Schizophrenia and cannabis use may share common genes

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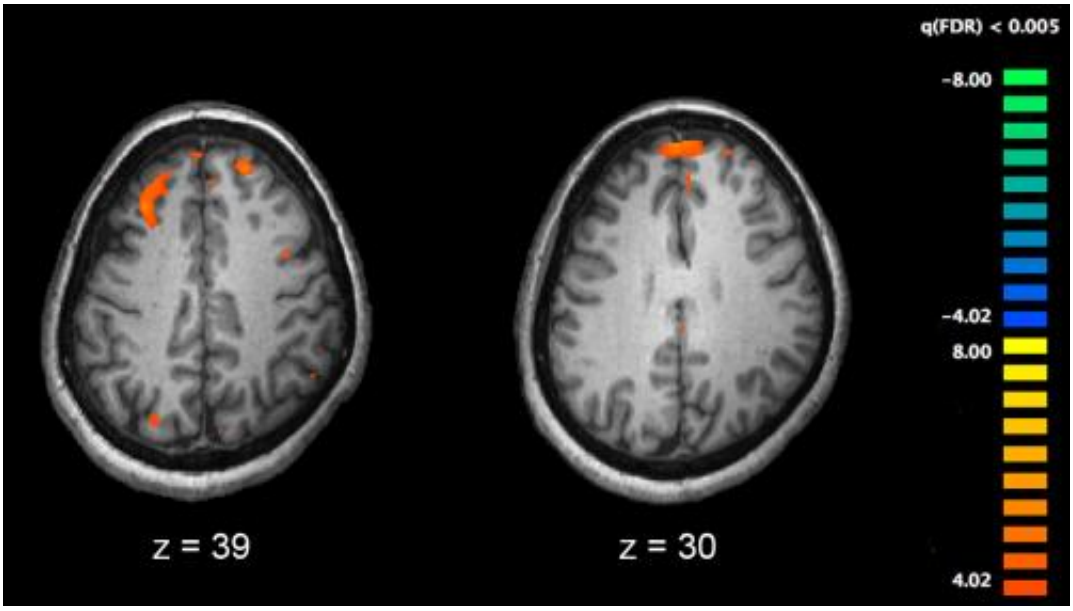

Functional magnetic resonance imaging (fMRI) and other brain imaging technologies allow for the study of differences in brain activity in people diagnosed with schizophrenia. The image shows two levels of the brain, with areas that were more active in healthy controls than in schizophrenia patients shown in orange, during an fMRI study of working memory. Credit: Kim J, Matthews NL, Park S./PLoS One.

Genes that increase the risk of developing schizophrenia may also increase the likelihood of using cannabis, according to a new study led by King's College London, published today in *Molecular Psychiatry*.

Previous studies have identified a link between cannabis use and schizophrenia, but it has remained unclear whether this association is due to cannabis directly increasing the risk of the disorder.

The new results suggest that part of this association is due to common genes, but do not rule out a causal relationship between cannabis use and schizophrenia risk.

The study is a collaboration between King's and the Queensland Institute of Medical Research in Australia, partly funded by the UK Medical Research Council (MRC).

Mr Robert Power, lead author from the Institute of Psychiatry at King's, says: "Studies have consistently shown a link between cannabis use and schizophrenia. We wanted to explore whether this is because of a direct cause and effect, or whether there may be shared genes which predispose individuals to both cannabis use and schizophrenia."

Cannabis is the most widely used illicit drug in the world, and its use is higher amongst people with schizophrenia than in the general population. Schizophrenia affects approximately 1 in 100 people and people who use cannabis are about twice as likely to develop the disorder. The most common symptoms of schizophrenia are delusions (false beliefs) and auditory hallucinations (hearing voices). Whilst the exact cause is unknown, a combination of physical, genetic, psychological and environmental factors can make people more likely to develop the disorder.

Previous studies have identified a number of genetic risk variants associated with schizophrenia, each of these slightly increasing an individual's risk of developing the disorder.

The new study included 2,082 healthy individuals of whom 1,011 had

used cannabis. Each individual's 'genetic risk profile' was measured – that is, the number of genes related to schizophrenia each individual carried.

The researchers found that people genetically pre-disposed to schizophrenia were more likely to use cannabis, and use it in greater quantities than those who did not possess schizophrenia risk genes.

Power says: "We know that cannabis increases the risk of schizophrenia. Our study certainly does not rule this out, but it suggests that there is likely to be an association in the other direction as well – that a pre-disposition to schizophrenia also increases your likelihood of cannabis use."

"Our study highlights the complex interactions between genes and environments when we talk about cannabis as a risk factor for schizophrenia. Certain environmental risks, such as cannabis use, may be more likely given an individual's innate behaviour and personality, itself influenced by their genetic make-up. This is an important finding to consider when calculating the economic and health impact of cannabis."

More information: Power, R. et al. 'Genetic predisposition to schizophrenia associated with increased use of cannabis' published in *Molecular Psychiatry*.

Provided by King's College London