

OPINION

Test draws on doodles to spot signs of autism

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Picture this: Interactive drawings made with a typically developing 6-year-old boy (left) and with a 6-year-old boy who has autism (right).

When I pass a pint of ice cream back and forth with my husband (don't judge) and hand the spoon to him after taking a few bites — rather than eating half the carton on my own — I'm demonstrating an important social skill that scientists call reciprocity.

Reciprocity can mean taking turns, but also something more — the flexibility to work together with others to shape a conversation, a game or other social interaction. Children with autism often struggle with reciprocity, and poor reciprocity is **among the new diagnostic criteria** for the disorder in the latest edition of the "Diagnostic and Statistical Manual of Mental Disorders." But clinicians lack tools to measure it.

Dutch researchers hope to **fill this void with a whimsical test** described 29 January in the *Journal of Autism and Developmental Disorders*. The 10-minute assessment starts with simple instructions from the tester to the child: "We are going to draw together."

The researchers focused on drawing because it can capture the implicit nature of taking turns without relying on conversation, a plus when testing children with poor verbal abilities. It may also enable more accurate readings in high-functioning children with autism, who cannot use vocabulary to cover up their social deficits as they tend to do when the task is verbal.

For the assessment, the tester and child take turns adding elements such as a house or a tree to a common drawing. The child earns points for contributing to the same feature as the tester — such as adding leaves to a tree — for going with the flow when the tester changes some part of the drawing and for passing the paper back across the table at the end of a turn. All three behaviors show awareness of unstated social rules about taking turns and a willingness to collaborate to create a meaningful image.

Surreal sketch:

Researchers tried the test in 131 children aged 6 to 18 with autism and 62 age-matched children without the disorder. The autism group achieved lower scores overall. But the biggest differences between the two groups emerged when the tester added new objects to a scene or changed an object or detail that the child had begun drawing.

The results suggest that children with autism tend to be better at reciprocity when they are in control of the narrative.

That is, when a child with autism begins drawing a tree, she is not too bad at going back and forth with the tester to add details such as leaves, apples and bark. But if the tester adds something new to the scene, such as the outline of a house, the child might ignore the house and keep working on the tree or start drawing a car instead.

By contrast, a typically developing child is likely to add to the visual concept that the other person initiated. For instance, when I tried the exercise with my 7-year-old daughter, I drew a stick figure throwing a ball and she immediately added another stick figure to catch it.

Other differences between the groups emerge when an object the child initiated changes direction. If a child begins sketching a car and the tester turns it into a fire truck, for example, a typically developing child tends to run with the new narrative, adding a firefighter behind the wheel. But a child with autism might scratch out the transformed car to keep the drawing in line with his original vision.

One example of an interactive drawing made with a child who has autism features a fragmented house, a couple of cars with an exuberant scribble for a racetrack and a cloud with arms. The resulting illustration reminds me of the collaborative drawings produced by French surrealists in the 1930s.

It's not surprising that narrative control facilitates reciprocity in people with autism. Many affected individuals fluently chat about their own interests but struggle to keep up the conversation when the topic shifts. Through drawing, the true nature of the difficulty becomes more apparent: Rather than

having difficulty taking turns speaking, people with autism may struggle to follow another person's lead in a conversation. This insight may lead to targeted interventions for the disorder.

In the meantime, at least one other reciprocity test is also in the works: a video-based test that so far **captures variations in reciprocity** among typically developing toddlers, as researchers reported in the *Journal of Child Psychology and Psychiatry* in February. Together, the two tests might help scientists and clinicians get to the bottom of reciprocity, spoonful by spoonful.