

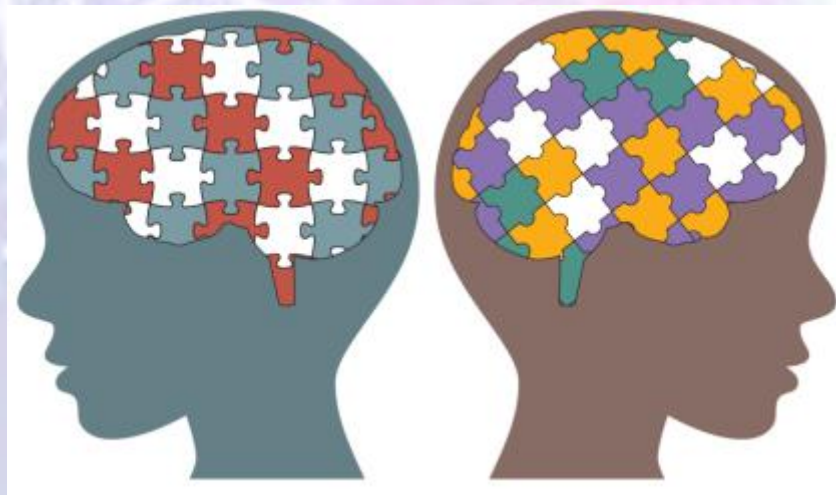
They may be resting but their brains aren't:

Brain function in Autism

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Researchers at the TEND Lab at San Diego State University and the University of Michigan have found that the brains of kids with autism spectrum disorder (ASD) work differently when the kids are at rest.

Even when we are not doing anything in particular, our brains are hard at work. Examining our brains “at rest” can help us figure out what might be different in the brains of individuals with ASD. The researchers’ aim was to examine the functional connectivity of the default network (a network particularly active when we are at rest) in adolescents with ASD in comparison to adolescents who are typically developing, in order to associate abnormalities in the default network with some of ASD’s core symptoms: social impairment, communication deficits, and restricted and repetitive behaviors or interests.



Participants included 16 adolescents with ASD and 15 typically developing children for comparison. The participants’ functional connectivity was measured by an fMRI machine, monitoring activation of the default network as participants were at rest, passively viewing a fixation cross.

The findings of this study supported the researcher's initial hypotheses, specifically, that adolescents with ASD showed weaker connectivity in the default network than other studies have previously reported, and that some of ASD's core impairments were associated with areas of weaker connectivity in the default network.

The default network may be involved in understanding oneself in relation to others, taking others' perspectives, and mind wandering, among other functions. In typically developing individuals, mind wandering involves imagining past or hypothetical social situations. Differences in activation in the ASD group led researchers to the idea that such thoughts may be qualitatively different or the content may be less socially oriented in individuals with ASD. If default network activation truly reflects these thought processes, then the present findings suggest that these inner thought processes differ in adolescents with ASD.

What is the Default Network?

The Default Network is comprised of a set of structures in the brain including the posterior cingulate cortex (PCC), retrosplenial cortex, and temporal lobe. Its function has been related to cognitive processing of recent stimuli, mind-wandering, and comprehension.

Connectivity of Default Network (DN) associated with core symptoms:

Weaker Connectivity in DN relates to:

- Poorer social skills
- Increased restrictive and repetitive behaviors or interests

Stronger Connectivity in DN relates to:

- Poorer verbal and nonverbal communication

So, what's next?

Future studies on younger ages and lower functioning individuals with ASD could be conducted in order to gain a clearer picture of how connectivity of the default network is related to symptom severity.

Weng, S.J., **Wiggins, J.L.**, Peltier, S.J., Carrasco, M., Risi, S., Lord, C., Monk, C.S. (2010). Alterations of resting state functional connectivity in the default network in adolescents with autism spectrum disorders. *Brain Research*, 1313, 202-14.