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# Observational Characterization of Sensory Interests, Repetitions, and Seeking Behaviors

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## MeSH TERMS

- child behavior
- child development disorders, pervasive
- developmental disabilities
- observation
- sensation

Sensory interests, repetitions, and seeking behaviors (SIRS) are common among children with autism spectrum disorder (ASD) and other developmental disabilities (DD) and involve unusual actions that intensify or reinforce a sensory experience. Researchers and practitioners typically use parent-report measures or informal clinical observations to understand the presence and nature of SIRS. In this study, we used a scoring supplement to the Sensory Processing Assessment for Young Children, an observational measure, to characterize SIRS across three groups of children—those with ASD ( $n = 40$ ), DD ( $n = 37$ ), and typical development ( $n = 39$ ). Group differences were identified in frequency and intensity of overall SIRS, complexity of SIRS, and incidence of particular types of SIRS (i.e., posturing, sighting, proprioceptive seeking, spinning). Facial affect was also explored and found to be primarily neutral during engagement in SIRS across groups. Implications for practice and future research are discussed.

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**S**ensory experiences are inherent in everyday activities and may facilitate or inhibit people's engagement in those activities (Dunn, 2001). In certain populations, such as children with autism spectrum disorder (ASD) or other developmental disabilities (DD), unusual sensory experiences may be perceived as interfering with occupational performance and participation (Boyd et al., 2010; Lane, Young, Baker, & Angley, 2010); thus, occupational therapists often consider sensory aspects of daily activities in their assessment and intervention planning (Lane, Smith Roley, & Champagne, 2013).

Occupational therapists often observe that some children demonstrate unusual behaviors that involve intense, often repetitive interactions with sensory stimuli (Miller, Anzalone, Lane, Cermak, & Osten, 2007). For example, a child may intensively rub or touch certain textures, visually focus on moving objects, or spin himself or herself in circles. These behaviors, when extreme, are thought to negatively affect children's participation in daily activities (Dunn, 2001; Reynolds, Bendixen, Lawrence, & Lane, 2011). Such behaviors have been labeled in various ways, including *sensory seeking* or *sensation seeking*, in the occupational therapy literature (e.g., Dunn, 2001; Miller et al., 2007) or, alternatively, incorporated in a broader category of restricted and repetitive behaviors in the DD and ASD literature (e.g., Bodfish, Symons, Parker, & Lewis, 2000). In this study, we use the term *sensory interests, repetitions, and seeking behaviors* (SIRS), recently described by Ausderau et al. (2014), to encompass the full range of behaviors of interest in this analysis.

SIRS may be considered one construct within a group of abnormal sensory response patterns (Ausderau et al., 2014; Baranek, Little, Parham, Ausderau, & Sabatos-DeVito, 2014; Ben-Sasson et al., 2009; Dunn, 2001; Lane et al., 2013; Miller et al., 2007), which also include hyperresponsiveness (i.e., an overreaction

to stimuli, such as being bothered by everyday sounds) and hyporesponsiveness (i.e., an underreaction to stimuli, such as having a diminished response to pain; Ausderau et al., 2014; Baranek et al., 2014; Dunn, 2001). These types of unusual sensory responses are highly prevalent among children with ASD (Baranek et al., 2014; Ben-Sasson et al., 2009; Leekam, Nieto, Libby, Wing, & Gould, 2007) and were recently added as an aspect of the diagnostic classification of ASD by the American Psychiatric Association (2013).

The diagnostic specificity and developmental course of SIRS are not well understood. Some groups have suggested that toddlers with ASD demonstrate fewer SIRS than children with typical development (TD; Ben-Sasson et al., 2007; Ermer & Dunn, 1998). Yet, a study by Watling, Deitz, and White (2001) suggested that SIRS are more prevalent among children with ASD than among children with TD as they reach preschool age. Findings from studies using observational measurements (as opposed to parent report) have consistently described higher levels of SIRS among children with ASD than among those with DD and TD, even at very young ages (Baranek, 1999a; Zwaigenbaum et al., 2005) and into the preschool years (Leekam et al., 2007; MacDonald et al., 2007).

The empirical literature has described the frequency of a wide range of SIRS, citing that, as a single construct, such behaviors are more common among children with ASD than among other groups (Ben-Sasson et al., 2009; Boyd et al., 2010; Tomchek & Dunn, 2007). Multiple types of behaviors are considered within this construct, including flapping hands, being fascinated with certain noises, showing interest in bright lights or moving objects, seeking various types of movement, spinning, excessively mouthing objects, and smelling objects (Ausderau et al., 2014; Baranek et al., 2014; Dunn & Brown, 1997; Leekam et al., 2007; Tomchek & Dunn, 2007). Through the use of parent questionnaires, an understanding has been gained that children may perform multiple types of SIRS in the course of their daily lives (Ausderau et al., 2014; Tomchek & Dunn, 2007). However, little information is available on whether and how different SIRS are engaged in simultaneously (i.e., complexity). Clinical experience has suggested that children with ASD perform complex SIRS (e.g., flapping while visually fixated on a spinning object), which may further differentiate diagnostic groups and have an impact on participation. Research conducted on restricted and repetitive behaviors supports these assumptions; Bodfish et al. (2000) described that elevated patterns of “occurrence, co-occurrence, and severity” (p. 243) characterize ASD.

Another question not fully answered in the literature concerns the degree to which SIRS may be associated with

specific emotional or affective states. In fact, the literature has reflected considerable disagreement about the theorized direction of association. For example, Dunn (2001) hypothesized an association between SIRS and positive affect. In a correlational study, Engel-Yeger and Dunn (2011) found a small but statistically significant positive association between high sensory-seeking behaviors and positive affect ( $r = .14, p = .042$ ). Personal accounts by people with ASD often corroborate an association with positive affect. For example, Naoki Higashida (2013) wrote in his book *The Reason I Jump* that when he jumps he “feels so, so good” (p. 47). However, he also explained that there may be other reasons why people with ASD engage in similar behaviors, such as in response to sadness. Pfeiffer, Kinnealey, Reed, and Herzberg (2005) found a significant correlation between SIRS and depressive symptoms ( $r = .299, p = .035$ ). Both scientific studies mentioned used questionnaire measures to classify affective–emotional states (self-report in Engel-Yeger & Dunn, 2011, and parent report in Pfeiffer et al., 2005). Thus, these relationships need to be explored more explicitly in an observational manner.

In this study, we analyzed how children in three diagnostic groups (ASD, DD, and TD) differed in observational presentation of SIRS during administration of the Sensory Processing Assessment for Young Children (SPA; Baranek, 1999b). We hypothesized that overall frequency and intensity as well as complexity of SIRS would be highest in the ASD group, followed by the DD group, and with the lowest occurrence in the TD group. In addition, we hypothesized that there would be a significant Group  $\times$  Age interaction for overall SIRS, such that younger children with ASD would exhibit the highest overall SIRS scores. Group differences in facial affect and particular SIRS were explored without a directional hypothesis, given the ambiguity in the literature.

## Method

This study involved behavioral coding from video-recorded data from a cross-sectional sample of 116 children drawn from a larger grant-funded study. This research was approved by the university’s institutional review board and adhered to all recommended consent, assent, and data security procedures.

### Participants

Participants were 116 children ages 2–12 yr in three groups: those with ASD ( $n = 40$ ), those with DD ( $n = 37$ ), and those with TD ( $n = 39$ ). See Table 1 for demographic characteristics of the sample. Children in the ASD group had a diagnosis of autistic disorder or ASD given by

**Table 1. Participants' Demographic Characteristics**

Characteristic	ASD ( <i>n</i> = 40)	DD ( <i>n</i> = 37)	TD ( <i>n</i> = 39)
Age, mo, mean ( <i>SD</i> )	54.33 (19.4)	57.54 (32.3)	60.32 (29.6)
Male, <i>n</i> (%)	35 (87.5)	18 (48.6)	29 (74.4)
Race, <i>n</i> (%)			
White	30 (75.0)	30 (81.1)	32 (82.1)
Black	7 (17.5)	2 (5.4)	2 (5.1)
Asian	0	1 (2.7)	2 (5.1)
Multiple races	3 (7.5)	4 (10.8)	3 (7.7)
Hispanic ethnicity, <i>n</i> (%)	1 (2.5)	2 (5.4)	6 (15.4)
IQ proxy, mean ( <i>SD</i> )	53.0 (29.5)	66.0 (24.1)	123.9 (50.7)

*Note.* Percentages may not total 100 due to rounding. ASD = autism spectrum disorder; DD = developmental delay; *SD* = standard deviation; TD = typical development.

a licensed physician or psychologist, typically as part of a specialized multidisciplinary team evaluation, and diagnoses were confirmed for research purposes using the Autism Diagnostic Interview–Revised (ADI–R; Le Couteur, Lord, & Rutter, 2003) and the Autism Diagnostic Observation Schedule (ADOS; Lord, Rutter, DiLavore, & Risi, 1999). All children received a standardized assessment protocol that included the Vineland Adaptive Behavior Scales (VABS; Sparrow, Balla, & Cicchetti, 1984) and at least one cognitive assessment (i.e., the Stanford-Binet Intelligence Scales [SBI; Roid, 2003], Mullen Scales of Early Learning [MSEL; Mullen, 1995], Leiter International Performance Scale–Revised [Roid & Miller, 1997], or a combination of these; see Instrumentation section for details).

Children included in the DD group were confirmed to have overall cognitive delays of  $\geq 2$  standard deviations (*SDs*) below the mean or to have two separate areas of development (i.e., receptive language, expressive language, visual reception, fine or gross motor, or adaptive behavior) at least 1.5 *SD* below the mean on one of the standardized developmental tests. The DD group included children with known genetic syndromes (e.g., Williams or Down; *n* = 16), idiopathic DD (*n* = 17), or delays related to prematurity (*n* = 4). The group of children with TD had no known diagnoses and no history of DD. Children were excluded from the DD and TD groups if they had a previous diagnosis of autism or met the clinical cutoff for autism on the ADOS, the Childhood Autism Rating Scale (CARS; Schopler, Reichler, & Renner, 1988), or both. Exclusion criteria for all groups included a diagnosis of seizure disorder or cerebral palsy or diagnoses comorbid with autism (e.g., tuberous sclerosis, fragile X syndrome), a mental age  $< 6$  mo, or uncorrected visual or hearing impairment.

### Instrumentation

**Diagnostic and Severity Measures.** As part of the larger study and for diagnostic classification, we administered

several assessments. To confirm or rule out ASD, we used the ADOS (Lord et al., 1999), the ADI–R (Le Couteur et al., 2003), and the CARS (Schopler et al., 1988). The ADOS is a semistructured direct assessment in which a trained assessor observes and characterizes autism symptoms. The ADI–R is a structured caregiver interview during which a trained assessor gathers information about lifetime and current autism symptoms. The CARS is a standardized observational measure that involves rating a child on 15 items during a semistructured play observation.

**Developmental Measures.** To characterize clinical groups, we administered the VABS (Sparrow et al., 1984), SBI (Roid, 2003), MSEL (Mullen, 1995), and Leiter International Performance Scale–Revised (Roid & Miller, 1997). The VABS is a structured, standardized interview administered to caregivers that includes Communication, Socialization, Daily Living, and Motor Skills scales. The SBI, Leiter, and MSEL are all standardized, examiner-administered developmental assessments. Which assessments were administered depended on when the child entered the study (e.g., the SBI was used more recently) and the child's age (e.g., the MSEL is standardized only for children age  $\leq 68$  mo). To generate a comparable metric across assessments, we used IQ proxy scores (akin to an IQ ratio or developmental quotient score); these scores were calculated using nonverbal age equivalent (i.e., mental age) divided by chronological age and multiplied by 100 (Becker, 2003; Knobloch & Pasamanick, 1974).

**Sensory Measures.** As part of the larger study, two parent-report measures of sensory processing were used, the Sensory Experiences Questionnaire (Baranek, 2009) and the Sensory Profile (Dunn, 1999). In addition, we administered an observational assessment, the SPA (Baranek, 1999b). The SPA is a 20-min play-based behavioral observation assessment administered by a trained assessor, initially designed to measure primarily hyper- and hyporesponsiveness. The SPA enables observation of children's responses to tactile, auditory, and visual modalities through interaction with novel sensory toys and unexpected sensory stimuli. Previous research has found that the SPA demonstrates sound psychometric properties (Baranek, Boyd, Poe, David, & Watson, 2007; Baranek et al., 2013). For the purposes of this investigation, we developed a scoring supplement for the SPA to characterize the behavioral presentation of SIRS and coded it from existing video-recorded SPA administrations.

**SPA SIRS Scoring System.** In framing our investigation, we conceptualized SIRS as actions that intensify a sensory experience, may be repetitive in nature, involve one or more of the senses, and may be engaged in with or without objects. The constructs of interest for this analysis were

rated during children’s interactions with each of the SPA’s eight toys during SPA administration. The SPA toys provide a variety of sensory experiences for participants and include a colorful Slinky<sup>®</sup>, a squishy water toy, a small battery-operated fan, bubbles, a vibrating toy, a spiky fish squeeze toy, and a light-up musical device. For each toy presentation, the child was rated on overall SIRS (ranging from 0 = *no unusual SIRS* to 2 = *frequent, intense, and/or unusual SIRS*); complexity (ranging from 0 = *no SIRS or one behavior engaged in at a time* to 2 = *three or more behaviors engaged in simultaneously*); facial affect (scored as *negative, neutral, positive, or mixed*); and discrete behaviors (endorsed when observed during each toy presentation; refer to Table 2 for a description of behaviors). Endorsement of observed discrete behaviors was required to be accompanied by an overall SIRS score of 1 or 2, with the exception of mouthing. To reduce inflation of overall SIRS scores in young children for whom mouthing is a developmentally appropriate behavior (Juberg, Alfano, Coughlin, & Thompson, 2001), we did not consider mouthing a contributor to the overall SIRS score.

### Procedures

The data used in this analysis were collected as a part of a larger research project. Participants were recruited for the

**Table 2. Discrete Sensory Interests, Repetitions, and Seeking Behaviors**

Behavior	Description
<b>Body</b>	
Flapping	Repetitive arm or hand flapping
Posturing	Tensing body or hands; includes finger splaying
Other body	Other body-focused, clearly unusual or intense seeking behaviors
<b>Object</b>	
Mouthing <sup>a</sup>	Brings object to open mouth; includes placing it inside and licking
Biting	Clearly bites object with teeth
Smelling	Brings object to nose and clearly smells it
Sighting	Intense visual inspection or looking at objects from angles
Tactile or touching	Rubbing, scratching, or stroking object
Proprioceptive or pressure	Pressing, banging, or pounding object
Spinning	Repetitive (≥3 times in sequence) spinning of object or part of object
Auditory	Clearly seeking auditory input from object; must be put close to ear
Other object	Other object-focused, clearly unusual or intense seeking behaviors

*Note.* All discrete behaviors must be clearly unusual or intense, must be in response to the Sensory Processing Assessment for Young Children toy presented, and must accompany a Seeking score of 1 or 2 (except mouthing). <sup>a</sup>Developmentally appropriate or brief mouthing scored as a 1, unusual mouthing scored as a 2.

larger study through a variety of methods, including a state subject registry, parent support groups, developmental evaluation clinics, and public schools. All clinical assessments were conducted by trained, reliable assessors in our university-based research office. Children and their families typically visited the office for two sessions to complete all assessments. Participants received monetary incentives (\$20–50 plus travel reimbursement) for participation in the clinical assessments, including the measures used in this study, which varied according to time commitments and number of assessments required for the child’s age and diagnosis.

The first two authors (coders; Kirby and Little) completed scoring from video-recorded SPA administrations. They independently scored videos with 20% randomly selected overlap ( $n = 8$  from each diagnostic group) and were required to achieve at least 80% agreement. We calculated percentage of agreement as number of agreements divided by the total number of agreements plus disagreements multiplied by 100. In addition, we ran intraclass correlation coefficients (ICCs) between the coders on the mean scores used in the analyses presented in this article to verify reliability; this procedure is considered to be a statistical equivalent to using a weighted  $\kappa$  (Fleiss & Cohen, 1973).

The scoring data were entered into IBM SPSS Statistics, Version 20 (IBM Corporation, Armonk, NY), which we used to analyze data. Analysis began with visual inspection of the data and calculation of descriptive statistics. Chronological age, race, and ethnicity did not significantly differ across the three groups, and although gender did differ—as expected with samples of children with ASD—it did not significantly contribute to any of the models and was therefore excluded from the final reported analyses. IQ proxy scores are presented in Table 1; cognitive status did not significantly differ between the ASD and DD groups, but the TD group had significantly higher IQ proxies than both other groups. We used mean scores across the SPA’s eight toys in the analyses. The only missing data were individual SIRS item-level scores—resulting from video-recording errors and extenuating circumstances during administration. In these few instances, we used mean scores across valid items.

We used a generalized linear model (GLM; Field, 2009; Sullivan, 2009) to examine the main effects of diagnostic group (ASD, DD, TD) and chronological age, as well as the interaction between diagnostic group and chronological age, on mean SIRS scores. Bonferroni corrections were used to analyze differences between groups. This approach allowed us to examine both the parameter estimates provided by the GLM and follow-up comparisons and is appropriate for both continuous (e.g., chronological age) and categorical

(e.g., group) data (Field, 2009). We used a separate analysis of variance (ANOVA; Field, 2009; Sullivan, 2009) to examine complexity mean scores across groups. Differences in discrete behaviors between groups were analyzed using a multivariate analysis of variance (MANOVA; Field, 2009).

Through initial visual inspection of the data, we identified overwhelmingly high frequencies of neutral affect across toys and groups. Therefore, we calculated mean frequencies of neutral affect (vs. nonneutral affect) during SIRS and used an ANOVA to determine whether there were group differences in average frequency of neutral affect during SIRS.

## Results

### Interobserver Agreement

The coders achieved 86.4% agreement overall, with 88.2% in the ASD group, 82.6% in the DD group, and 88.7% in the TD group. The single-measures ICCs were .78 ( $p < .001$ ) for overall SIRS means and .40 ( $p = .02$ ) for complexity means. The single-measures ICC for mean neutral affect during SIRS was 0.41 ( $p = .053$ ).

### Group Differences on SIRS Variables

For overall SIRS, we identified a significant main effect for group,  $F(2, 110) = 10.49, p < .001$ . We found the highest mean overall SIRS scores in the ASD group (mean [ $M$ ] = 0.57,  $SD = 0.37$ ), followed by the DD group ( $M = 0.32, SD = 0.28$ ) and the TD group ( $M = 0.20, SD = 0.17$ ), as hypothesized. Bonferroni correction revealed significant differences in mean SIRS scores between the ASD group and both other groups (both  $ps < .001$ ); the DD and TD groups did not significantly differ from each other. We also found a significant interaction between group and chronological age,  $F(1, 110) = 3.75, p < .05$ , on mean overall SIRS scores, as expected. Specifically, we found that younger children with ASD demonstrated more SIRS than young children with TD,  $t(110) = -2.66, p < .05$ .

The ANOVA results for mean complexity showed significant group differences,  $F(2, 113) = 5.15, p < .01$ . The ASD group had the highest mean SIRS complexity scores ( $M = 0.07, SD = 0.01$ ), followed by the DD group ( $M = 0.03, SD = 0.01$ ) and the TD group ( $M = 0.01, SD = 0.01$ ). Bonferroni correction suggested a significant difference between the ASD group and the TD group ( $p < .01$ ); other group differences were nonsignificant.

We observed neutral affect during more than half of all SIRS in our sample (59%), with the lowest rates observed in the ASD group (49%). Using ANOVA to explore

group differences in average neutral affect during SIRS, we identified no significant differences,  $F(2, 88) = 2.03, p = .138$ .

The MANOVA run to determine group differences in discrete SIRS was significant, Pillai's trace = 0.38,  $F(22, 208) = 2.20, p = .002$  (see Table 3). Significant group differences were revealed for posturing, sighting, proprioceptive, and spinning behaviors, with the ASD group engaging in significantly more posturing and sighting behaviors than the other two groups ( $ps < .05$ ) and the ASD group demonstrating significantly more proprioceptive and spinning behaviors ( $ps < .05$ ) than the TD group.

## Discussion

Our findings suggest that differences in SIRS exist among groups (ASD, DD, and TD) during a structured play assessment with novel objects. We found that children with ASD demonstrated distinct patterns of SIRS with regard to frequency, complexity, and discrete behaviors. The findings suggest that children with ASD display significantly more SIRS than children with DD and TD. These findings are consistent with the majority of previous research (Baranek, 1999a; Boyd et al., 2010; Leekam et al., 2007; MacDonald et al., 2007; Watling et al., 2001; Zwaigenbaum et al., 2005). In addition, chronological age was a significant moderator, such that younger children with ASD demonstrated more SIRS than children with TD. This finding aligns with previous research using micro-level coding from video, which suggests a

**Table 3. Group Differences on Discrete Sensory Interests, Repetitions, and Seeking Behaviors**

Discrete Behavior	Mean			$F(2, 114)$
	ASD	DD	TD	
Flapping	0.05	0.04	0.003	2.32
Posturing	0.02	0.003	—	5.86**
Other body	0.03	0.02	0.01	1.14
Mouthing	1.23	1.61	0.89	0.38
Biting	0.04	0.01	0.003	1.98
Smelling	—	—	—	—
Sighting	0.18	0.09	0.09	6.9**
Touching or tactile	0.03	0.01	0.01	2.77
Proprioceptive or pressure	0.10	0.08	0.03	4.42*
Spinning	0.05	0.05	0.02	3.77*
Auditory	0.02	0.01	0.01	0.61
Other object	0.02	0.01	0.01	1.31

*Note.* Group differences on discrete behaviors analyzed with multivariate analysis of variance. Dashes indicate no instances of the behavior. ASD = autism spectrum disorder; DD = developmental disability; TD = typical development.

\* $p < .05$ . \*\* $p < .01$ .

higher incidence of SIRS among young children with ASD than among children with TD and DD (e.g., Baranek, 1999a; Watt, Wetherby, Barber, & Morgan, 2008). This study extends these findings, however, by suggesting that the differences can be identified during the SPA's brief 20-min semistructured administration. Therefore, the SIRS scoring system for the SPA may have utility for supplementing caregiver-report data for assessment in practice and future research.

Moreover, findings from this study suggest that, in addition to a higher frequency of SIRS performed by children with ASD, this group demonstrates increased complexity of SIRS. That is, children with ASD demonstrated significantly more SIRS simultaneously (e.g., flapping while sighting, spinning while sighting) than the TD group. Previous studies have found that children with ASD demonstrate increasingly complex repetitive behaviors as they age (e.g., Bodfish et al., 2000; Milnerini, Bravaccio, Falco, Fico, & Palermo, 2002), and our findings related to the simultaneous nature of SIRS align with these findings. The current findings demonstrate that complexity may be an important aspect of these behaviors that differentiates diagnostic groups and potentially contributes to exaggerated difficulties with participation for children with ASD and their families. This construct must be further explored to determine its potential impact on children's occupational functioning. In the meantime, occupational therapists should pay particular attention to when and how a child's SIRS may be co-occurring and tailor interventions to an individual child's behavioral presentation and subsequent impact on engagement in occupations.

Interestingly, the majority (59%) of the SIRS observed in this study were accompanied by neutral facial affect. That is, children engaged in these behaviors did not display many expressions typical of enjoyment (i.e., positive affect) or distress (i.e., negative affect). Previous research has suggested associations with positive affect (Engel-Yeger & Dunn, 2011) and, alternatively, depressive symptoms (Pfeiffer et al., 2005). However, in this study, neither positive nor negative affect were identified with SIRS with any real frequency in any of the groups. This finding challenges the clinical assumption that engagement in SIRS is necessarily associated with enjoyment of the particular behavior.

We did not specifically explore the function of SIRS; however, the lack of an association between affective valence (positive or negative) and SIRS behaviors leaves open many possibilities about why children perform these actions (e.g., a need or compulsion, pleasure, anxiety). Another possibility is that a child's level of enjoyment while engaging with toys is not fully manifested through facial

affect. The neutral affect we observed could also merely signify interest, which is distinct from positive or negative emotional states (Sullivan & Lewis, 2003). Moreover, in this study children were observed in a structured laboratory setting; thus, results may have been affected by their comfort level, awareness of being observed, or unfamiliarity with the toys or setting. Future researchers should consider conducting in-home observations during daily occupations to add contextual relevance. Clearly, the affective states of children engaged in SIRS warrant further nuanced exploration.

Finally, our examination of particular SIRS revealed that the groups differed in their use of some behaviors more than of others. Specifically, the ASD group displayed significantly more posturing and sighting behaviors than the other two groups. In addition, the TD group displayed significantly fewer proprioceptive and spinning behaviors than the ASD group. These findings suggest that diagnostic differentiation of SIRS may be action specific. That is, certain behaviors are more likely to be manifested in specific diagnostic groups, which perhaps suggests different neurobiological bases reflecting areas of strength or weakness. This adds to previous literature suggesting that SIRS are, in general, more prevalent among children with ASD, even at very young ages (e.g., Baranek, 1999a; Watt et al., 2008), and can contribute to further research that can inform assessment and treatment related to SIRS.

## Limitations and Future Directions

In this study, we relied on coding of video rather than using live scoring during SPA administration, which offers some strengths (e.g., video offers precision and the ability to review carefully in a research setting) and weaknesses (e.g., camera angle may obscure some behaviors and affective responses that are more likely to be interpreted by an experienced clinician). Future work should determine the feasibility of completing SIRS scoring live in conjunction with the original SPA scoring during administration, which would be more efficient in clinical settings. We also examined the form of SIRS in terms of types, frequency, and complexity but did not specifically examine the function or meaning of SIRS; therefore, we cannot make conclusions regarding the underlying reasons for the behaviors. Determining these reasons is an important direction for future work.

## Implications for Occupational Therapy Practice

As a result of this observational laboratory study, we can make several recommendations for practitioners to consider

when working with children who display SIRS, which are also referred to as *sensory-seeking behaviors*. Most important, practitioners should supplement caregiver-report measures with clinical observations of sensory behaviors (including SIRS). During clinical observations, practitioners should take note of the intensity, frequency, quality, and complexity of SIRS. In addition, practitioners should consider reasons why a child may be engaging in SIRS, which could be positive or negative; monitoring facial affect and body language during activities that elicit SIRS can provide meaningful information regarding a child's individual interest level or emotional state.

- We recommend that practitioners augment caregiver-report measures with behavioral observations to better understand how SIRS are manifested and how they may affect each child's participation in daily activities.
- Practitioners should monitor children's interest and affect during SIRS when performing clinical observations. Moreover, practitioners should maintain awareness that engagement in SIRS does not necessarily imply enjoyment of the behavior.
- Surveillance of the manner in which children engage in multiple SIRS concurrently (i.e., complexity) may reveal more challenges for some children than others in the face of similar situations, which may be important for intervention planning.

## Conclusion

The observational scoring protocol used in this study revealed group differences on three aspects of SIRS. Group differences were identified in overall frequency or intensity and complexity of SIRS, as well as in particular types of SIRS (i.e., posturing, sighting, proprioceptive, and spinning behaviors), suggesting more specific diagnostic specification of SIRS that can inform future research. Facial affect during SIRS was primarily neutral across groups; thus, few conclusions can be drawn about emotional associations with SIRS in this laboratory context. Further research in natural contexts may add further understanding of the nature of SIRS and how they affect occupational engagement. Likewise, practitioners are advised to assess SIRS using a combination of parent report and observed clinical measures and to use appropriate interventions in the child's natural environments (e.g., home, school) to optimize occupational performance and participation. ▲

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## CALL FOR PAPERS

### Occupational Therapy and Childhood Obesity

Guest Editor: Michael A. Pizzi, PhD, OTR/L, FAOTA

The *American Journal of Occupational Therapy* announces a call for papers for a special issue on occupational therapy and childhood obesity. Articles covering the following topics are encouraged:

- The role of occupation in the daily lives of children who are overweight or obese
- Obesity as a public health concern and the impact of occupational therapy in its prevention among children
- Community-based programming and childhood obesity
- Interdisciplinary perspectives on assessment and intervention in childhood obesity
- Childhood obesity as a family issue
- Childhood obesity as a societal and global issue
- Marginalized communities and childhood obesity
- Mental health concerns and interventions in childhood obesity
- Qualitative and quantitative research studies related to childhood obesity
- Context-based assessment and intervention in childhood obesity.

For all *AJOT* articles, the goal is to provide high-quality research for use by occupational therapy practitioners and researchers as well as consumers, insurers, and other health care professionals. Articles that are relevant to readers in addition to occupational therapy audiences will be given greater consideration.

Before submitting a manuscript, authors should contact the guest editor, Michael Pizzi, at [mpizzi58@gmail.com](mailto:mpizzi58@gmail.com) then submit manuscripts through the BenchPress system at <http://ajot.submit2aota.org> and specify in their cover letter that the manuscript is intended for publication in this special issue. Submitted manuscripts will be peer reviewed and must conform to the criteria specified in the current Guidelines for Contributors to *AJOT* (available on the *AJOT* and BenchPress websites).

Questions about submission should be directed to [ajotproduction@aota.org](mailto:ajotproduction@aota.org). The issue is tentatively scheduled for publication in September 2016.

**Deadline for submission: December 1, 2015**

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