Machine learning improves ADI-R efficiency

By Dr Jessica K Edwards

Early interventions in autism spectrum disorder (ASD) are essential to improve communication and behavioural skills in affected children. Now, researchers have used machine learning to derive new instrument algorithms that may help practitioners screen for autism more efficiently and effectively. The study, published in the Journal of Child Psychology and Psychiatry in 2016 used scores from two well-established caregiver-report tests — the Autism Diagnostic Interview-Revised (ADI-R) and the Social Responsiveness Scale (SRS) — from 1,264 individuals with ASD and 462 with non-ASD developmental or psychiatric disorders. The researchers used their machine learning technique to correlate the caregiver responses to individual questions with the child's clinical diagnosis. In this way, the researchers identified redundant questions in the two tests, and specifically reduced the ADI-R to only five questions that they say could maintain instrument performance at 95%. These questions included ADI-33, 34, 35, 50 and 73, which assess stereotyped language, social verbalization / chat, reciprocal conversation, gaze and abnormal responses to sensory stimuli, respectively. The researchers thus consider that certain diagnostic constructs may be more important than others in predicting a clinical diagnosis. Furthermore, they propose that with further clinical testing, machine learning may help make the diagnosis of ASD more effective and systematic, reducing the frequency of misdiagnosis.

Glossary:

Machine learning: A computer-based method in which statistical techniques permit computers to progressively improve performance (learn) on a given task without being explicitly programmed.