

TOOLBOX

# Cognitive tests may help characterize intellectual disability

BY MARCUS A. BANKS

29 APRIL 2020

Standardized tests can reliably measure memory, language ability, executive function and other cognitive traits in people with **intellectual disability linked to autism**<sup>1</sup>.

A package of seven tests from the U.S. National Institutes of Health, known as the **NIH Toolbox-Cognitive Battery**, is designed to assess cognitive skills in people aged 3 to 85 years in the general population. A new analysis indicates the tests are also valid for people with intellectual disability, including those with Down syndrome or **fragile X syndrome**.

More than 65 percent of people with intellectual disability do not have a definitive diagnosis — in part because clinicians have not had reliable tools to measure these individuals' cognitive ability<sup>2</sup>. Without any baseline characterizations, it is also difficult to gauge the effects of treatments.

Researchers administered the set of tests to 242 people with intellectual disability aged 6 to 25 years, including 75 with fragile X syndrome and 91 with Down syndrome. Each group had an average mental age of about 5.

A facilitator helped the participants take the tests using a tablet device. Those with a mental age of 6 or older were able to take all seven tests, whereas those with a mental age of 3 to 5 could use the tablets only for tests of vocabulary, reading out loud and memory.

Participants with fragile X syndrome scored higher on vocabulary and lower on executive function (skills that include planning and organizing) than people with Down syndrome, a result the team had predicted. The findings were published in March, and the researchers also prepared **a manual** of best scoring practices.

The battery performed most reliably for individuals above a mental age of 5. Results for people with younger mental ages should be interpreted with caution, the researchers say.

A revision of the battery, scheduled for 2021, may allow for more accurate characterizations.

**REFERENCES:**

1. Shields R.H. *et al. Neurology* **94**, e1229-e1240 (2020) [PubMed](#)
2. Coffman K.A. and R. Borgatti *Neurology* **94**, 507-508 (2020) [PubMed](#)