

The Relationship between Hot and Cool Executive Function and Theory of Mind in School-Aged Children with Autism Spectrum Disorder

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Abstract : Executive function (EF) refers to a set of future-oriented and goal-directed cognitive skills that are crucial for problem solving and social behaviour, as well as the ability to organise oneself. It has been suggested that EF could be conceptualised as two distinct but interrelated constructs, one emotional (hot) and one cognitive (cool), as it facilitates both affective and cognitive regulation. Cool EF has been found to be strongly related to Theory of Mind (ToM) that is the ability to infer mental states, but research has not taken into account the association between hot EF and ToM in Autism Spectrum Disorder (ASD) to date. The present study investigates the associations between both hot and cool EF and ToM in school-aged children with ASD. This cross-sectional study assesses 79 school-aged children with ASD (7-15 years) and 91 controls matched for age and IQ, on tasks tapping cool EF (working memory, inhibition, planning), hot EF (effective decision making, delay discounting), and ToM (emotional understanding and false/no false belief). Significant group differences in each EF measure support a global executive dysfunction in ASD. Strong associations between hot EF and ToM in ASD are reported for the first time (i.e. ToM emotional understanding and delay discounting). These findings highlight that hot EF also makes a unique contribution to the developmental profile of ASD. Considering the role of both hot and cool EF in association with ToM in individuals with ASD may aid in gaining a greater understanding not just of how these complex multifaceted cognitive abilities relate to one another, but their joint role in the distinct developmental pathway followed in ASD.

Keywords : ASD, executive function, school age, theory of mind

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