



Is there a diagnostic category for atypical sensory processing in children with no psychopathology?

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INTRODUCTION

Hypothesis

We hypothesize that children described by parents as showing symptoms of tactile and/or auditory sensory over-responsivity and who failed to be identified with psychopathology would display atypical behaviors during a laboratory assessment of temperament compared to age- and gender-matched typically developing children.

Introduction to Sensory Processing Disorder (SPD):

- The prevalence of SPD is estimated at 5-10% of the pediatric population (Ahn, Miller, Milberger, & McIntosh 2004).
- SPD is not considered an official diagnosis since it is not in the Diagnostic and Statistical Manual of Mental Disorders published by the American Psychiatric Association (DSM-IV).
- Children with SPD face functional problems in school and home environments such as poor socialization and emotional dysregulation ((Ben-Sasson, Carter & Briggs-Gowan (2009), (Miller, Schoen, James, & Schaafl (2007)).
- Acceptance in the next issue of the DSM-V is a goal that would increase research on the condition.

RESEARCH DESIGN & METHODS

Participants

- The Wisconsin Twin Project is an ongoing longitudinal study of child psychopathology that provided the sample for the current study (n=2,269).
- Of the total population (n=2,269), 149 twins screened positive for sensory symptoms using the Sensory Over-Responsivity Scale (Schoen, Miller, & Green, 2008).
- These 149 twins who screened positive for sensory symptoms were screened for psychopathology using the DISC (see description below).
- Of the 149 twins, 60 twins (40%) were found to have no other psychopathology including specific phobia.
- This current study involves these 60 twins who met the criteria for sensory symptoms without having any comorbidities of ADHD, autism spectrum disorder, generalized anxiety disorder, fragile X, or other psychopathology.
- These 60 twins were age and gender matched to controls with no psychopathology for a total of 120 participants (n=120).

Measures

- DISC: A widely used diagnostic psychological assessment to evaluate psychopathology.
- Sensory Over-Responsivity Scale: A parent-reported rating of atypical responses to auditory and/or tactile stimuli scores of ≥ 4 auditory items and/or ≥ 6 tactile items were criteria for inclusion in the sensory symptoms group (Schoen et al., 2008).
- Laboratory Temperament Assessment Battery (Lab-TAB): Wisconsin Twin Project Home Visit version of the Lab-TAB is designed for use in the natural home environment. Consists of 14 vignettes demonstrating various physical and psychological attributes (Goldsmith, Essex, & Lemery (in preparation)).
- Attribute Rating Scale (ARS): Tool designed to code behavioral observations on 13 attributes across 7 vignettes on a 1-4 scale (low scores indicate more atypical behaviors). Created for this study by Dr.'s Lucy J. Miller & Sarah Schoen.

Procedure

Three raters completed training and two rounds of inter-rater reliability on the ARS, first coding 15 cases not included in the current study (ICC = .85) before coding the cases used for the study. Using the ARS, vignettes were independently reviewed and coded by the three reliable raters who were blind to group assignment.

RESULTS

Analysis

The five categories in the Attribute Rating Scale (ARS); emotional state, interpersonal, attention, sensory-based motor ability and sensory responsivity were analyzed. The mean score of each attribute was calculated by vignette and summed across attributes to create the 5 attribute category variables. Mean scores for these 5 ARS category variables were compared across control and sensory symptom group using independent t-tests.

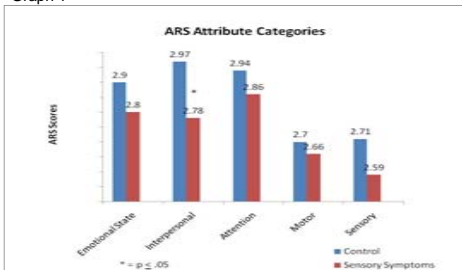
The next stage of the analysis was to compare the four individual attributes within the interpersonal category. The mean score was calculated by vignette and summed across attribute. Mean scores for these 4 individual attributes were compared across sensory symptom group and control group using independent t-tests.

Results

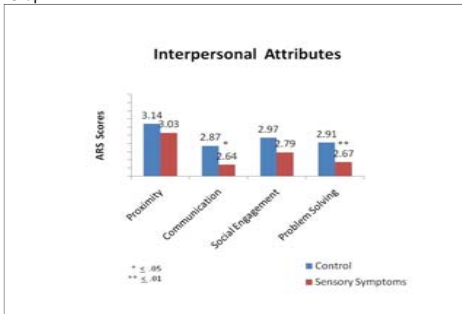
The sensory symptom group demonstrated a statistically significant lower mean rating for the interpersonal category ($p \leq .025$, $SD = .52$). (See graph 1). No significant group differences were found in the emotional, attention, sensory, or sensory based motor categories.

Graph 2 shows the results of the 4 individual attributes within the interpersonal category. The sensory symptom group scored lower for the communication and problem solving attributes compared to controls ($p < .01$, $SD = .57$ and $p < .03$, $SD = .70$). The social engagement and proximity attributes showed a trend for the sensory symptom group scoring lower than controls ($p \leq .057$, $SD = .62$ and $p \leq .136$, $SD = .49$).

Graph 1



Graph 2



DISCUSSION

Discussion

This study has discriminated between a group of twins with sensory symptoms and typically developing children at a statistically significant level. This group of children were first identified through a parent report sensory screening tool and were later confirmed to have behavioral issues based on ratings of videotaped vignettes. The sensory symptom group has been carefully evaluated and found to be negative for psychopathology. However, they were rated in this study positive for interpersonal problems including proximity, communication, social engagement, and problem solving when compared to controls. Since these children would not qualify for a diagnosis under the current DSM-IV classification system, they would not be eligible for services. The finding of interpersonal impairments is the most important finding of this study. It suggests that as children become older, their sensory symptoms may become less noticeable and may be expressed as behavioral symptoms. These deficits may compromise success in the school environment and functioning in the home environment. A comprehensive assessment by an occupational therapist would confirm the need for services. Future research is needed to evaluate the effect of occupational therapy services on outcomes related to social engagement, problem solving, and communication.

Limitations

The sensory symptom group was identified by the SOR Scales, an assessment of tactile and auditory over-responsivity. There may be children in the population (n=2,265) affected by other subtypes of SPD including: sensory under-responsiveness, sensory seeking, postural disorder, dyspraxia, or sensory discrimination disorder. These children would not have been identified by this assessment. Future studies may include a broader evaluation of SPD to identify a sensory symptom group. The laboratory assessment did not present a variety of tasks that were designed for sensory challenges. Future studies should include comprehensive sensory challenges.

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ACKNOWLEDGEMENTS

Funding provided by the Wallace Research Foundation
Support and training provided by the University of Wisconsin
Occupational Therapy Program, Department of Kinesiology and
by the STAR Research Center