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Development of the Classroom Sensory Environment Assessment (C-SEA)

Heather Miller Kuhaneck PhD OTR/L FAOTA and Jacqueline Kelleher PhD

Introduction and Background

- Explosive growth in the number of children with autism spectrum disorder (ASD) in the public schools.
- Children with ASD demonstrate sensory processing deficits that may impair their educational performance.
- States struggle with the preparation of teachers to teach students with ASD (Barnhill, Polloway, & Sumutka, 2011; Morrier, Hess & Helfin, 2011; Scheuermann et al., 2003).
- Teachers not typically taught how to assess sensory deficits or sensory aspects of the environment and typically do not develop an understanding of a child’s response to sensory stimuli (Oliver & Reschly, 2010).
- There are sensory assessments for children but focus groups and interviews with teachers suggested there is a need for a tool to assess the sensory environment of the classroom.
- The Classroom Sensory Environment Assessment (C-SEA) allows teachers to examine the sensory aspects of classroom tasks and environments. Purpose is to assist in determining ways to modify tasks and environments to improve engagement and reduce problem behaviors in elementary school students with ASD.

Methods

The process has taken 2 years and has included over 100 teachers and education students, 10 occupational therapists, 5 occupational therapy students, more than 100 classrooms, and 10 students with ASD. This project was reviewed and approved by the IRB at each step of the process.

- The C-SEA was designed collaboratively after viewing 18 classrooms across urban, suburban, and rural locations in one New England state.
- Currently C-SEA contains 160 items categorized into sensory systems.
- Each item is scored for frequency on a 5 point scale and intensity on a 3 point scale.
- The C-SEA is available for free online at https://sites.google.com/site/cseafree/.

Qualitative Results

- There are no similar tools currently available to assess classroom sensory environment.
- Focus group
  - Importance of prior experience for the teachers and their lack of prior preparation for teaching children with ASD and dealing with the sensory issues.
  - Acknowledgement of the individuality of issues in children with ASD.
  - Suggested a need for teacher training in this area.
- Classroom observations noted wide variation in classroom sensory experiences.
  - The observations provided us with the initial items included in the C-SEA.
- Teachers’ feedback from using the C-SEA suggests teachers found it useful.
  - I found doing this activity very helpful because it allowed me to take a deeper look at all of the classroom surroundings. I never realized how many things could affect student and their attention span.
  - Interviews of high school students with ASD are providing additional items to include based on student’s perceptions of helpful and difficult sensory experiences.
  - These students with ASD report their most difficult experiences to be loud noises in the cafeteria and hallways, such as other students yelling.

Quantitative Results

- Frequently checked items (counts of 20 or greater out of 33) fell in the visual and tactile areas.
- Very frequent classroom sensory experiences included fluorescent lighting, use of primary colors, use of patterns, multiple storage bins, and sitting in close proximity to peers.
  - Cafeteria and hallway noise levels can be compared in dBA level to noises like a hand saw, an electric shaver, heavy traffic, or an electric drill.
    - Cafeteria levels measured between 81 and 98-99 dBAs.
    - Hallway noise ranged from the high 70’s to the high 80’s in dBA.

Discussion

- The tool demonstrates face validity.
- Teachers and therapists report it to be useful and it served as an instructional tool for teachers and student teachers.

Future Directions

- Test Retest reliability with teachers
- Inter-rater reliability from videotape
- Factor analysis on instrument data
- Manual development
- Consideration of teacher’s sensory preferences compared to classroom sensory ratings

References

References are available on the handout

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