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PRIMITIVE REFLEXES AND THEIR RELATIONSHIP TO DELAYED CORTICAL MATURATION, UNDER CONNECTIVITY AND FUNCTIONAL DISCONNECTION IN CHILDHOOD NEUROBEHAVIORAL DISORDERS

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ABSTRACT

Persistent primitive reflexes have been noted in a number of neurobehavioral disorders and are thought to be related to delayed or absent developmental milestones in this population of children. This is also associated with the presence of clumsiness, incoordination, awkward posture, gait and other motor disturbances. The degree of motor incoordination seems to be related to cognitive dysfunction as well. ADHD, autism, dyslexia as well as almost all neurodevelopmental disorders have been associated with anatomical and functional effects that correlate with the motor incoordination, motor disturbance, cognitive delays and the presence of persistent primitive reflexes. For some time researchers have debated if the structural anatomic and volumetric differences in disorders such as ADHD and autism represent deviant developmental changes or whether they reflect a maturational delay. In this paper we review the literature that clearly demonstrates that these disorders and the structural differences represent cortical maturational delays not deviant development. We also note that persistent primitive reflexes are the earliest markers for this delay and that this delayed maturation will eventually lead to the presence of autism, ADHD, and other neurobehavioral disorders. We also note that these disorders and their recent reported increased incidence is related to a combination of genetic and epigenetic factors mostly driven by environmental and lifestyle changes affecting early motor development, sensory stimulation and activity dependent synaptogenesis and neuroplasticity. Symptom variations between these neurobehavioral disorders may be related to asymmetrical maturational differences resulting from different rates of maturation of the right and left hemisphere. Asymmetric persistent primitive reflexes may also be an early marker related to this maturational imbalance.

This abnormal pattern of hemispheric asymmetry may lead to desynchronization, underconnectivity, and

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