Cognitive and Brain Measures in Middle-Aged Autistic Spectrum Disorder Individuals: Where Are the Differences?

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Introduction: As the aging ASD cohort becomes larger, there continues to be a paucity of research to assess their needs. This study is the beginning of one of the first longitudinal cognitive and brain studies in aging ASD. We hypothesized that the older ASD group would show change in brain structure and function that will match lower performance on frontal lobe-dependent cognitive measures. Methods: We examined 16 ASD and 17 age-matched typically developing individuals from ages 40 to 65. All subjects completed cognitive testing. Structural MRI scans, diffusion tensor images, and Functional MRI were obtained. Working memory, fluency, and visual search tasks were obtained. Results: Group analyses showed that the ASD cohort had thinner cortex in the frontal lobe and smaller volumes of the hippocampi, cerebellum white matter, and corpus callosum. The ASD group had decreased white matter integrity throughout the hippocampus, corpus callosum, and cerebellum, as well as greater frontal and parietal lobe activation during EF tasks and reduced resting-state DMN connectivity. Conclusion: Our results supported our hypothesis that differences in older adults with ASD as measured by white and gray matter volumes, structural and functional connectivity, and cognitive data often center on the frontal lobe.

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