

Scientists unpack testosterone's role in schizophrenia

April 26 2013, by Sunanda Creagh



A person with schizophrenia can experience bouts of disordered thinking that can distort their sense of reality, according to the Department of Health. Credit: <http://www.flickr.com/photos/methad/>

Testosterone may trigger a brain chemical process linked to schizophrenia but the same sex hormone can also improve cognitive thinking skills in men with the disorder, two new studies show.

Scientists have long suspected [testosterone](#) plays an important role in

schizophrenia, which affects more men than women. Men are also more likely to develop psychosis in adolescence, [previous research has shown](#).

A new study on lab rodents by researchers from Neuroscience Research Australia analysed the impact increased testosterone had on levels of dopamine, a [brain chemical](#) linked to [psychotic symptoms](#) of schizophrenia.

The researchers found that testosterone boosted dopamine sensitivity in adolescent male rodents.

"From these rodent studies, we hypothesise that adolescent increases in circulating testosterone may be a driver of increased dopamine activity in the brains of individuals susceptible to psychosis and schizophrenia," said senior Neuroscience Research Australia researcher and author of the study, Dr Tertia Purves-Tyson, who is presenting her work at the [International Congress](#) on Schizophrenia Research in Florida this week.

Dr Philip Mitchell, Scientia Professor and Head of the School of Psychiatry at the University of NSW, said the research was very interesting.

"The relationship between [sex steroids](#), such as testosterone, and [psychiatric disorders](#) has long intrigued researchers. For example, we have known for many years that schizophrenia presents earlier in males than females, but the [biological mechanism](#) for this has been poorly understood," said Dr Mitchell, who was not involved in the study.

"The rodent study by Professor Shannon Weickert from the School of Psychiatry at UNSW and NeuRA is therefore of particular interest. This study suggests an important interplay between circulating testosterone levels and the brain's sensitivity to dopamine – a neurochemical which has been long implicated in the cause of schizophrenia," said Dr

Mitchell.

"This study suggests that it is the interplay between testosterone and dopamine which is critical. This is an important observation which may very well throw an important light on solving the puzzle of the biological causes of schizophrenia."

Cognitive thinking

A separate study by Dr Thomas Weickert at [Neuroscience Research Australia](#) examined the role testosterone plays in the cognitive thinking skills of men with schizophrenia.

The researchers examined testosterone levels in a group of 29 chronically ill men with schizophrenia or schizoaffective disorder, and a control group of 20 healthy men and asked both groups to take a series of cognition tests.

"Circulating [testosterone levels](#) significantly predicted performance on verbal memory, processing speed, and working memory in men with schizophrenia ... such that increased normal levels of testosterone were beneficial to thought processing in men with schizophrenia but circulating sex steroid levels did not appear to be related to cognitive function in healthy men," the researchers reported.

"The results suggest that circulating sex steroids may influence thought processes in men with schizophrenia."

Dr Melanie McDowall, a researcher at the University of Adelaide's Robinson Institute, said the study added to a large body of evidence demonstrating a link between testosterone and schizophrenia.

"This is not surprising, given the link between testosterone and

dopamine," she said, adding that symptoms of schizophrenia predominantly began after puberty.

"However, as with most endocrine and mental illnesses, schizophrenia is multifaceted (genetic, environmental etc.), hence this may not be the be all and end."

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