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Pilot Application of the BPSCConnect Model: Bio-Psycho-Social Correlation in Children with ASD

Children with autism spectrum disorder (ASD) are routinely assessed through fragmented approaches that address biological, psychological, and social dimensions in isolation, limiting the clinical understanding of their developmental complexity. This study presents the pilot application of the BPSCConnect model, a systematic bio-psycho-social screening protocol designed to integrate these three dimensions within a single, clinically applicable framework. A cross-sectional observational pilot was conducted at e-TherapyKids (Barcelona, Spain) from November 2024 to June 2025, including 25 children aged 4 to 8 years with confirmed ASD diagnosis via ADOS-2. The protocol combined dimension-specific checklists with validated scales (SRS-2, Vineland-3, SSP2/SP2, PSI-SF, FES) and an exploratory non-invasive hair epigenetic analysis (Cell Wellbeing). Protocol feasibility was high, with a completion rate above 90% and mean administration time below 60 minutes per dimension. Biological alarm signals were frequent: 64% showed indicators of vitamin D deficiency, 56% of iron deficiency, and 72% elevated electromagnetic field exposure. Psychological findings revealed marked difficulties in sensory processing (84%) and social communication (68%). Social findings were equally significant: 84% of caregivers reported high parental stress and 84% of children lacked adequate specialized school support. Exploratory Spearman correlations identified plausible cross-dimensional associations, including vitamin D deficiency with socio-communicative impairment ($\rho=0.41$), iron deficiency with language and attentional difficulties ($\rho=0.33$), and parental stress with reduced adaptive functioning ($\rho=0.38$). These preliminary findings confirm the feasibility and clinical relevance of the BPSCConnect protocol, establishing a foundation for the forthcoming multicenter NeuroEpigenCare validation study.

Keywords: autism spectrum disorder, bio-psycho-social model, BPSCConnect, biomarkers, parental stress, pilot study

Biography

Rebeca Linares Castellanos is a sociologist and researcher specializing in bio-psycho-social intervention models for pediatric neurodevelopment. She is the intellectual author of the BPSCConnect model, a comprehensive screening and intervention system currently in patent process across Spain, Europe, and the United States. As founder of e-TherapyKids, a pediatric neurodevelopment clinic in Barcelona, she leads multidisciplinary clinical teams and applied research initiatives at the intersection of clinical innovation, technology, and social impact. Her work focuses on translating complex neurodevelopmental science into actionable clinical and digital tools for children, families, and professionals.