Sensory processing: Brain, interventions, lifespan, evidenc.

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Introduction

This article systematically reviews and meta-analyzes the effectiveness of Ayres Sensory Integration (ASI) therapy. It finds evidence supporting ASI for improving sensory-motor skills, social participation, and reducing problem behaviors in children with sensory processing challenges. The insights here highlight the need for more high-quality, methodologically sound research to further strengthen the evidence base for ASI interventions [1].

This systematic review and meta-analysis explores sensory processing differences in children with Autism Spectrum Disorder (ASD) and Attention-Deficit/Hyperactivity Disorder (ADHD). It confirms that both groups exhibit distinct sensory processing patterns, suggesting these differences are core features, not just comorbidities. What this really means is that assessing sensory processing is crucial for tailored interventions in these populations [2].

This systematic review synthesizes research on brain connectivity in children diagnosed with Sensory Processing Disorder (SPD). It reveals consistent patterns of atypical connectivity in various brain regions, particularly those involved in sensory processing and integration. These findings underscore a neurobiological basis for SPD, suggesting potential neural biomarkers and informing future diagnostic and intervention strategies [3].

Here's the thing about Ayres Sensory Integration (ASI) this article provides a comprehensive overview, tracing its theoretical foundations, assessment methods, and intervention principles. It summarizes the current state of research supporting ASI's efficacy and outlines critical future directions for research, highlighting the need for rigorous study designs and robust outcome measures to further strengthen the evidence base [4].

This study investigates the interplay between sensory processing and emotional regulation difficulties in children and adolescents who have experienced complex trauma. It reveals significant differences in sensory processing patterns and emotional regulation capacities in this population compared to typically developing peers, suggesting that trauma can profoundly impact how individuals perceive and respond to sensory input. The findings highlight the importance of trauma-informed approaches in addressing sensory challenges [5].

This research explores the relationship between sensory processing patterns and psychological distress among university students. It demonstrates a significant correlation, indicating that atypical sensory processing is associated with higher levels of anxiety, depression, and stress. The findings here suggest that incorporating sensory-informed strategies could be beneficial in supporting the mental health and well-being of young adults in academic settings [6].

This systematic review investigates the neural underpinnings of sensory over-responsivity (SOR) in children with Autism Spectrum Disorder (ASD). It identifies consistent alterations in brain structure and function, particularly in regions involved in sensory processing, attention, and emotion regulation. The evidence suggests a distinct neurobiological profile for SOR in ASD, offering insights into potential targets for neurodevelopmental interventions [7].

This scoping review examines the range and types of sensory strategies employed in classroom settings for children with sensory processing difficulties. It identifies various common approaches, such as sensory breaks, flexible seating, and calming corners, and discusses the evidence base supporting their use. The review highlights the need for more rigorous research on the effectiveness and implementation fidelity of these strategies in educational environments [8].

This article details the development, validity, and reliability of the Sensory Processing Measure, Second Edition (SPM-2), a widely used assessment for sensory processing difficulties across various environments. It presents evidence supporting the SPM-2's psychometric properties, demonstrating its utility for identifying sensory processing patterns in children, adolescents, and adults. The updated version offers enhanced clinical applicability and research utility, which is a big deal for practitioners [9].

This scoping review explores the current understanding of sensory processing in aging adults, an area that's often overlooked. It identifies common sensory processing challenges that emerge with age, such as changes in sensory modulation and discrimination, and discusses their implications for daily functioning and quality of life.

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The review calls for more research to develop age-appropriate sensory assessments and interventions to support healthy aging [10].

Conclusion

These articles collectively highlight the critical role of sensory processing in various populations and contexts. Ayres Sensory Integration (ASI) therapy shows promise in improving sensory-motor skills and reducing problem behaviors in children with sensory challenges. Research also confirms distinct sensory processing patterns in children with Autism Spectrum Disorder (ASD) and Attention-Deficit/Hyperactivity Disorder (ADHD), emphasizing the need for tailored interventions. The neurobiological basis of Sensory Processing Disorder (SPD) is supported by findings of atypical brain connectivity, and sensory over-responsivity in ASD is linked to specific brain alterations. Sensory processing difficulties are associated with emotional regulation issues in children with complex trauma and psychological distress in university students. Practical strategies, like classroom sensory interventions and comprehensive assessment tools such as the Sensory Processing Measure, Second Edition (SPM-2), are also discussed. There is an increasing focus on understanding and addressing sensory processing changes in aging adults to support their daily functioning and quality of life. The collective works emphasize the continuous need for high-quality research to strengthen the evidence base for sensory interventions and assessments.

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