

Cognitive skills in children with autism vary and improve, study finds

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People with autism spectrum disorders (ASD) are thought to have a specific profile of cognitive strengths and weaknesses—difficulties appreciating others' thoughts and feelings, problems regulating and controlling their behavior, and an enhanced ability to perceive details—but few studies have tracked children's cognitive skills over time. Now new longitudinal research provides clues that can inform our understanding of ASD.

"Parents and clinicians already know that the behavioral signs of ASD wax and wane throughout development," notes Elizabeth Pellicano, senior lecturer of [autism](#) education at the Institute of Education in London, who carried out the study. "What we know a lot less about is how the cognitive skills of children with ASD change over time. In this study, we found that these skills vary from child to child, and also that some of them can improve over time."

The research, which was conducted in Western Australia, appears in the September/October 2010 issue of the journal *Child Development*.

The cognitive strengths and weaknesses typically exhibited by people with ASD include difficulties predicting others' behavior based on their thoughts and feelings (so-called theory of mind) and problems regulating and controlling their behavior (termed executive function), combined with an aptitude for detecting parts of objects or small details (also called weak central coherence).

The study assessed 37 children with ASD and 31 typically developing children when they were 5 to 6 years old and again three years later. The researcher explored children's theory of mind by asking children to watch a series of social interactions on video and predict a character's behavior based on his or her mental state. She tested children's executive function by having them take part in problem-solving tasks that required them to plan ahead and show flexibility. And she

assessed children's central coherence by asking them to construct patterns from wooden blocks and search for shapes hidden in pictures.

On the whole, Pellicano found, children with ASD exhibited the same profile that's typically associated with ASD, both at the start of the study and three years later. But a closer look at individual children's patterns of performance revealed that not all children with ASD displayed the same profile of cognitive strengths and weaknesses. Instead, the profiles of cognitive skills varied from one child to the next: For example, while one child with ASD showed difficulties in theory of mind alone, another child showed problems in theory of mind plus executive function.

Furthermore, although previous research has reported little change over time in theory of mind and executive function skills of children with ASD, this study found that most of the children's skills in these areas improved considerably over time: Most of the children had better appreciation of others' thoughts and feelings, and they were better able to plan, regulate, and control their thoughts and actions over the study's three years.

"These findings are encouraging," notes Pellicano. "They stress the importance of understanding the breadth of [cognitive skills](#)—a set of weaknesses and strengths—in [children](#) with ASD, and how these skills progress over time. A key question for the future is whether there are approaches that can facilitate progress in some of these areas."

Provided by Society for Research in Child Development

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