



## ADHD Comorbidity in School Aged Children with ASD Impacts

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### ABOUT THE STUDY

The EEG microstate is defined in the literature as metastable topography of the electric field in the running EEG, lasting about 100 ms and representing sub second-scale coherent activation within the global functional brain networks. Recently, we found early alterations in the spatiotemporal dynamics and syntax of brain states in toddlers and preschoolers with autism spectrum disorders (ASD) compared to their typically developing (TD) peers.

According to DSM-5, major diagnostic criteria for autism spectrum disorders (ASD) are impairments in communication, social interactions, and repetitive behaviors and restricted interests, while attention deficit/hyperactivity disorder (ADHD) is defined by symptoms of inattention and/or hyperactivity/impulsivity. ASD and ADHD are two of the most frequent neurodevelopmental disorders of child psychiatry, with prevalence among children of 1.85% for ASD and up to 11% for ADHD. Since the release of DSM-5 in 2013, the co-diagnosis of both disorders is now possible. This update reflects the frequent clinical co-occurrence between both disorders. Indeed, ADHD is one of the most co-occurring psychiatric disorders in ASD. According to the literature, up to 85% of children with ASD have ADHD symptoms.

Moreover, observing clinical and neuroimaging similarities between ASD and ADHD, recent hypotheses have emerged concerning potential shared developmental pathways and mechanisms leading to both disorders. Among imaging studies, a common feature of ASD and ADHD is whole-brain functional

disconnectivity. Indeed, several studies have found connectivity particularities in resting-state brain networks (RSNs), such as the Default Mode Network (DMN) for both disorders separately and when they co-occur together. However, underlying mechanisms leading to ASD-ADHD comorbidity are not entirely understood.

To investigate other comorbid symptoms that could be present in children with ASD, use the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS). The K-SADS is a semi-structured parents' interview facilitating the diagnosis of past and current episodes of psychopathology in children and adolescents between 6 and 18 years old according to DSM-5 criteria. Regarding K-SADS interview, 1 participant with ASD met the diagnostic criteria for a comorbid diagnosis of specific phobia and 1 participant with ASD+ADHD met the diagnostic criteria for a generalized anxiety disorder.

Six microstate maps that best represent the dataset with the eyes closed. They found an increased incidence of microstate maps B and E in young adults with ASD compared to their TD peers. Card C tended to be more abundant in their control group. Comparing children aged 5 to 18 years with ASD with TD peers, microstate map B occurs more frequently and in time range, map a decreases in mean time period, and map C decreases in mean time period and time range there was a trend for map C being more present in their control group. Microstate map B more prevalent in occurrence and time coverage, a decreased map a regarding the mean duration, and a decreased map C regarding the mean duration and time coverage when comparing 5- to 18-year-old children with ASD to their TD peers.

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**Received:** 01-Mar-2022, Manuscript No. JOP-22-16177; **Editor assigned:** 04-Mar-2022, PreQC No. JOP-22-16177(PQ); **Reviewed:** 18-Mar-2022, QC No JOP-22-16177; **Revised:** 25-Mar-2022, Manuscript No. JOP-22-16177(R); **Published:** 31-Mar-2022. DOI: 10.35248/2378-5756.22.25.498

**Citation:** Belayneh M (2022) ADHD Comorbidity in School Aged Children with ASD Impacts. J Psychiatry. 25:498.

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