

# Is schizophrenia one disease... or eight?

By David McNamee

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Rather than being a single condition, new research published in the *American Journal of Psychiatry* suggests that schizophrenia may be a group of eight genetically different diseases - each with their own symptoms.

*The scientists classified various profiles of schizophrenia symptoms into eight qualitative types of different diseases.*

[Schizophrenia](#) affects about 1% of the world's population. Previous research has suggested that 80% of the risk for having schizophrenia is hereditary. Historically though, scientists have struggled to pinpoint which genes increase risk for schizophrenia.

Despite this, in 2014, researchers from Cardiff University School of Medicine in the UK reported that they had linked 108 genes - [83 of them newly discovered](#) - to schizophrenia.

However, co-author of that study, Prof. Michael O'Donovan, warned that:

"Genetics only provides pointers to aspects of biology, but other research is needed to follow up those pointers and translate that into a detailed understanding of disease mechanisms. So by providing lots of genetic clues, we have provided an unprecedented number of openings to study the biology of the disorder."

In the new study, researchers from the universities of Granada in Spain and Washington in St Louis, MO, recruited 4,196 schizophrenia patients and 3,200 healthy controls to identify the different gene networks implicated in schizophrenia.



The patients were divided into groups according to the extent of "positive symptoms" - such as hallucinations or deliriums - and "negative symptoms," such as lack of initiative, problems with organizing thoughts and lack of connection between emotion and thought.

The scientists then classified the profiles of these symptoms into eight qualitative types of different diseases.

## Researchers matched eight groups of symptoms to gene networks

Associations between individual genes and schizophrenia symptoms were found to be weak and inconsistent. However, where this study breaks from other studies into the genetic component of schizophrenia is by choosing to investigate the interaction of genes, rather than just associations between schizophrenia and individual genes.

"What we did with this research," the authors write, "after a decade of frustration in the field of psychiatric genetics, is identify the manner in which the genes interact with each other, in an orchestrated manner in the case of healthy patients, or disorganized, as happens in the cases that lead to the different types of schizophrenia."

**The researchers first identified 42 groups of genes that appeared to influence schizophrenia risk, then calculated that they contribute to 70-100% of schizophrenia risk. The authors note that it is, therefore, almost impossible for individuals with certain genetic variant networks to avoid schizophrenia.**

These findings were subsequently replicated in two independent samples of schizophrenia patients.

"Genes do not operate on their own, in an isolated manner," co-author Igor Zwir, from the University of Granada, explains. "They rather work with each other as an orchestra. To understand how they work, we must not just know what each member of this orchestra is like, but also how they interact with each other."

He continues:

*"In the past, scientists had searched for associations between individual genes and schizophrenia. What was lacking was the idea that these genes do not act independently, but that they work as a group instead, to disturb the structure and the functions of the brain, thus causing the disease."*

Zwir believes that by identifying these gene networks and how they correlate with symptoms in individual patients it will soon be possible to develop localized treatments for the specific paths implicated in the individual's schizophrenia.

Last year, *Medical News Today* also reported that researchers had found a [genetic overlap between schizophrenia and autism](#).

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University of Granada [news release](#), accessed 15 January 2015 via AlphaGalileo.

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