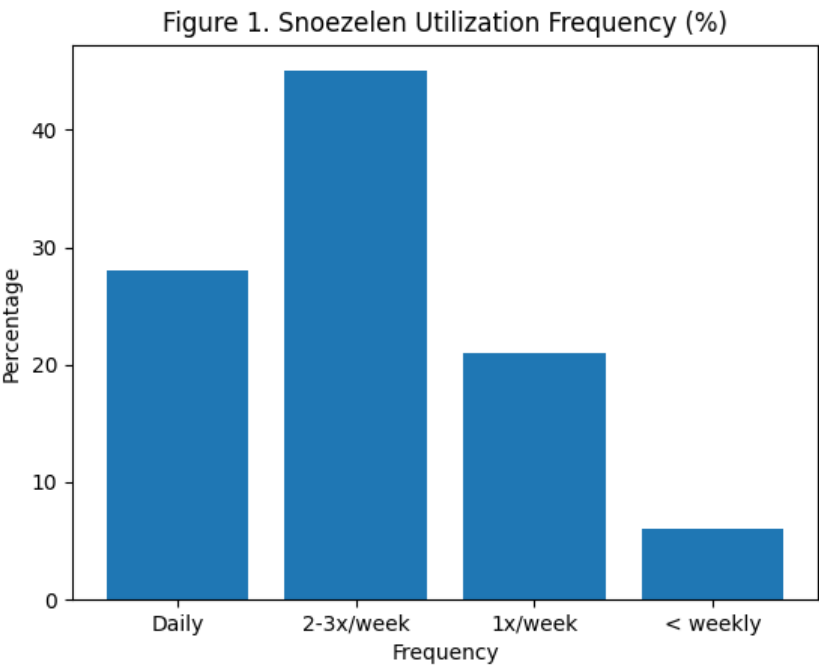
Overall utilization was high, with the majority of respondents indicating frequent engagement. Across all positions, 28% (n = 19) reported daily use, 45% (n = 30) reported use 2–3 times per week, and 21% (n = 14) reported use once per week. In contrast, infrequent use was minimal, with only 3% (n = 2) reporting use twice per month, 1% (n = 1) rarely using the space, and 1% (n = 1) reporting never using the Snoezelen Complex.

This finding suggests that, despite observable descriptive differences, utilization patterns were statistically similar across roles. Table 2 summarizes the utilization data across the reported job categories. Figure 2 presents the overall usage frequency for all position categories combined.

Table 2. Snoezelen Center Usage Frequency Across Job Category

Job Category	Daily	1186-1195 Times a Week	Once a Week	Twice Month ^a	Monthly	Rarely	Never
Behavior Technician	2(50%)	2(50%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Job Facilitator	0(0%)	1(100%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Paraprofessional	10(25%)	17(42.5%)	10(25%)	2(5%)	0(0%)	1(2.5%)	0(0%)
Registered Nurse	0(0%)	1(100%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Teacher	7(35%)	8(40%)	4(20%)	0(0%)	0(0%)	0(0%)	1(5%)
Therapist	0(0%)	1(100%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
All Positions	19 (28%)	30(45%)	14(21%)	2(3%)	0(0%)	1(1%)	1(1%)

Figure 1. Overall Snoezelen Utilization Frequency



Qualitative Coding Results

There were fifteen unique responses coded into thematic codes with 100% agreement across two coders. Three responses were split across two codes for a total of eighteen coded responses. Eight codes emerged from the qualitative data. Three of the thematic codes were positive attributes of the Snoezelen Center, while four of the thematic codes referred to barriers present in utilizing the complex. The most frequent responses aligned with the code of “love the Snoezelen complex” with 4 responses centering around this theme. Additionally, the code of “fulfills sensory needs” was present in four responses. The last positive theme that emerged with two responses was that the Snoezelen Complex supports professionals when used. Ten

of the 18 (55.56%) responses were categorized as positive attributes responses.

Barrier-related responses comprised 8 of the 18 coded segments (44.44%). The most frequently presenting theme was that broken items were present in the Snoezelen complex with three responses. Transportation barriers were present for two respondents. While scheduling, appropriate student interaction with items, and paraprofessional buy in was reported by one survey respondent each. Table 3 summarizes the thematic codes which emerged from the qualitative responses. Overall, findings indicate a predominance of positive perceptions alongside notable operational and logistical barriers that may influence consistent utilization.

Table 3. Positive attributes and barriers from qualitative responses.

Thematic Codes	
Positive Attributes	
Love Complex	4
Fulfills sensory needs	4

Supports Professionals	2
Barriers	
Broken Items	3
Transportation	2
Scheduling	1
Appropriate Student Interaction with Items	1
Paraprofessional Buy In	1

4. Discussion

This study evaluated interdisciplinary differences in Snoezelen Complex utilization within a special education setting and found that overall use was high across roles, with approximately 73% of staff reporting use at least 2–3 times per week. This level of engagement is consistent with prior literature suggesting that multisensory environments are perceived as practical and beneficial tools for supporting individuals with developmental and behavioral needs (Fava & Strauss, 2010; Lotan & Gold, 2009). High utilization may reflect the integration of sensory-based strategies into daily programming to support self-regulation, attention, and behavioral stability.

Descriptive findings indicated that paraprofessionals and teachers accounted for the majority of Snoezelen Complex use. This pattern is consistent with their roles as primary implementers of educational and behavioral interventions, often spending the greatest amount of direct time with students. Prior research has emphasized that intervention uptake and sustainability are strongly influenced by frontline staff who deliver supports in naturalistic settings (Carter & Stephenson, 2012). Behavior Technicians also demonstrated high-frequency use, which may reflect alignment between Snoezelen-based sensory modulation strategies and behavior analytic frameworks, particularly in the use of antecedent interventions and reinforcement-based approaches to behavior management.

Differences in professional training and theoretical orientation may also influence how multisensory environments are conceptualized and utilized across disciplines (Champagne & Stromberg, 2004). Importantly, the high frequency of use across roles supports existing evidence that multisensory environments can be feasibly incorporated into routine practice and are perceived as beneficial by staff. Previous studies have demonstrated that Snoezelen environments are associated with reductions in agitation and maladaptive behavior, as well as improvements in engagement and mood among individuals with developmental disabilities (Fava & Strauss, 2010; Kaplan et al., 2006). While the present study did not directly measure student outcomes, the high level of staff engagement may serve as a proxy indicator of perceived effectiveness.

The high ratings related to sensory fulfillment and avoidance of overstimulation further support existing literature on multisensory environments. Snoezelen-based interventions have been shown to promote relaxation, reduce maladaptive behavior, and improve engagement when sensory input is individualized and controlled (Fava & Strauss, 2010; Lotan & Gold, 2009). The current findings extend this literature by demonstrating that practitioners perceive these benefits in real-world educational contexts, particularly in balancing academic and emotional needs.

Despite these strengths, the findings also highlight important operational challenges. The relatively lower rating for equipment maintenance, coupled with higher variability ($SD = 1.12$), suggests inconsistency in the condition

or availability of resources. This finding is consistent with implementation science literature, which identifies infrastructure reliability as a critical determinant of sustained intervention use (Fixsen et al., 2005). Similarly, moderate ratings for scheduling and coordination indicate that logistical barriers may limit optimal utilization, even when perceived value is high.

The present qualitative findings provide important contextual insight into the implementation and utilization of Snoezelen (multisensory) environments within applied educational and therapeutic settings. Overall, responses were predominantly positive, with over half of coded segments reflecting favorable perceptions. This aligns with prior literature suggesting that Snoezelen environments can enhance sensory regulation, engagement, and emotional well-being among individuals with diverse needs, including those with developmental and sensory processing disorders (Hogg et al., 2001; Lotan & Gold, 2009).

The most salient positive themes, affective endorsement (“love the Snoezelen complex”) and perceived fulfillment of sensory needs, underscore the clinical and practical value of multisensory environments. These findings are consistent with evidence demonstrating that controlled sensory stimulation can reduce maladaptive behaviors and improve adaptive functioning (Chan et al., 2005; Fava & Strauss, 2010). From a behavior analytic perspective, the Snoezelen environment may function as an antecedent-based intervention, modifying motivating operations and establishing conditions that promote appropriate engagement and reduce problem behavior. In addition to behavior analysis, these students in this educational environment are often served by multiple supportive services, such as occupational, physical and speech therapy. Therefore, the researchers propose additional practices and research that incorporate all supportive services for the students using the Snoezelen complex.

Importantly, respondents also noted that the Snoezelen complex supports professionals in

practice. This aligns with organizational behavior management (OBM) principles, suggesting that well-designed environments can enhance staff performance and intervention fidelity by providing structured, reinforcing contexts for service delivery (Daniels & Bailey, 2014). Such findings are particularly relevant in interdisciplinary settings where occupational therapy and applied behavior analysis intersect.

Taken together, these findings suggest that while Snoezelen environments are perceived as highly beneficial, their effectiveness is contingent upon operational supports, including equipment maintenance, staff training, and logistical planning. From a human performance technology (HPT) perspective, these barriers represent performance system gaps that can be addressed through systematic analysis and intervention, including process redesign, training, and environmental supports.

Implications for Practice

These findings highlight the importance of supporting frontline staff, particularly paraprofessionals and teachers, who appear to drive the majority of Snoezelen Complex utilization. Targeted training and ongoing professional development may enhance the quality and consistency of implementation across roles. Additionally, future research should aim to recruit larger and more balanced samples across disciplines, incorporate objective measures of utilization (e.g., usage logs), and examine the relationship between Snoezelen use and student-level outcomes.

From an implementation science perspective, ensuring interdisciplinary alignment in training and expectations may further optimize the integration of multisensory environments into special education settings (Damschroder et al., 2009). Given the increasing emphasis on evidence-based and data-driven practices, future studies should also evaluate fidelity of implementation and its association with both staff perceptions and student outcomes.

Taken together, these findings suggest that while Snoezelen environments are highly valued and

perceived as effective, their impact is contingent upon consistent maintenance, efficient scheduling systems, and ongoing staff support. Future research should examine the relationship between these perceptual measures and objective outcomes, such as behavioral improvements, academic engagement, and physiological indicators of stress reduction.

Limitations

Several limitations must be considered. First, the small and uneven distribution of participants across roles, particularly for nurses, therapists, and job facilitators, substantially limited statistical power and increased the likelihood of Type II error. Second, reliance on self-reported frequency of use introduces the potential for recall bias and social desirability bias. This qualitative analysis is limited by a relatively small sample size and reliance on self-reported perceptions, which may introduce response bias. Additionally, the absence of longitudinal data limits conclusions regarding sustained use and outcomes. Future research should incorporate mixed-methods designs and objective utilization metrics to better

understand the relationship between perceived benefits and actual implementation fidelity.

5. Conclusion

Multisensory environments, such as Snoezelen Complexes, are positively received by educational professionals. The center supports special education students in their sensory regulation and teachers in supporting their students. However, infrastructure is needed within educational settings to support the maintenance and use of the Snoezelen Complex.

Future research should aim to recruit larger and more balanced samples across disciplines, incorporate objective measures of utilization (e.g., usage logs), and examine the relationship between Snoezelen use and student-level outcomes. Additionally, future research should examine the relationship between these perceptual measures and objective outcomes, such as behavioral improvements, academic engagement, and physiological indicators of stress reduction.

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7. Author Declaration

The authors confirm this is original work.

There are no conflicts of interest to disclose related to this work.