



BIPOLAR DISORDER Factsheet

March 2019

What is executive functioning and how is it measured?

Executive functions are a group of cognitive processes including control, mental flexibility, planning, inhibition, decision-making, initiation, abstraction, self-monitoring and pursuit of goals. Executive functions are important in situations involving error correction and behaviour evaluation in response to environmental feedback.

Executive functioning is most commonly measured using the Wisconsin Card Sorting Task (WCST). This task requires the ability to shift cognitive sets. Study participants are told to match stimulus cards containing varying coloured shapes, based first on colour, then quantity, then design. The participant is then given additional cards and asked to match each one without being told any matching rules, so participants usually match according to the previous rule. Feedback is provided as to whether their match was correct or incorrect, based on a new and undisclosed matching rule that changes during the task. Other common tasks assessing executive functioning include the Trail Making Test (TMT), which requires participants to connect, in order, letters and/or numbers as quickly as possible. Also, the Stroop Colour Word Test (SCWT), presents colour names printed in an ink congruent to the colour name (e.g. blue), or incongruent to the colour name (e.g. blue). Participants are asked to either read the word or name the ink colour. Any impairment in executive functioning can also reflect impairments in other cognitive functions such as processing speed, attention and memory.

What is the evidence regarding executive functioning in people with bipolar disorder?

Moderate to high quality evidence suggests people with bipolar disorder showed poorer response inhibition than controls, particular people with bipolar disorder who were in a mania phase. Moderate quality evidence also suggests poorer set-shifting and planning. High quality evidence suggests a small association between poorer executive functioning and poorer general functioning.

Moderate to high quality evidence suggests a large effect of poorer executive functioning in elderly people with bipolar disorder compared to controls who were matched for age and education. High quality evidence shows a small effect of poorer overall executive functioning in people with bipolar disorder and a history of psychotic symptoms compared to people with bipolar disorder and no history of psychotic symptoms. There was also a small effect of poorer overall executive functioning in people with bipolar I disorder compared to people with bipolar II disorder. Moderate quality evidence suggests no differences on tasks of executive functioning between people with bipolar disorder and people with major depression.

High quality evidence suggests a small effect of poorer performance on the Stroop test, but not the WCST, in young relatives of people with bipolar disorder compared to controls.

There were no changes in performance on executive functioning tasks over time (~4-7 years), indicating a lack of neurodegeneration.

For more information see the technical table



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NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.

Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.

Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical benefits for all patients.

While we hope you find this information useful, it is always important to discuss any questions about bipolar disorder or its treatment with your doctor or other health care provider.

HOW YOUR SUPPORT HELPS

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