

Scientists identify depression and anxiety biomarker in youths

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Scientists have discovered a cognitive biomarker – a biological indicator of a disease – for young adolescents who are at high risk of developing depression and anxiety. Their findings were published today, 28 November, in the journal *PLOS ONE*.

The test for the unique cognitive [biomarker](#), which can be done on a computer, could be used as an inexpensive tool to screen adolescents for common emotional mental illnesses. As the cognitive biomarker may appear prior to the [symptoms of depression](#) and anxiety, [early intervention](#) (which has proven to be one of the most effective ways of combatting mental illness) could then be initiated.

For the study, 15-18 year old participants underwent [genetic testing](#) and [environmental assessment](#), an exercise which would currently be too expensive and take too long to use as a widespread method of screening. The adolescents were then given a computer test to gauge how they process emotional information. The test had the participants evaluate whether words were positive, negative or neutral (examples included 'joyful' for positive, 'failure' for negative, and 'range' for neutral).

Those adolescents with a variation of one gene (the short form of the [serotonin transporter](#)) as well as exposure to intermittent family arguments for longer than six months and violence between parents before the age of six were shown to have marked difficulty in evaluating the emotion within the words, indicating an inability to process emotional information. Previous research associated a maladjusted

perception and response to emotions, as seen here, with a significantly increased risk of depression and anxiety.

Professor Ian Goodyer, Principal Investigator on the study from the University of Cambridge, said: "Whether we succumb to [anxiety and depression](#) depends in part on our tendencies to think well or poorly of ourselves at troubled times. How it comes about that some people see the 'glass half full' and think positively whereas other see the 'glass half empty' and think negatively about themselves at times of stress is not known.

"The evidence is that both our genes and our early childhood experiences contribute to such personal thinking styles. Before there are any clinical symptoms of depression or anxiety, this test reveals a deficient ability to efficiently and effectively perceive emotion processes in some teenagers – a biomarker for low resilience which may lead to [mental illnesses](#)."

The scientists hope that their research could lead to developing inexpensive cognitive tests to screen for these illnesses, particularly in people identified as being at high social and genetic risk.

Dr Matthew Owens from the University of Cambridge added: "Having difficulty in processing emotions is likely to contribute to misunderstanding other people's intentions and can make individuals emotionally vulnerable. This research opens up the possibility of identifying individuals at greatest risk and helping them with techniques to process emotions more easily or training them to respond more adaptively to negative feedback."

Professor Goodyer further stated: "These types of cognitive biomarker can also be used to aid therapeutics by helping to determine which treatments are likely to work best for types of depressions and anxiety disorders. This is important, as although we have good treatments we do

not yet know what works best for whom."

Professor Barbara Sahakian, a co-author on the paper from the Department of Psychiatry at the University of Cambridge said: "The way we perceive and respond to emotions affects our resilience and whether we succumb to depression and other maladaptive ways of thinking. Using the biomarker identified in this study, it is possible to develop a screening programme to identify those at greatest risk."

Mental health problems are common in young people with approximately 10% of children (aged 5-16 years old) in Great Britain being assessed as having a mental disorder of some kind including conduct disorder, emotional disorder or hyperactivity. In addition, adolescence is a critical period for the development of depressions.

More information: The paper '5-HTTLPR and Early Childhood Adversities Moderate Cognitive and Emotional Processing in Adolescence' will be published in the 28 November edition of *PLOS ONE*. [dx.plos.org/10.1371/journal.pone.0048482](https://doi.org/10.1371/journal.pone.0048482)

Provided by University of Cambridge

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