NEWS

Cognition and behavior: Visual perception enhanced in autism

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People with autism are adept at detecting whether two items appear on a screen simultaneously or close together in time, according to a study published 14 December in the *Journal of Autism and Developmental Disorders*. This ability is linked to altered brain activity and to more severe symptoms of the disorder[1].

Some people with autism are thought to have **enhanced visual perception**, which may explain why they tend to focus on details at the expense of the bigger picture.

In the new study, researchers looked at brain activity in 16 individuals with autism and 17 controls while they watched two vertical bars appear on the screen. The bars either pop up at the same time, or at closely timed intervals.

In general, people perceive events separated by 57 milliseconds or more as separate and those closer together as simultaneous. A study published last year found that people with autism are better able to distinguish closely timed events than controls are[2].

In the new study, the participants looked at two vertical bars that appeared on a computer screen either at the same time, or 17 or 117 milliseconds later (referred to as short and long spacings).

People with autism detect a difference between the simultaneous and short-spaced bars about 12 percent of the time, compared with 4 percent for controls, the study found. Overall, both groups almost always saw the long-spaced bars as separate.

During the task, the researchers measured brain activity using magnetoencephalography (MEG), which detects large groups of neurons working together. A spike in activity immediately following an event suggests the brain's response to the event.

The researchers found one such spike 130 milliseconds after the appearance of the vertical bars. The spike occurs after a slight delay for short-spaced bars and after a longer delay for the longer spacing.

The participants with autism who were the best at detecting the short-spaced bars also had a longer delay in this brain measure, suggesting that this brain activity underlies visual perception.

People with autism also show more significant differences between their MEG responses to the simultaneous and short spacings than controls do.

The ten participants with autism who have the most severe autism symptoms are better able to detect these differences than the six with milder symptoms.

References:

1: Falter C.M. *et al. J. Autism Dev. Disord.* Epub ahead of print (2012) **PubMed**

2: Falter C.M. *et al. PLoS One* **7**, 1-6 (2012) **PubMed**