

Multi-Sensory Interventions for Children and Adolescents with Autism Spectrum Disorders

Translating Research into RT Practice

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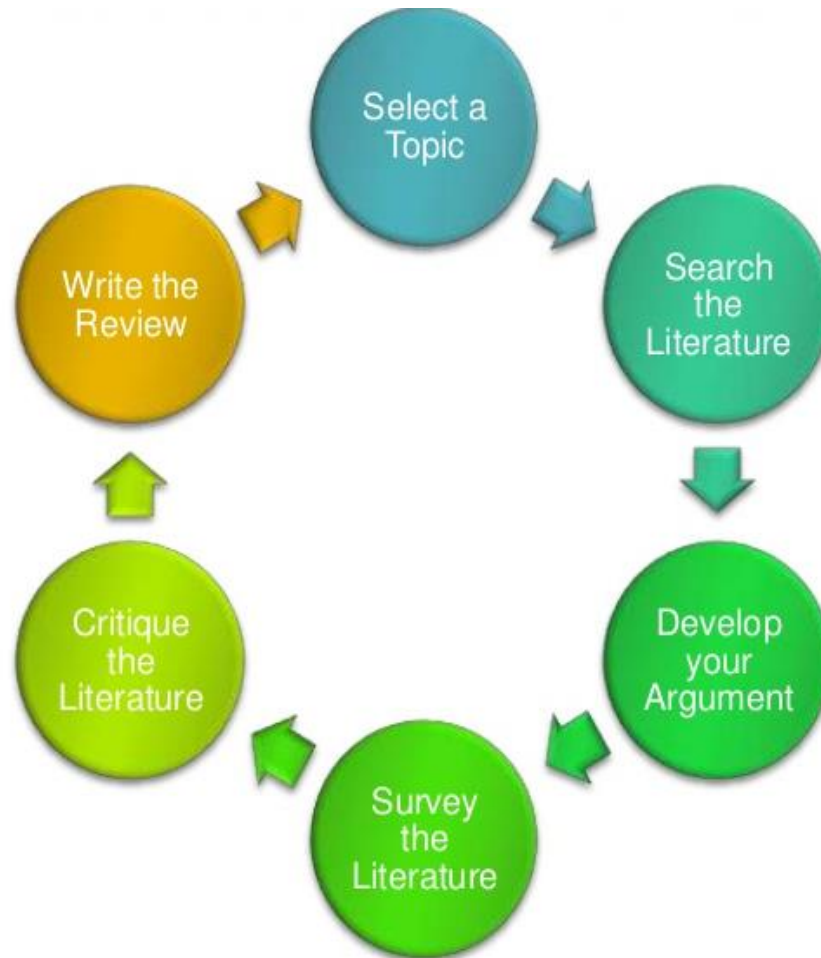
University of Utah Student RT Research Lab

Focus: RT Research & Evidence-Based Practice

- Efficacy of RT Interventions
- Reading/Understanding Research
- Data Collection and Analysis
- Knowledge Translation
- Research Ethics
- Dissemination of Research Findings



Literature Review Process



From *The Literature Review* (2009) by Machi and McEvoy



Our Process

Data Bases:

Academic Search Premier, CINAHL, Education Full Text, ERIC, Google Scholar, MEDLINE, PsycARTICLES, PsychINFO, SPORTDiscus

Search Terms Used:

Adolescents, Autism, Autism Spectrum Disorder, Children, Developmental Disability, Intellectual Disability, Multisensory, Multisensory Intervention, Multisensory Environment, Multisensory Room, Snoezelen



Topic Identification & Initial Literature Review Form

Briefly describe the topic/research question of interest to you.

From your explanation above, fill in the first row of table below – pulling out your key concepts and placing them in the appropriate box. Next, generate as many synonyms for each key concept that might assist you in searching the literature and fill in the second row of the table.

	Client Type, Population, Characteristics	Course of Action. Treatment, Intervention	Alternative (if any)	Outcome or Intended Results
From your selected topic				
Synonyms				

Complete a minimum of 3 combinations of search terms from your list above to conduct your Literature Review and enter number of results for each. (You can do more. If you do more, include your most “successful” searches in the box below.) Do not include a search that yields no results. Please also record the Databases you used and the timeframe (years) of results.

Search Terms Combined	Results (number of articles)	Databases Searched	Timeframe (Years)

Literature Review Table

Table 1: Descriptive Review of the Research Literature on Insert Your Topic Here

Source	Purpose	Design	Outcome Focus	Results	Conclusions and Issues
Author & Date	Describe the research question being investigated and/or purpose of the study	Describe the research design, measurement tools and number of subjects/participants	List all outcomes measured	Summarize the results including statistical significance	Summarize in bullet points major conclusions from findings and/or any concerns regarding study methodology that may have impacted results



Synthesizing Your Information

Purpose: Review the purpose of all your articles. Do you see any similarities or themes?	
Purpose	Article(s)

Design: Review the design of all your studies/articles. Do you see any similarities or differences?	
Design	Article(s)

Participants: Review the participants/subjects in your studies. Do you see any similarities or differences?	
Participants	Article(s)

Outcomes: Review the outcome focus in your articles. Do you see any similarities or themes?	
Outcomes	Article(s)

Measurement Tools: Review the measurement tools used. Are there any similarities?	
Measurement Tools	Article(s)

Interventions: Review the interventions used. Are there any similarities or differences?	
Interventions	Article(s)

Results: Review the results of your studies/articles. Do you see any similarities or themes?	
Results	Article(s)

Conclusions: Review the conclusions you and the authors drew from these articles. Do you see any similarities or themes?	
Conclusions	Article(s)

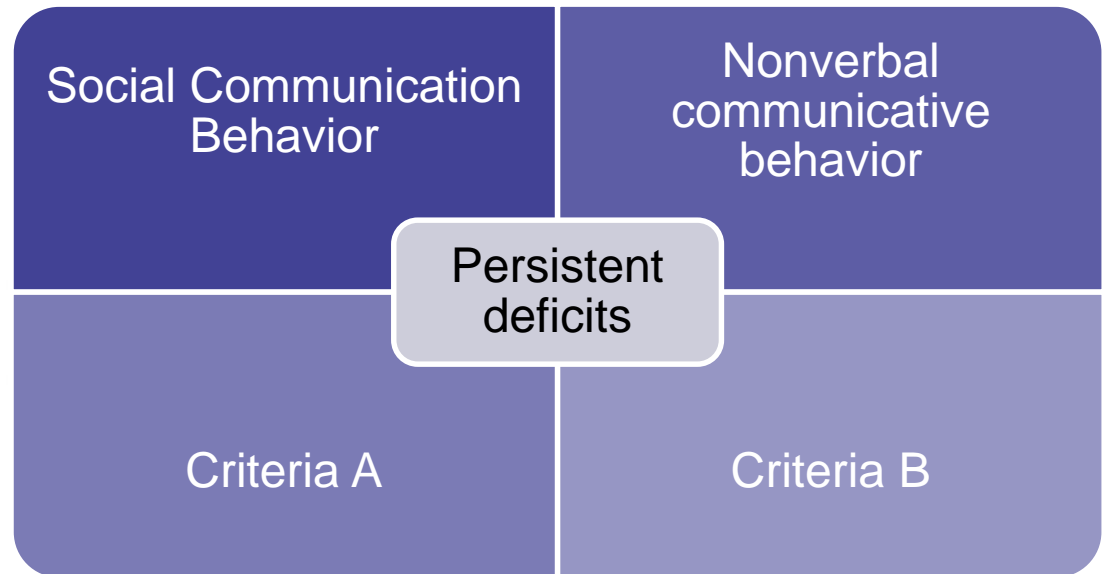
Limitations: What limitations did you and the authors note in these studies/articles. Do you see any similarities or themes?	
Limitations	Article(s)

Introduction in Autism Spectrum Disorders

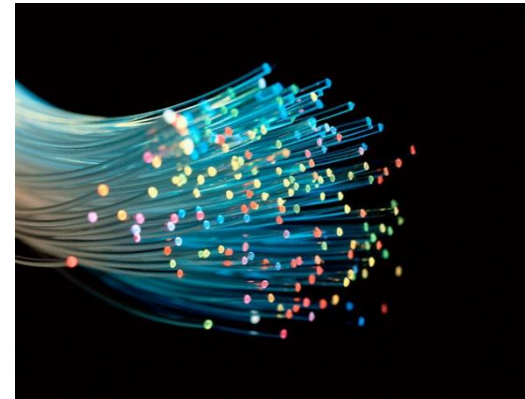
- Neurodevelopmental Disorder
- Often diagnosed in early childhood



AUTISM
AWARENESS



Multi-Sensory Environments/Interventions



Study 1

The Effects of Multi-Sensory Environments on the Stereotypic Behaviors of Children with Autism

Brandenburg, L. A. (2012). *The effects of multi-sensory environments on the stereotypic behaviors of children with autism* (Doctoral dissertation). Retrieved from ProQuest LLC (Accession #ED556802).



The Effects of Multi-Sensory Environments on the Stereotypic Behaviors of Children with Autism

Purpose:

To determine the effects of multi-sensory environments on reducing stereotypic and out-of-seat behaviors in 5 participants with Autism ages 9-12.

Design:

Multiple baseline design.

Included individualized treatment plans based on each participant's sensory and behavior data.



The Effects of Multi-Sensory Environments on the Stereotypic Behaviors of Children with Autism

Intervention:

Occurred in a MSE with a trained staff member for 10-20 minutes 3x/week for 16 weeks prior to group instruction in a school setting.

Baseline of behaviors was determined pre-intervention.

Post-intervention, behaviors were recorded during 15 second intervals for 7-10 minutes.

Participants given choice of 2 items with which to interact; based on individual sensory data.



The Effects of Multi-Sensory Environments on the Stereotypic Behaviors of Children with Autism

Results:

Decrease in intensity and frequency of stereotypic behaviors in all five participants.

Effects on out-of-seat behaviors were inconclusive.

Children with the highest number of stereotypic behaviors showed strongest results.

Researchers believe the success of this intervention was strongly tied to individualized treatment sessions based on each participant's sensory profile.



The Effects of Multi-Sensory Environments on the Stereotypic Behaviors of Children with Autism

Limitations:

Small sample size of only 5 students.

Results inconclusive on out-of-seat behaviors due to participants having low number of out-of seat behaviors initially.

Study did not describe exact protocols or activities which occurred during intervention.



Study 2

Multi-Sensory Rooms: Comparing Effects of Snoezelen and the Stimulus Preference Environment on the Behavior of Adults with Profound Mental Retardation.

Fava, L., & Strauss, K. (2010). Multi-sensory rooms: Comparing effects of the Snoezelen and the stimulus preference environment on the behavior of adults with profound mental retardation. *Research in Developmental Disabilities*, 31(1), 160-171.



Multi-Sensory Rooms: Comparing Effects of Snoezelen and the Stimulus Preference Environment on the Behavior of Adults with Profound Mental Retardation.



Purpose:

To determine the effects of Snoezelen on disruptive and pro-social behaviors in adults with profound mental retardation and ASD.

Participants:

27 adults (ages 30-48) with profound mental retardation and ASD.

Inclusion Criteria:

This study includes the exact equipment used in the Snoezelen room.

Multi-Sensory Rooms: Comparing Effects of Snoezelen and the Stimulus Preference Environment on the Behavior of Adults with Profound Mental Retardation.



Results:

Significant effects in decreasing frequency of disruptive and aggressive behaviors, only in individuals with ASD.

Intervention increased pro-social behaviors only for individuals with profound MR.

Snoezelen had positive effects for adults with autism, and it carried over into the control room.

Limitations:

Medication may have been an affecting factor in some individuals. Study did not describe exact protocols or activities which occurred during intervention.

Study 3

Effects of a Snoezelen Room on the Behavior of Three Autistic Clients

McKee, S. A., Harris, G. T., Rice, M. E., & Silk, L. (2007). Effects of a Snoezelen room on the behavior of three autistic clients. *Research in Developmental Disabilities*, 28(3), 304-316.



Effects of a Snoezelen Room on the Behavior of Three Autistic Clients

Purpose:

To determine the effects of Snoezelen on disruptive and prosocial behavior.

Participants:

3 adult males with ASD in a psychiatric hospital who exhibited high levels of aggression and destructive behaviors.

Interventions:

Participants had access to Snoezelen for 28 days on/off/on/off in an ABAB reversal design. Sessions lasted 45-90 minutes.

Measurement tools:

Aggressive and prosocial behaviors were recorded 24/7.



Effects of a Snoezelen Room on the Behavior of Three Autistic Clients

Results:

No significant differences, and no benefits found in using the Snoezelen room for disruptive or aggressive behaviors.

Limitations:

Small sample size of only 3 participants.

Discrepancies on time spent in the room.

One participant did not like the room.

Longest session length of any study; which could be problematic for this population.

Study did not describe exact protocols or activities which occurred during intervention.



Study 4

Snoezelen Multi-Sensory Environments: Task Engagement and Generalization

Kaplan, H., Clopton, M., Kaplan, M., Messbauer, L., & McPherson, K. (2006).
Snoezelen multi-sensory environments: Task engagement and
generalization. *Research in Developmental Disabilities, 27*(4), 443-455.



Snnozelen Multi-Sensory Environments: Task Engagement and Generalization



Purpose:

To determine the carry over of behavioral improvements after use of a Snnozelen, particularly in increasing task engagement and decreasing challenging behaviors.

Participants:

Three individuals with moderate intellectual disability, autism and severe challenging behaviors.

Intervention:

2x/week, 30 mins and then given a task to complete.

Snnozelen Multi-Sensory Environments: Task Engagement and Generalization



Results:

Participants needed fewer prompts to stay on task; however there was no significant decrease.

There was a significant decrease in challenging behaviors

Limitations:

Small sample size of 3.

Each participant was given a different task to complete.

Study did not describe exact protocols or activities which occurred during intervention.

Study 5

Influence of Adapted Environment on the Anxiety of Medically Treated Children with Developmental Disability

Shapiro, M., Sgan-Cohen, H. D., Parush, S., & Melmed, R. N. (2009). Influence of adapted environment on the anxiety of medically treated children with developmental disability. *The Journal of Pediatrics*, 154(4), 546-550.



Influence of Adapted Environment on the Anxiety of Medically Treated Children with Developmental Disability



Purpose:

Effects of Sensory Adapted Environment (SAE) on behavior and arousal in children with Developmental Disorders in high stress situation (dentist).

Participants:

16 children (6-11years) with DD with 19 typical age matched children.

Intervention:

SAE – adapted lighting, auditory and somato-sensory stimuli with bass vibrator, tactile stimulus.

Influence of Adapted Environment on the Anxiety of Medically Treated Children with Developmental Disability

Results:

Created significant calming effect and significant decrease in anxious behavior and arousal levels as measured by movements of head, forehead, eyes and mouth, coughing/gagging, crying/screaming, and other.

Limitations:

Different interventions were used for children with DD and typical children.



Study 6

Snoezelen: A Controlled Multi-Sensory Stimulation Therapy for Children Recovering from Severe Brain Injury

Hotz, G. A., Castelblanco, A., Lara, I. M., Weiss, A. D., Duncan, R., & Kuluz, J. W. (2006). Snoezelen: A controlled multi-sensory stimulation therapy for children recovering from severe brain injury. *Brain Injury, 20*(8), 879-888.
doi:10.1080/02699050600832635



Snoezelen: A Controlled Multi-Sensory Stimulation Therapy for Children Recovering from Severe Brain Injury

Purpose:

Effects of Snoezelen on behavior in kids with TBI.

Participants:

15 children (11 boys, 4 girls, range = 1.2-16.9) with severe TBI.

Intervention:

Snoezelen – one-on-one, 30 min session, 3 times a week, 10 sessions total. Used three pieces of equipment.



Snnozelen: A Controlled Multi-Sensory Stimulation Therapy for Children Recovering from Severe Brain Injury



Results:

Significant decrease in heart rate over sessions, Significant improvement on Rancho Los Amigos and FIM. Agitation Behavior Scale for Snnozelen therapy showed decrease approaching significance for children with TBI.

Limitations:

Large age range, lack of specification of equipment used or activities used, indicates therapists were trained – no details on training.

Study 7

The Use of a Multisensory Environment for Assessment of Sensory Abilities and Preferences in Children with Profound Intellectual and Multiple Disabilities (PIMD): A Pilot Study

Van der Putten, A., Vlaskamp, C. and Schuivens, E. (2011), The use of a multisensory environment for assessment of sensory abilities and preferences in children with profound intellectual and multiple disabilities: a pilot study. *Journal of Applied Research in Intellectual Disabilities*, 24: 280–284. doi:10.1111/j.1468-3148.2010.00601.x



The Use of a Multisensory Environment for Assessment of Sensory Abilities and Preferences in Children with Profound Intellectual and Multiple Disabilities (PIMD): A Pilot Study



Purpose:

Find multisensory activities appropriate for children with PIMD and impact on MSE on teacher's knowledge of child abilities and preferences.

Participants:

23 children with PIMD and 3 teachers.

Intervention:

4 week, individual activities with teacher twice a week, two min long to test increases in teacher knowledge.

The Use of a Multisensory Environment for Assessment of Sensory Abilities and Preferences in Children with Profound Intellectual and Multiple Disabilities: A Pilot Study



Results:

Significant increase in teacher's knowledge of student's preferences as measured by Individual Program Plan review.

Limitations:

No control or comparison group (does it have to be one-on-one MSE or could it be just one-on-one time), lack of information about specific activities or equipment in the MSE.

Study 8

Effects of Snoezelen Room, Activities of Daily Living Skills Training, and Vocational Skills Training on Aggression and Self-injury by Adults with Mental Retardation and Mental Illness

Singh, N. N., Lancioni, G. E., Winton, A. S., Molina, E. J., Sage, M., Brown, S., & Groeneweg, J. (2004). Effects of Snoezelen room, activities of daily living skills training, and vocational skills training on aggression and self-injury by adults with mental retardation and mental illness. *Research in Developmental Disabilities, 25*(3), 285-293.



Effects of Snoezelen Room, Activities of Daily Living Skills Training, and Vocational Skills Training on Aggression and Self-injury by Adults with Mental Retardation and Mental Illness



Purpose:

Determine effects of Snoezelen on aggression and self injury and decrease aggressive acts (kicking, punching, hitting, slapping) and self-injurious behaviors (biting, slapping, head banging).

Participants:

45 adults with developmental disabilities.

Intervention:

10 week observational study, 1 hour each session, 5 days per week

Effects of Snoezelen Room, Activities of Daily Living Skills Training, and Vocational Skills Training on Aggression and Self-injury by Adults with Mental Retardation and Mental Illness



Results:

Snoezelen condition had a significant effect in lowering aggressive and self-injurious behaviors. Being in the Snoezelen room had carryover effect – level of self-injurious behavior was significantly lower than levels preceding Snoezelen condition.

Limitations:

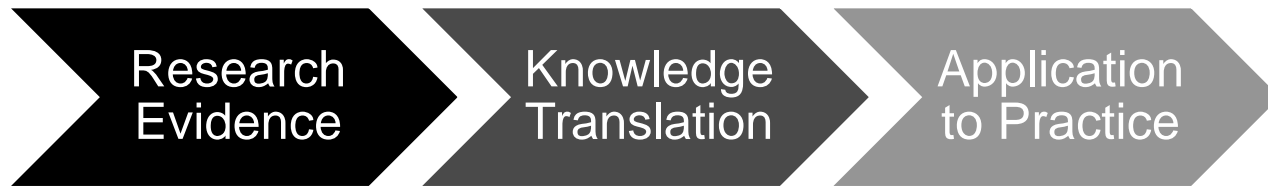
Snoezelen was not customized to the individual (certain lights or sounds or other stimuli might be perceived as threatening).

Translating Research Findings into Recreational Therapy Practice



Knowledge Translation Plan

- Knowledge Translation is a term increasingly used in health-care fields to represent a process of moving what we learn through research to the actual applications of such knowledge in a variety of practice settings and circumstances.



PARTICIPANTS

Autism Spectrum Disorder (ASD)
Developmental/Intellectual Disabilities
Traumatic Brain Injury (TBI)



INDIVIDUAL INTERVENTIONS

SETTING	MULTI-SENSORY INTERVENTIONS	IMPLEMENTATION
Dental Hospital Residential Facility School	Snoezelen Multi-Sensory Environment Multi-Sensory Room Sensory Adapted Environment	Recommended: 20-30 min sessions 2-3x per week 4-10 weeks



OUTCOMES

DECREASED	INCREASED
Anxious/Agitated Behavior Aggressive Acts Self-Injury Stereotypic Behaviors Challenging/Disruptive Behavior	Task Engagement Prosocial Behavior

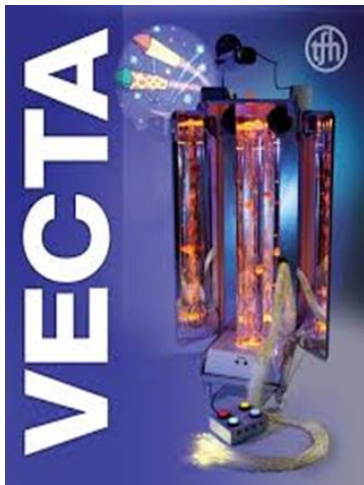


Opportunities to Advance Knowledge and Practice

- Limitation: Current studies lack protocols that outline interventions that can be replicated by others.
- Response: Develop a set of structured activity protocols that incorporate common MSI equipment in order to:
 - Document standardized interventions
 - Provide therapists with ideas for treatment sessions
 - Identify potential goals, assessment tools, and methods for documenting outcomes
 - Clarify recreational therapy's role in using MSI



- Limitation: Many studies in the current literature utilize multisensory environments or Snoezelen rooms. However, these rooms are costly and many therapists do not have access.
- Response: Provide leadership in examining the effectiveness of mobile and portable MSI starting with the VECTA, a mobile multisensory cart.





Limitation: Research in this area is lacking.

Responses:

- Initiate research studies that can add to the current evidence base.
Priorities include:
 - Studies that specifically focus on individuals with ASD
 - Research that compares structured activities vs. unstructured play and exploration
 - Efficacy of multisensory environments vs. portable interventions
 - Use of structured protocols across service settings and populations
- Seek clinical partnerships with therapists/agencies currently using MSI in order to build a team of RTs interested in advancing evidence-based practices in this area.



Resources

Websites:

<http://www.specialneedstoys.com/usa/>

<http://www.flaghouse.com/Sensory-Solutions/Snoezelen-MSE/>

<http://www.rompa.com/snoezelen-sensory-rooms.html>

<https://www.sensorytoywarehouse.com/multi-sensory-equipment>



Other Sources:

See corresponding session handout for complete reference list of sources reviewed for this presentation.



Questions?

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