

The Effect of Tactile and Vestibular Sensory Stimulation on Off-Task Behaviors in a Child with an Autistic Spectrum Disorder

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Sensory Integration

- “Sensory integration (SI) is the organization of sensation for use” (Ayres, 1995).
- Sensory input is organized effectively to enable an appropriate, purposeful, or adaptive response to a condition.
- The ability to form appropriate responses or reactions makes body motions adaptive, makes learning easier, and tends to produce appropriate behavior (Ayres, 1995).

SI Dysfunction

- SI dysfunction is “an irregularity or disorder in brain function that makes it difficult to integrate sensory input” (Ayres, 1995).
- Symptoms of SI dysfunction include unusually high or low activity levels, coordination problems, delays in speech or language skills, delays in motor skills, poor organization of behaviors, and a poor self-image (Anderson & Emmons, 1996).
- One disorder area in which SI deficits frequently occur are autistic spectrum disorders (ASD).

SI Therapy

- SI Therapy is a type of occupational therapy, which is often applied using rocking chairs, swings, weighted vests and collars, stress squeeze balls, padded chairs, etc.
- This therapy uses a holistic approach, involving the whole body, all the senses, and the entire brain, to provide and control sensory input (Ayres, 1995).
- SI Therapy can regulate arousal levels, decrease stereotypic or self-stimulatory behaviors, and promote communication (Yack, Sutton, & Aquilla, 1998).

Past Research

- Case-Smith and Bryan (1999)
- Patterson (1999)
- Downs (2004)

Purpose

- The present study was designed to examine the effectiveness of different types of sensory stimulation on the behavior of a child with an autistic spectrum disorder.

Research Questions

- 1. Is there a significant difference in the frequency of off-task behavior in a child with ASD when sensory stimulation is provided versus withheld?
- 2. Is there a difference between tactile and vestibular stimulation on off-task behavior in a child with ASD?
- 3. Is there a significant difference in the type of off-task behavior, verbal or physical, when sensory stimulation is provided versus withheld?
- 4. Is there a significant difference in the frequency of off-task behavior when sensory stimulation is provided versus withheld between the first ten minutes of the session and the last ten minutes of the session?

Participant

- The subject in the study was a 6-year, 0-month-old male with ASD with delays in pragmatic skills, a mild phonological delay, and ADHD.
- Intelligence and hearing were within the normal limits, and no other medical diagnoses had been made.
- He has received speech-language therapy at the Eastern Illinois University Speech-Language-Hearing Clinic since October 2002 and is currently receiving speech-language therapy at the university with a student clinician.

Participant

- Downs (2004) found a statistically significant difference in off-task behavior on the client in the current study.
- Downs' independent variables included no sensory stimulation, calming sensory stimulation, and alerting sensory stimulation.
- A significant difference in behavior given various types of sensory stimulation was expected in the current study.

Independent Variables

- The subject received five minutes of sensory stimulation in the clinic's sensory room prior to each session. Sensory stimulation included:
 - Tactile sensory stimulation: deep-pressure massage and/or laying in the ball pit
 - Vestibular sensory stimulation: swinging and/or jumping on a trampoline
 - No sensory stimulation: client and clinician go directly to therapy room

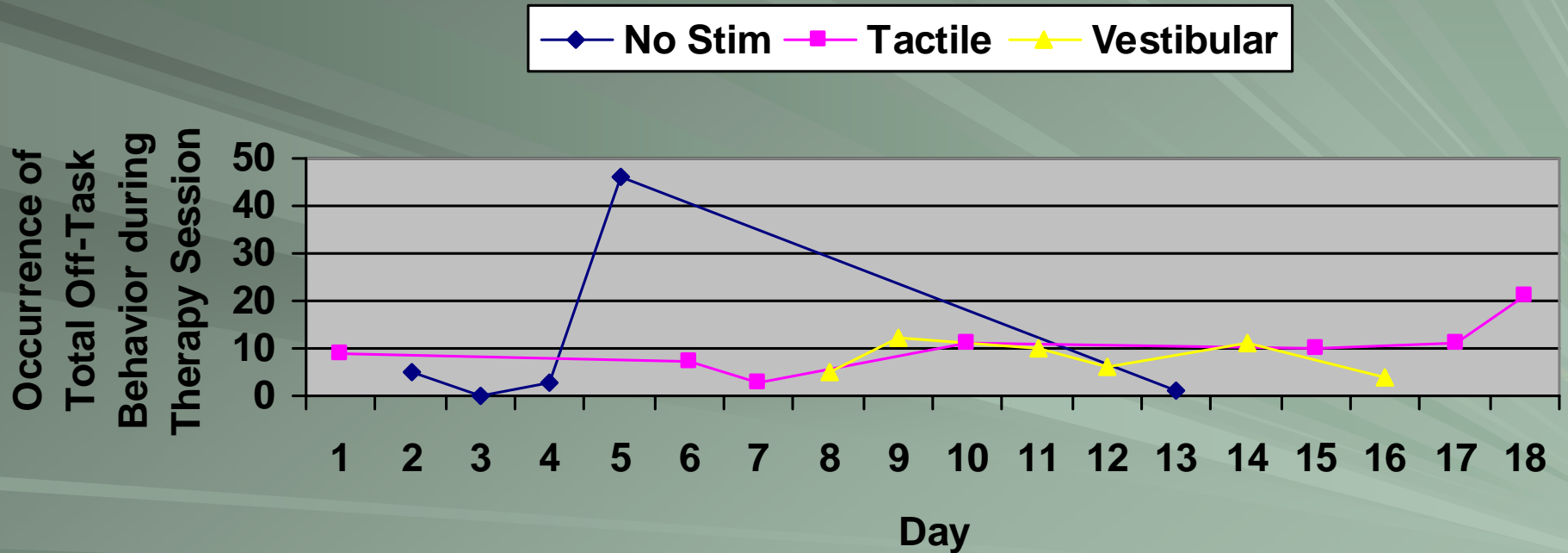
Dependent Variables

- Verbal or physical off-task behaviors were recorded during the first and last ten minutes of each of the sessions.
 - Verbal off-task behaviors: any verbalization that interferes with the task focus
 - Physical off-task behaviors: any physical behavior that interferes with the task focus

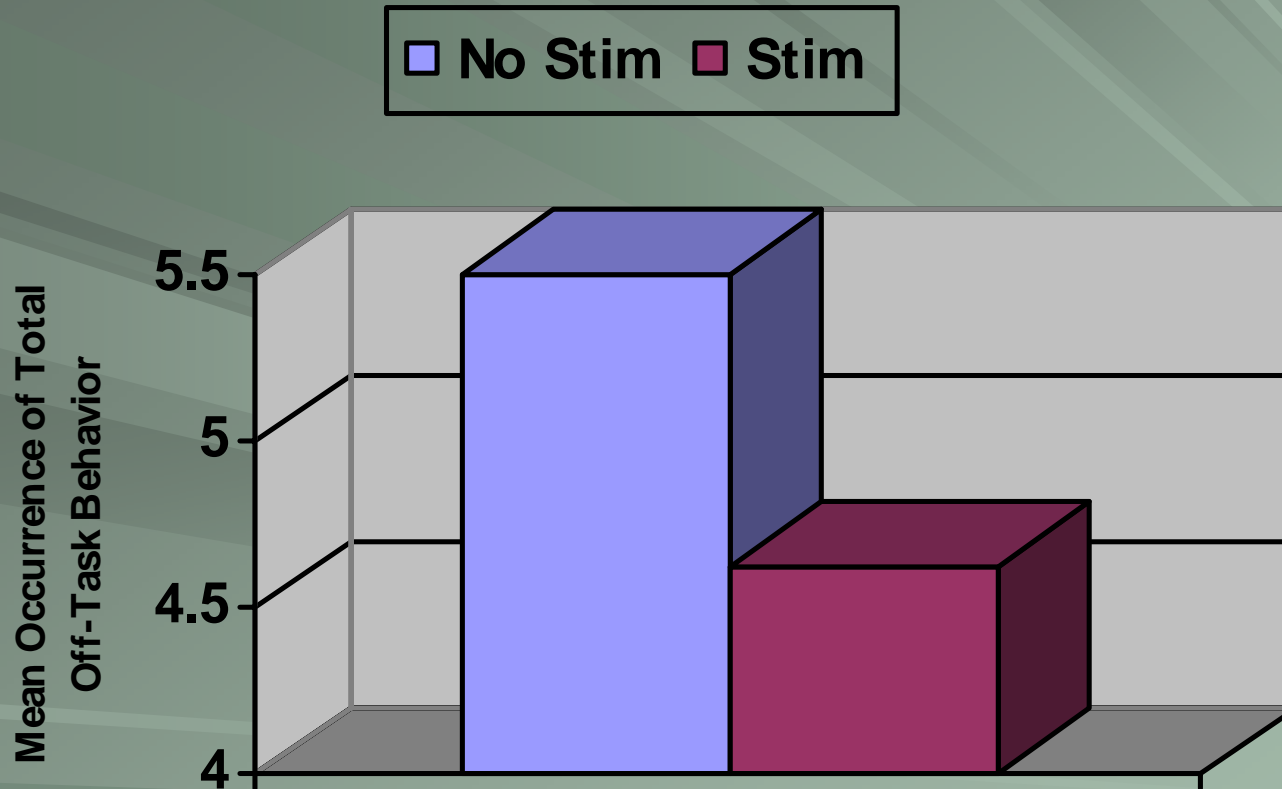
- Interval recording using an audiocassette tape with ten second intervals for observing behaviors followed by five seconds for recording was used for data collection.
- Interjudge reliability was obtained during five sessions. A point-by-point agreement index indicated 97% agreement.

Results

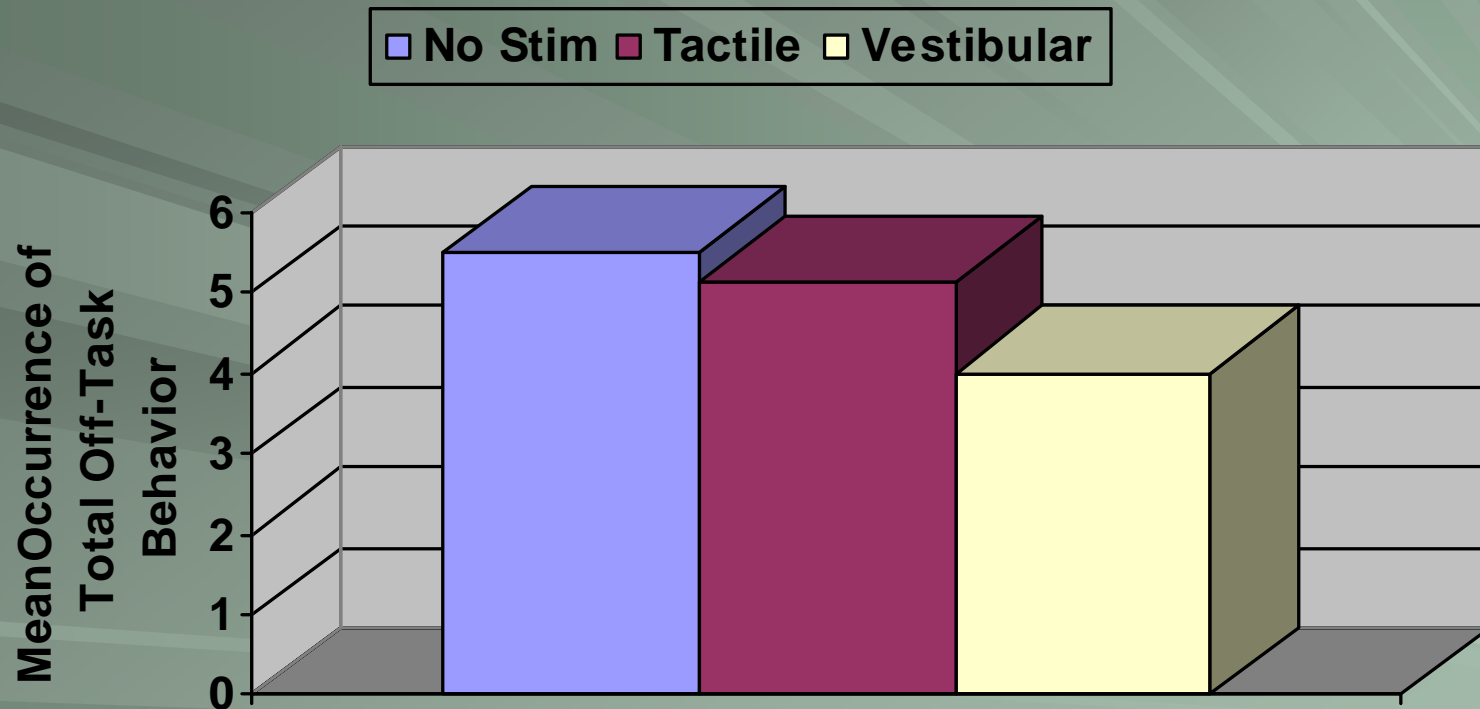
Figure 1. Mean Occurrence of Off-Task Behaviors



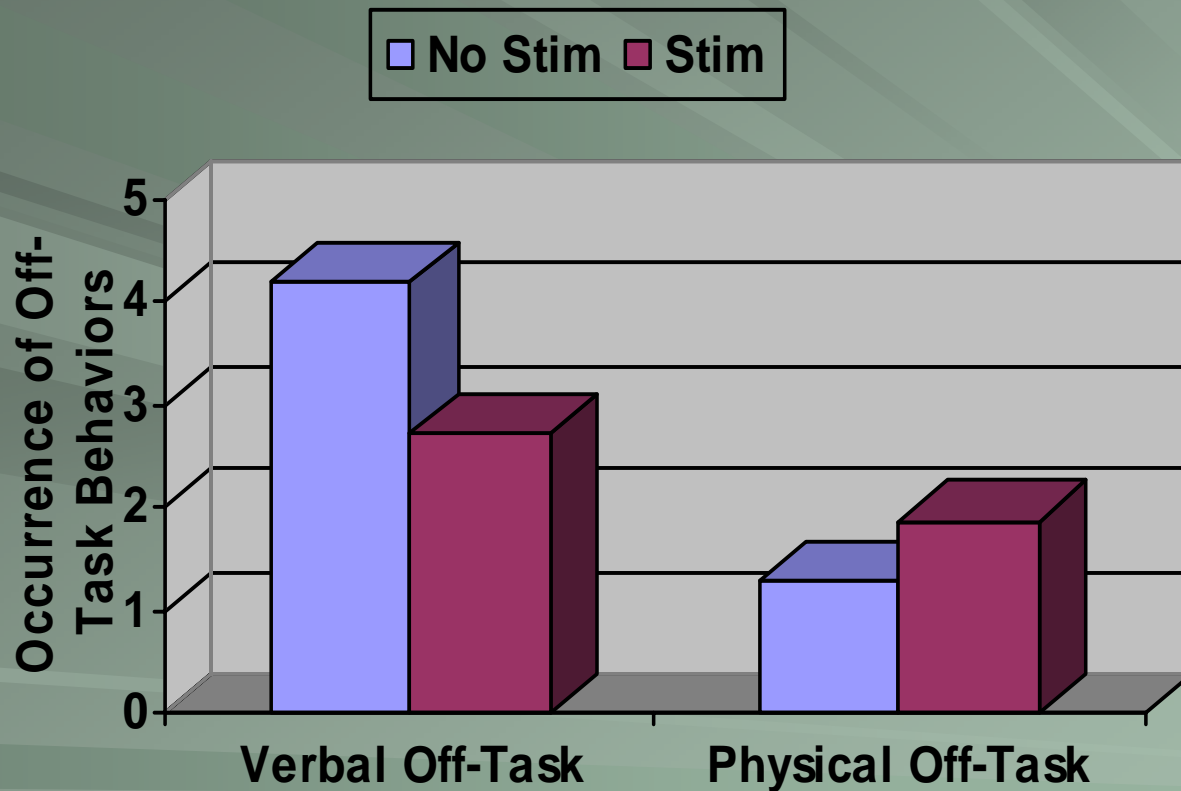
1. Is there a significant difference in the frequency of off-task behavior in a child with ASD when sensory stimulation is provided versus withheld?



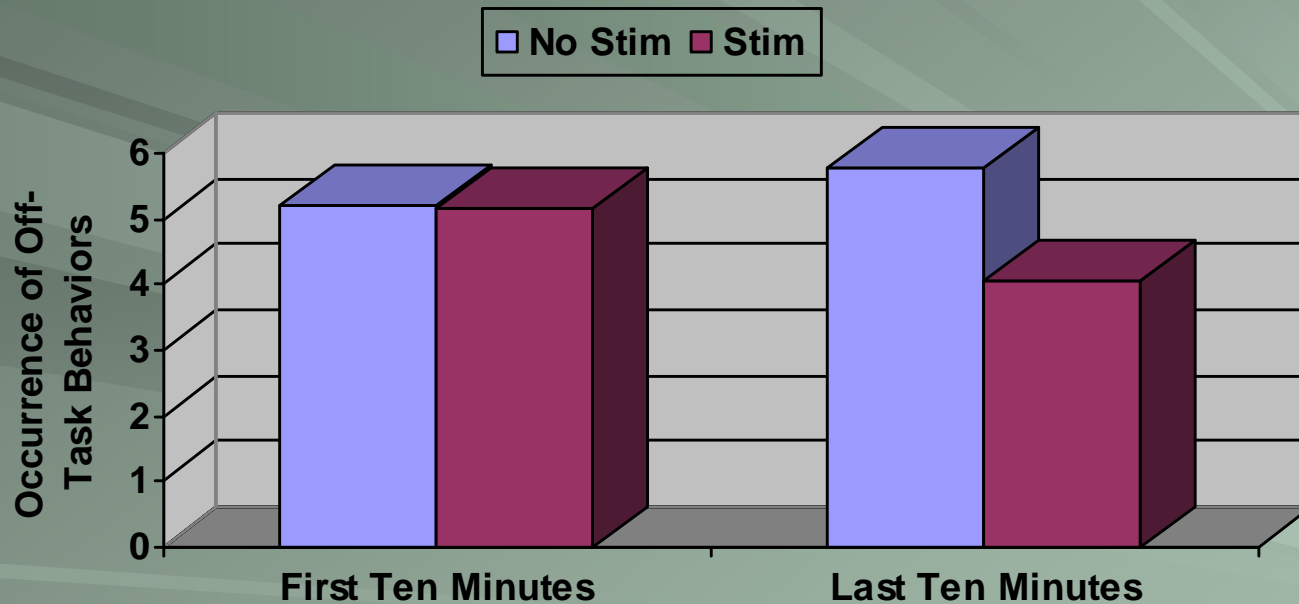
2. Is there a difference between tactile and vestibular stimulation on off-task behavior in a child with ASD?



3. Is there a significant difference in the type of off-task behavior, verbal or physical, when sensory stimulation is provided versus withheld?



4. Is there a significant difference in the frequency of off-task behavior when sensory stimulation is provided versus withheld between the first ten minutes of the session and the last ten minutes of the session?



Discussion

- Past research suggests sensory stimulation is beneficial for children with ASD, but no substantiated evidence exists.
- No statistically significant differences were found for this particular client.
- Results suggested a clinically significant difference in off-task behavior.

Discussion

- The current study suggests a maturation of the sensory system of the participant as a result of sensory stimulation.
- Study by Downs (2004) indicated a need for sensory stimulation in this client.

Limitations

- Small sample size
- Limited data points
- Structure of the sessions
- Variability between semesters
- Subject displayed few self-stimulatory behaviors initially

Discussion

- Further research is needed in the area of SI treatment on children with autism and ASD.
 - Studies focusing specifically on the impact of SI on language learning
 - Studies with larger samples and longer experimental time
 - Studies focusing on the age or level of sensory system maturation that need to be reached are also needed

Any Questions?