



## Neurotrophin genes may be involved in gambling disorder

### What this research is about

Gambling disorder (GD) is an addictive disorder where one's gambling results in harms to personal, financial, and/or occupational functioning. The development of GD is due to biological, social, and psychological factors. One biological factor of interest is the genetics involved in GD. Neurotrophic factors (NTFs) might be involved in the genetics of GD as they regulate the growth and development of brain cells. A member of NTFs called the brain-derived neurotrophic factor (BDNF) has been linked to addictive disorders in previous research. Drugs of abuse may change the way BDNF works in the brain.

The aim of this study was to examine the role of NTFs in GD. The researchers sought to examine the genes underlying NTFs in people with GD and compare them to people without GD (known as the control group).

### What the researchers did

A total of 166 people who were diagnosed with GD were recruited from an outpatient hospital programme in Barcelona, Spain. Another 191 people without GD were recruited using posters around the hospital; these people made up the control group. People with GD were diagnosed using the Diagnostic Questionnaire for Pathological Gambling According to DSM Criteria. Participants underwent genotyping, which is a procedure in which a person's unique genetic profile is identified.

The researchers were interested in differences in single nucleotide polymorphisms (SNPs) between people with and without GD. SNPs are sections of genes that result in changes in the way the gene is expressed (a phenotype). This means that an SNP that differs between a person with GD and someone

### What you need to know

Some people develop a problematic relationship with gambling. This can lead to gambling disorder (GD). The researchers of this study wanted to better understand the genetics involved in GD. A total of 166 people with GD and 191 people without GD (the control group) participated in a genotyping study, where their unique genetic code was profiled. The researchers found four single nucleotide polymorphisms (SNPs) for neurotrophin genes that distinguished the GD group from the control group. They also found that two haplotypes, which are groups of SNPs, distinguished the two groups. One haplotype increased the risk of GD and the other decreased the risk of GD. Finally, the location of the SNPs in genetic code could have important information related to how the SNPs functionally contribute to the development of GD.

without GD could result in genetic differences between the two. This may partially explain why GD develops in one person but not the other. The SNPs for the genes underlying NTFs were examined in this study. The researchers also compared haplotypes between people with and without GD. Haplotypes are groups of SNPs that are inherited together because they are located close to one another in the genetic code. Essentially, the researchers examined genetic differences between people with and without GD by focusing on differences in SNPs and haplotypes.

### What the researchers found

The researchers identified four SNPs that uniquely distinguished the GD group from the control group.

The presence of certain variants in these SNPs might increase one's risk for having GD. The researchers examined six haplotypes (groups of SNPs) to see if any haplotypes were associated with GD. They found that two of these six haplotypes were significantly related to GD. One of the haplotypes was associated with an increased risk of GD (i.e., was more common in the GD group) and the other was associated with a decreased risk of GD (i.e., was more common in the control group).

The researchers also looked at the relationship between SNPs and certain areas of the genetic code that are responsible for transcription. Transcription is one step of the process in how genes are expressed. Examining this relationship could help uncover the role of SNPs in how these genes are expressed. The researchers discovered several important relationships. Several SNPs were involved in the transcriptional process and have been linked to depressive behaviours in mice and the functioning of an area of the hypothalamus. Another was related to the production of brain cells that produce dopamine, a neurotransmitter in the brain that has been linked to disordered gambling. Another was related to the transcription process that has been implicated in schizophrenia.

### How you can use this research

This research suggests the involvement of NTFs in the development of GD. The researchers also explored how NTFs might functionally contribute to the development of GD. Further studies are needed to better understand the role of NTFs in GD.

### About the researchers

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