

Our task instructions are available in a wide variety of languages including:

- English
- French
- German
- Italian
- Spanish
- Dutch
- Portuguese
- Japanese

Other languages are also available on request.

Schizophrenia Cognitive Test Battery



Scientific Literature

Collie A, Maruff P, Snyder PJ. (2006). Does atypical antipsychotic medication improve executive function in schizophrenia? *Int J Neuropsychopharmacol.* 9, 629-630; author reply 631-632.

Falletti MG, Maruff P, Collie A, Darby DG. (2006). Practice effects associated with the repeated assessment of cognitive function using the CogState battery at 10-minute, one week and one month test-retest intervals. *J Clin Exp Neuropsychol.* 28, 1095-1112.

Snyder PJ, Piskulic D, Olver J, Norman T, Maruff P. (2006). Spatial working memory and problem solving in schizophrenia: The effect of symptom stabilization with atypical antipsychotic medication. *Psychiatry Research.* In press.

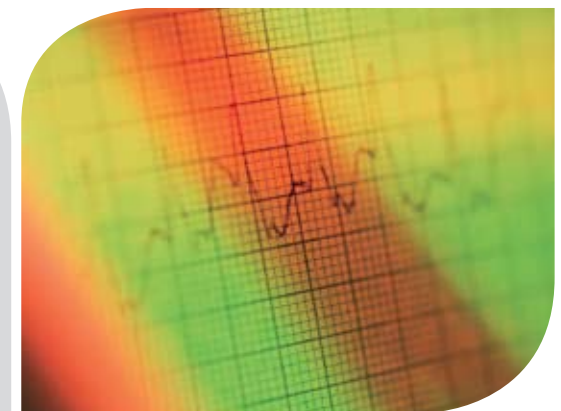
Snyder PJ, O'Sullivan R, Jackson C, Olver J, Norman T, Piskulic D, Collie A, Maruff P. (2006). Stability of cognitive performance in chronic schizophrenia over brief and immediate re-test intervals: Implications for studies of treatment efficacy. *Human Psychopharmacology.* In press.

About CogState

CogState is a provider of cognitive testing products and services that predominantly caters to the global pharmaceutical industry. CogState tests use simple but effective technology to detect cognitive change in subjects. Widely acknowledged as being the fastest tests in the world with outstanding levels of sensitivity, their validity has been confirmed in over 100 peer-reviewed publications. CogState tests have been used in over 60 clinical trials ranging from Phase I to Phase IV, with both healthy volunteers and patient groups.

CogState is a publicly listed company, trading on the Australian Stock Exchange (ASX:CGS), with offices in Melbourne, Australia, New Haven, CT, USA and the UK. CogState ClinicalTrials is used extensively by leading FDA-regulated pharmaceutical companies throughout the world to assess the effect of their drugs on human cognition. Our customers include 5 of the leading top 10 pharmaceutical companies, over 25 leading universities worldwide and numerous smaller pharmaceutical and biotech companies. FDA 21 CFR Part 11 compliant, the company's quality and data systems have been audited successfully by independent consultants and multinational pharmaceutical companies.

- Covers all domains identified by **MATRICES** initiative
- Requires only around **35 minutes** for administration
- Sensitive to the effects of novel compounds and licensed medication
- Sensitive to the effects of medication in groups or individual patients
- Outcome measures related to functional status



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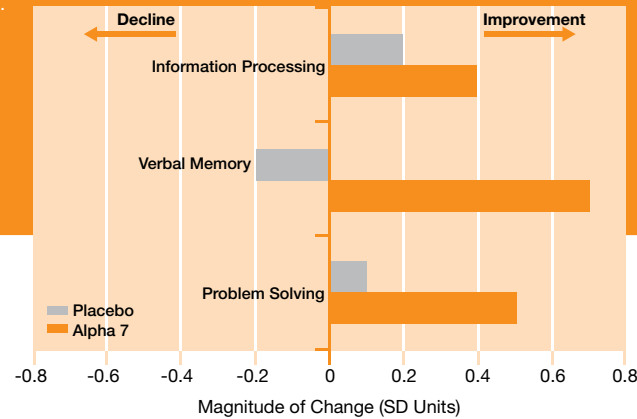
CogState and the three card motif are registered trademarks in the US and other jurisdictions

THE MAZE LEARNING TESTS DESCRIBED HERE WERE DEVELOPED BY PFIZER AND ARE SOLD UNDER EXCLUSIVE LICENCE FROM PFIZER



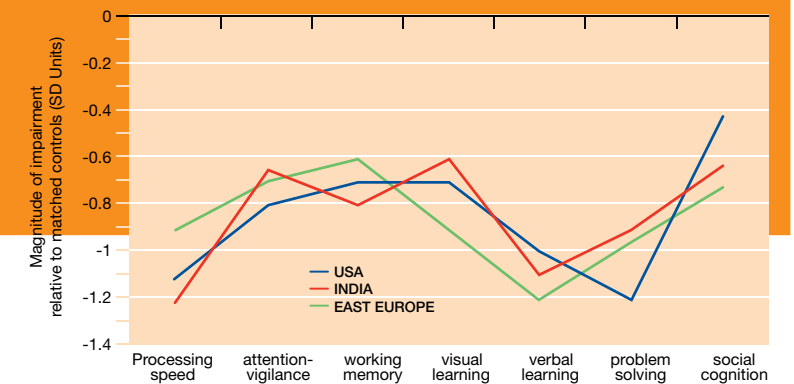
Screenshot of Maze Learning Task

Sensitivity of three measures from the CogState schizophrenia battery to change in cognitive function in schizophrenia. This figure summarizes the results from a placebo controlled parallel group study comparing the effect of a novel alpha 7 nicotine agonist on the Simple Reaction Time (information processing), International Shopping List (verbal learning) and Groton Maze Learning Task (problem solving) tasks in patients with chronic schizophrenia (n=30 per group) who were stable on their antipsychotic medication at randomization. Improvement in performance of greater than 0.4 standard deviation units was found for each measure.



Screenshot of Social-Emotional Cognition Task

Sensitivity of the primary outcome measures from the CogState schizophrenia battery to cognitive impairment in patients with chronic schizophrenia who were receiving antipsychotic medication in three different geographical areas. The nature and magnitude of impairment in the different cognitive domains was consistent across the three cultural groups.



The MATRICS initiative

As a result of FDA and NIH agreement that cognitive dysfunction/impairment is an important health issue in schizophrenia, the FDA confirmed that improved cognitive function would be considered as a primary outcome in schizophrenia research. Following this guidance, the MATRICS initiative, a collaboration of FDA, NIH, academic researchers and industry, recommended a test battery for the assessment of cognition in this population.

Prior to the MATRICS initiative, there was no consensus on the optimum outcome measures for evaluation of cognitive function in clinical trials in schizophrenia. The test criteria recommended by the MATRICS group was defined as:

- High test-retest reliability
- Good coverage of cognitive domains
- Comparable alternative forms
- Strong internal consistency
- Well established in general population
- Demonstrated tolerability and acceptability

All CogState tasks meet the criteria set out above with regards to scientific validity, reliability and consistency. These tasks, when put together to form the CogState Schizophrenia Battery, also cover the cognitive domains stipulated by the MATRICS initiative.

The benefits of the CogState Schizophrenia Battery

- The test battery is rapid. It covers all necessary domains in around 35 minutes – a huge benefit when working with patients suffering from schizophrenia.
- The user-friendly test battery allows for non-expert administration on standard computer equipment, which reduces costs and increases efficiency.
- The tasks utilize culture-neutral stimuli, which ensures that they can be integrated into clinical trials all around the world regardless of culture, ethnicity and socio-economic status.
- The test battery has high test-retest reliability, which ensures quality data.

The CogState Schizophrenia Battery

Domain	CogState Task	Task Description
Speed of Processing/Simple Reaction Time	Detection	The pre-task on-screen instructions ask: “Has the card turned over?” A playing card is presented in the center of the screen. The card will flip over so it is face up. As soon as it does, the subject must press the “Yes” key. The card will go to the back of the pack and the subject must press the “Yes” key as soon as the next card flips over and so on.
Attention/Vigilance	Identification	The pre-task on-screen instructions ask: “Is the card red?” A playing card is presented in the center of the screen. The card will flip over so it is face up. As soon as it does this the subject must decide whether the card is red or not. If it is red they should press “Yes” , if it is not red they should press “No” .
Working Memory	One-Back	The pre-task on-screen instructions ask: “Does the face up card exactly match the one before?” A playing card is presented face up in the center of the screen. The subject must decide as each card is presented whether it is identical to the one just before. If the card is identical to the card presented immediately before it, they should press “Yes” if it is not they should press “No” .
Visual Learning	One Card Learning	The pre-task on-screen instructions ask: “Have you seen this card before in this task?” A playing card is presented in the center of the screen. As soon as it does the subject must decide whether or not the same card has been seen before in this task. Subjects must try to remember all the cards that have been shown previously in order to decide whether or not they have seen each card before.
Verbal Learning	International Shopping List	The subject is told by the test supervisor: “In this task, I am going to read you a shopping list. I would like you to remember as many items from this list as possible. Are you ready to start?” The test supervisor reads the list of words as they appear on the computer screen. When the test supervisor has read all the words, the subject is required to recall as many items as possible from the list.
Reasoning/Problem Solving	Groton Maze Learning	The subject is shown a 10 x 10 grid of tiles on a computer touch screen. A 28-step pathway is hidden among these 100 possible locations. The start is indicated by a blue tile at the top left and the finish location is a tile with the red circles at the bottom right of the grid. The subject is instructed to move one step from the start location and then to continue, one tile at a time, toward the end (bottom right).
Social Cognition	Social-Emotional Cognition	The pre-task on-screen instructions ask, “Tap the odd one out” . In this task, the subject will see a number of pictures on the screen. One of these pictures will be different to the others in some way. The subject must decide which one of the pictures is different then tap that picture as quickly as they can.