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Examining sensory quadrants in autism

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Abstract

The purpose of this study was to examine sensory quadrants in autism based on Dunn's Theory of Sensory Processing. The data for this study was collected as part of a cross-sectional study that examined sensory processing (using the Sensory Profile) in 103 persons with autism, 3–43 years of age, compared to 103 age- and gender-matched community controls. Sensory quadrants (Low Registration, Sensation Seeking, Sensation Sensitivity, and Sensation Avoidance) on the Sensory Profile are different in persons with autism as compared to community controls, with persons with autism engaging in the behaviors more frequently than the controls. This study provides further evidence of sensory differences in autism.

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Keywords: Autism; Sensory quadrants; Sensory Profile; Low Registration; Sensation Seeking; Sensation Sensitivity; Sensation Avoidance

1. Introduction

To be able to process sensory information is an important part of our daily function. Our understanding of life as humans is rooted in our sensory experiences. Data suggests that

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there are individual differences in sensory processing. Thus, how we experience life and how we interpret our world could conceivably vary depending on our individual and unique way of processing of sensory information.

Dunn (2001) outlined the Dunn's Model of Sensory Processing that focuses on the impact of sensory processing in daily life. The basic concept of this Model is that a person's way of responding to sensory events is a combination of their sensory threshold (high or low) and their responding strategy (passive or active). Using this Model, Dunn (2001) delineates sensory processing into four quadrants: Low Registration, Sensation Seeking, Sensation Sensitivity, and Sensation Avoidance. Low Registration is a combination of high thresholds and passive responding. Sensation Seeking is a combination of high thresholds and active responding. Sensation Sensitivity is a combination of low thresholds and passive responding. Sensation Avoidance is a combination of low thresholds and active responding (Dunn, 2001).

For person's with significant sensory processing differences, the world may be viewed very differently, and in some cases, sensory experiences could be different to the point of being altered or confusing. Anecdotal reports suggests that for person's with autism sensory processing is very different and can, in some cases, be overwhelming. Some researchers have suggested that there is a link between the sensory processing problems that a person with autism experiences and the difficulties in managing daily life (Cook & Dunn, 1998; Dunn, 1997, 1999, 2001; Kern et al., 2006).

Since the nature or the frequency of abnormal sensory responses is not included in the diagnostic criteria for autism or pervasive developmental disorder (PDD), it has been disregarded in some research (Tadevosyan-Leyfer et al., 2003). As such, there has been a paucity of research in sensory processing in autism, and as a result, there is not a clear understanding of the sensory pathology.

Some studies have reported significant differences in both high and low thresholds on autism as compared to controls (Baranek, Foster, & Berkson, 1997a, 1997b; Kern et al., 2006; Rosenhall, Nordin, Sandstrom, Ahlsen, & Gillberg, 1999). A better understanding of sensory processing in autism, including threshold differences, will improve on our understanding of what persons with autism experience everyday and how their sensory experience may shape their behavior and their response to their world.

This analysis examined sensory quadrants, based on Dunn's Theory of Sensory Processing, in 103 persons with autism, 3–43 years of age, compared to 103 age- and gender-matched controls using the Sensory Profile.

2. Methods

2.1. Subject selection and participation

The data for this study was collected as part of a cross-sectional study of 103 persons with a diagnosis of autism, 3–43 years of age, as compared to 103 gender- and age-matched community controls (see Table 1 for demographic information). The participants were recruited across seven age categories (3–7; 8–12; 13–17; 18–22; 23–27; 28–32; and 33+) in order to ensure a full range of ages and a balance of participants in the seven categories.

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