

research snapshot

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What Does the Research on the Brains of People With ASD Say?

What is this research about?

A person with autism spectrum disorder (ASD) will have difficulties with social communication. There will also be issues with repetitive and restrictive behaviors. ASD is diagnosed based on a range of behavioral concerns and delays in development. There is little known about potential biological markers that can be used to aid the diagnosis of ASD. Tests that examine brain structure, function, and chemical makeup are exploring biological factors of ASD. We hope this research will help develop new diagnostic and treatment strategies for people with ASD. The quicker a person engages with interventions, the better the long term outcomes. Research results are not always consistent and they may be hard to integrate. This causes difficulties in transferring knowledge from the research studies to the clinical settings. This paper outlines research that has been completed on the brains of people with ASD. The discussion will focus on where there is agreement in research and what can be learned from these. Reasons for areas where there are disagreements are also discussed.

What did the researchers do?

The researchers reviewed literature on the structure, function, and chemical makeup of the brain of people with ASD. This thorough exploration allowed for themes within the research to be found and discussed. Studies related to the structure of

What you need to know:

New technologies are helping to discover new information on how ASD affects the brain. New knowledge will create a better understanding of ASD, which will help with diagnosis and treatment.

the brain included studies using structural MRI, examining volume and the thickness of the cortical grey matter, and diffusion tensor imaging studies. Then, literature on the functions of the brain focused on studies of functional MRI. Finally, the chemical makeup of the brain was explored in studies of magnetic resonance spectroscopy.

What did the researchers find?

Although there is lack of consensus across all the research studies, the following themes emerged:

- There is rapid growth of the brain in early childhood followed by a slowing in growth in later childhood and adolescence. These findings suggest that there are differences in how the brain forms, and is organized in ASD.
- Different parts of the brain show unusual patterns of connections and a lack of specialization. These issues lead to inefficient processing of signals.
- There are differences in the levels of several

chemicals important for the structure and function of the brain. Although this field of research is new, it has the potential to guide the development of biological treatments for ASD.

Several areas of inconsistency were also found. The researchers suggest that differences in results could be related to:

- Differences in the age of the participants in the study.
- Differences in the level of difficulties related to ASD in participants.
- The presence of other health issues.

How can you use this research?

Policymakers will learn that further research on how the brain is affected by ASD is needed to develop the best interventions. Research in this area should be prioritized by policy makers in a position to influence funding.

Practitioners will find this information useful as it pulls together a large portion of the research done on how ASD affects the brain. This will help in understanding what current research has found and where work must be done in the future.

About the Researchers

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