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The use of movement-based interventions with children diagnosed with autism for psychosocial outcomes—A scoping review



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ABSTRACT

Over the past decade, research evidence on the sensory motor challenges associated with autism spectrum disorder (ASD) raises questions about the unilateral focus on psychosocial criteria for the diagnostic category and shifts attention from perspectives that focus solely on behavioral deficits towards a more embodied perspective of the spectrum. The focus on embodiment in autism research forges a link between psychosocial deficits and sensory motor challenges. Further, sensory motor actions and experiences are the foundation for cognition, emotions and communication within conceptualizations of embodiment. This unifies theoretical divisions between body and mind. This shift of perspective raises the question of whether or not there is a gap between emergent research knowledge and its implementation in practice. Thus, the aim of this scoping review was to understand the extent of research on interventions focused on the use of sensory motor based or movement based interventions (MBI) to target psychosocial outcomes for children with autism. Using a combination of a descriptive numerical analysis and a thematic analysis of fourteen studies, this scoping review provides the preliminary evidence of the efficacy of MBIs for children with ASD and questions actual research practices to measure psychosocial changes.

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1. Introduction

Autism spectrum disorder (ASD) is a lifelong neurodevelopmental condition (Bracher, 2012) for which the prevalence among school-aged children has increased from one in 88 to one in 50 in the United States (Centers for Disease Control and Prevention, 2013) and globally, around 1–2% in 2012 (Elsabbagh et al., 2012). Changes in diagnostic criteria, methods for ascertaining, and reporting of ASD over the past decades have contributed to this increase in prevalence (Hahler & Elsabbagh, 2015). These prevalence rates highlight the global burden of ASD and fuel the need for effective interventions for individuals with ASD and their families (Baxter et al., 2015).

Since Kanner's (1943) first description of ASD as the *autistic disturbance of affective contact*, the diagnostic name, criteria, and conceptualization have changed numerous times. The Diagnostic and Statistical Manual of Mental Disorders or DSM-V (American Psychiatry Association, 2013) includes behaviors that may result from hyper- and/or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment as a sub criteria for restricted, repetitive patterns of behavior. The inclusion of sensory criteria expands on first generation research on autism, which focused solely on social and cognitive behavioral deficits. The current controversy between behavioral and sensory motor approaches to ameliorate psychosocial deficits in autism reflects the persistence of both the original and more recent understanding of this lifelong condition and raises questions regarding what the most effective intervention approaches may be.

First generation research on autism focused on understanding the underlying cognitive and/or behavioral deficits of autism leading to the development of theories on mentalization, such as Theory of Mind (Baron-Cohen, Leslie, & Frith, 1985). Theory of Mind (ToM) is believed to provide the cognitive capacity to predict and respond to others' behaviors and mental states by putting aside one's own current perspective (Baron-Cohen & Wheelwright, 2004). As a result of this conceptualization, interventions such as social skills trainings (SST) focus on remediating social cognitive and behavioral skills deficits. Yet, recent reviews suggest that evidence of the efficacy of these interventions remains inconclusive (Koenig et al., 2010; Rao, Beidel, & Murray, 2008), and that the skills learned in these interventions may not generalize to day-to-day life (Paul, 2008).

Second generation research increased understanding of the sensory and motor challenges of persons with ASD, such as differences in eye-tracking during social situations (Klin, Jones, Schultz, Volkmar, & Cohen, 2002b), multi-sensory deficits (Baranek, 2002; May-Benson & Koomar, 2010), motor impairments (Fournier, Hass, Naik, Lodha, & Cauraugh, 2010; Green et al., 2002), and imitation challenges in novel tasks (Rogers & Williams, 2006). Recent neurological evidence supports the growth of theories on embodied cognition, a philosophical construct that integrates theoretical knowledge from diverse disciplines (psychiatry, psychology, phenomenology, anthropology, philosophy, and linguistics among others) to understand ASD (Gallese, 2005, 2006, 2007; Gallese, Rochat, & Berchio, 2013; Williams, 2008). This has shifted the research focus from behavioral components of social cognition towards understanding the complexity of the experiences of interacting with others in particular places (Fuchs, 2009).

Recently emerging conceptual models of ASD integrate theories of embodiment to understand the complexity of social impairments. For example, *The Enactive Mind* (Klin, Jones, Schultz, & Volkmar, 2003) focuses on the moment-by-moment adaptation to sensory and social stimuli required in social situations. *Identification theory* (Hobson, Lee, & Hobson, 2007) suggests that the perceiver registers and assimilates another person's bodily anchored stance in a way that it becomes a potential stance for himself. *Position Exchange* (Gillespie, 2012) stipulates that understanding others' experiences comes through exchanging social positions, in contrast to being a process of mind reading as espoused in Theory of Mind. In *Participatory Sense-Making* (De Jaegher, 2013) meaning is created through interaction with the world and in coordination with

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