



A systematic review of sensory-based autism subtypes



Kelle K. DeBoth*, Stacey Reynolds

Virginia Commonwealth University, School of Allied Health Professions, Occupational Therapy, 730 East Broad Street, P.O. Box 980008, Richmond, VA 23298-0008, United States

ARTICLE INFO

Article history:

Received 2 September 2016

Received in revised form 8 January 2017

Accepted 16 January 2017

Number of reviews completed is 2

Available online xxx

Keywords:

Autism spectrum disorder

Sensory responsivity

Systematic review

Subtypes

ABSTRACT

Background: Children with autism often present with a myriad of possible sensory processing deficits. Sensory-based subtypes have been proposed as a means to better understand the unique sensory qualities in this clinical population. The purpose of this systematic review is to synthesize information about sensory-based subtypes that have been reported in the literature for children with autism.

Methods: PRISMA guidelines informed this review process. Included articles were published in the last 12 years, specific to children with autism between the ages of 2–18 years old. Of the 33 articles meeting eligibility for full-text review, 8 matched the final inclusion criteria.

Results: Findings indicate that sensory-based subtypes in children with autism were developed using primarily parent-report instruments that assess differences in sensory responsivity. Several different subtyping schemes were presented, suggesting between three to five subtypes as an appropriate fit to encompass the different patterns of sensory responsivity seen in children with autism. Several studies suggest that a subgroup of this population has typical sensory functioning, and a subgroup exists with significant, global sensory differences. Mixed results were found for those children who fall in between, who have specific versus global differences in responsivity (i.e., hyper- or hypo-responsivity or sensory seeking), or within specific sensory domains.

Conclusion: The literature consists of a small number of descriptive studies with little consensus on subtypes. Initial findings indicate that service providers may be able to consider variable presentations of sensory processing differences in their approach to treatment and intervention planning, but further research is indicated.

© 2017 Elsevier Ltd. All rights reserved.

Contents

1. Introduction	45
2. Methods	46
3. Results	48
4. Discussion	51
4.1. Sensory based subtyping systems	51
4.1.1. Factors influencing sensory subtyping in ASD	52
4.1.2. Methodology considerations	53

* Corresponding author. Present address: Cleveland State University, School of Health Sciences, 2112 Euclid Avenue IM323, Cleveland, OH 44115, United States.

E-mail addresses: kelledeboth@gmail.com, k.deboth@csuohio.edu (K.K. DeBoth), reynoldsse3@vcu.edu (S. Reynolds).

4.2. Clinical implications	53
4.3. Limitations	53
4.4. Future directions	53
5. Conclusion	54
Conflicts of interest	55
Acknowledgement	55
References	55

1. Introduction

Autism spectrum disorder (ASD) is a complex and multifaceted neurological disorder. No single cause or biomarker has been identified, and the increasing prevalence has brought significant attention to efforts aimed at gaining a better understanding of ASD (Baio, 2012). A major complication of both research and clinical practice continues to be the varied presentation of this disorder (Anagnostou et al., 2014), including mixed levels of social interactions, patterns of verbal and nonverbal communication, repetitive behaviors, sensory processing deficits, restricted interests and rigidity, and severity of impairment (American Psychiatric Association, 2013). Evidence-based practice guidelines need to be able to address the entire spectrum of impairments associated with ASD, and more homogenous groups are required for improved interpretations of empirical research. Grouping children with ASD based on similar traits could provide more focused treatment groups for practitioners to direct their efforts, and allow targeted interventions for the symptoms of greatest severity and impact on functional performance (Lane, Young, Baker, & Angley, 2010; Lane, Dennis, & Geraghty, 2011; Lane, Molloy, & Bishop, 2014). Momentum towards the development of subgroups of ASD has taken hold across the many disciplines of ASD-related service providers, such as occupational therapists, psychologists and speech therapists. Deriving ASD subtypes according to similar characteristics could help set more explicit inclusion criteria for subjects entering clinical trials and potentially link neurological symptoms of ASD with particular symptoms or patterns of symptom manifestation (Charman et al., 2011; Grzadzinski, Huerta, & Lord, 2013; Lane et al., 2014; Taylor, Maybery, Grayndler, & Whitehouse, 2014).

Sensory processing abilities vary considerably in children with ASD and can be assessed using a variety of valid and reliable tools, such as the Sensory Profile and the Sensory Profile-2 (Dunn, 1999; Dunn, 2014). Scores from these measurement tools consistently indicate that, as a group, children with ASD have global dysfunction and clinically significant differences in all or many sensory domains compared to typical children (Baranek, David, Poe, Stone, & Watson, 2006; Ben-Sasson et al., 2007; Brock et al., 2012; Brockevelt, Nissen, Schweinle, Kurtz, & Larson, 2013; Kern et al., 2007). However, gross dysfunction in this population may not reflect an individual's specific sensory processing features. Occupational therapists frequently utilize a Sensory Integration (SI) frame of reference for interventions addressing sensory processing deficits in clients with ASD, and recent evidence indicates such SI interventions may be more effective than standard care (Pfeiffer, Koenig, Kinnealey, Sheppard, & Henderson, 2011; Schaaf, Benevides & Hunt, 2012; Schaaf et al., 2014). However, the efficacy of these interventions has been difficult to establish empirically (Lang et al., 2012), suggesting that inclusion of heterogeneous groups of children with ASD in research studies may mask the ability to detect significant improvements (May-Benson & Koomar, 2010). It is also possible that the effects attributed to SI intervention are a function of other aspects of the therapeutic interaction such as reinforcing engagement with the therapist or the process. Research rigor could continue to be enhanced by further homogenizing subgroups of children with ASD based on similar sensory processing deficits in order to explore these possibilities.

Differences in sensory processing are often diagnosed as a sensory processing disorder (SPD). Several methods for subcategorizing sensory processing disorders (SPD) have been proposed. Most commonly, a scheme involving hyperresponsivity (or overresponsivity), hyporesponsivity (or underresponsivity) and sensory seeking tendencies emerges. One nosology for diagnosis uses SPD as an umbrella term under which three specific types of SPD are identified: Sensory Modulation Disorder (SMD), Sensory-Based Motor Disorder (SBMD), and Sensory Discrimination Disorder (SDD; Miller, Anzalone, Lane, Cermak, & Osten, 2007). Within these subtypes of SPD, SMD is differentiated further by responsivity patterns (over/under/seeking) (Miller et al., 2007). Another model conceptualized by Dunn (1997, 2001) describes responsivity in relationship with a child's observable behavioral response or response strategy, providing four subcategories of sensory modulation disorder: Poor Registration, Sensitivity to Sensory Stimuli, Sensation Seeking and Sensation Avoiding. None of these SPD subcategories are specific to children with ASD who may fall into one or many of the classifications.

Children with ASD have been shown to have specific deficits with imitation and motor planning, perception of tactile and proprioception, vestibular bilateral integration and reactivity to sensory stimuli (Roley et al., 2015). However, it is unclear how these identified deficits co-occur within sensory-based subsets of children on the autism spectrum.

The purpose of this systematic review is to examine and summarize the evidence for sensory-based subtypes within the population of children with ASD. This stands in contrast to previous reviews that used core features of ASD (e.g. communication impairment level) or other associated features (e.g. degree of intellectual impairment) to develop ASD subtypes (Beglinger & Smith, 2001). This review is also distinct from previous reviews which used subtypes of SPD across diagnostic groups not exclusive to ASD (Davies & Tucker, 2010), or characterized sensory profiles of ASD which were not used

Download English Version:

<https://daneshyari.com/en/article/4940930>

Download Persian Version:

<https://daneshyari.com/article/4940930>

[Daneshyari.com](https://daneshyari.com)