

Link discovered between touch of individuals with autism and their social difficulties

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The sense of touch may play a more crucial role in autism spectrum disorder (ASD) than previously assumed. Doctoral researcher Eliane Deschrijver has published study results showing that individuals with ASD may have difficulties determining which tactile sensations belong to the actions of another person.

Many individuals with ASD are over- or under-sensitive to sensory information. Some feel overwhelmed by busy environments such as supermarkets; others are less sensitive to pain or dislike being touched.

Large-scale queries in the scientific literature have reported that the severity of daily social difficulties of individuals with ASD is strongly related to their sensitivity to touch, more so than to their visual or auditory sensitivities. To determine why this is the case, Eliane Deschrijver and her colleagues investigated how the brains of individuals with and without ASD use self-touch to understand touch sensations in the actions of others.

Prof. dr. Marcel Brass clarifies: "We think that the human brain uses the sense of self-touch to distinguish one's self from others. When I perform an action that leads to a tactile sensation, for instance by making a grasping movement, I expect to feel a tactile sensation that corresponds to this. If my own touch tells me something else, the tactile sensation probably belongs to the other person and not to me. The brain can thus effectively understand others by signaling tactile sensations that do not correspond to the sense of self-touch."

In a series of experiments with electroencephalography (EEG) conducted at Ghent University, the scientists showed that the brain activity of adults with ASD differs from that of adults without ASD while processing touch.

The research showed that the human brain of individuals without ASD indicated very quickly when a tactile sensation does not correspond to the sense of self-touch. This means that the human brain is able to signal that a tactile sensation of a finger that touches a surface does not correspond to self-touch.

This process differed in the brains of adults with ASD, however. Their brains signaled to a lesser extent when the external touch sensation did not correspond to their own touch. Those individuals that experienced stronger sensory difficulties showed a stronger disturbance of the neural process, while they were also the ones that experienced more severe social difficulties.

"It is, to my knowledge, the first time that a relationship could be identified between the way individuals with ASD process tactile information in their brain, and their daily social difficulties. The findings yield a novel and crucial link between sensory and social difficulties within the autism spectrum," concludes Eliane Deschrijver.

"These findings primarily lead to a better understanding of the complex disorder, and of associated difficulties. It is still too early to draw conclusions on the impact of interventions. If the results can be confirmed in future studies of other groups with ASD, such as (young) children, they could provide a target for optimizing treatment," says Dr. Wiersema.

More information: Eliane Deschrijver et al. Action-based touch observation in adults with high functioning autism: Can compromised self-other distinction abilities link social and sensory everyday problems?, *Social Cognitive and Affective Neuroscience* (2016). [DOI: 10.1093/scan/nsw126](https://doi.org/10.1093/scan/nsw126)

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