# The Biological Explanations of Addiction: The Role of Genetics and Evaluation

## Explanation:

The most common method of studying this is to compare the lives of identical twins and non-identical twins. Traits that show a closer resemblance in the identical pairs are generally under strong genetic influence.

There are genetic factors involved in susceptibility to alcoholism, and the use of other drugs such as cocaine, heroin and nicotine. We can inherit a different version of certain genes that influence variation in way substances such as nicotine are metabolised in cells.

They can alter levels of certain chemicals that act as neurotransmitters helping brain cells to signal each other. Finally, there are genes that influence general aspects of behaviour such as the desire for new experiences.

The inherited influences are a result of complex combinations of genes, working in a way affected by the life and environment. Some may be more show broader behaviour patterns (i.e. impulsiveness) which can sometimes lead to addiction – may be an “addictive personality”

Several specific genes have been identified that have been associated with addictive behaviours. For example, many studies have indicated that the D2 dopamine receptor gene (DRD2) has a role in many addictive behaviours, including smoking and alcoholism. Individuals with the A1 variant of this gene have fewer receptors in the mesolimbic dopamine pathway.

## Evaluation

### Research Support

- National Institute on Drug Abuse aimed to find a genetic link between MZ twins and DZ twins for dependence and use of drugs: D: 35%=identical, 0%=fraternal twins, U: Cocaine use concordance, 54%=identical, 42%=fraternal
  - Kendler (1999) heritability of nicotine dependence is between 60-70%
  - Heath et al (1993) heritability of alcohol dependence is between 39-60%
  - Goldman et al (2005) addiction were moderate to highly heritable and heritability ranges from +0.39=hallucinogens and +0.72=cocaine (strong positive correlation). Therefore, being born with a particular genetic make-up makes it more likely that behaviour becomes an addiction.
  - Goldman also reported: age, gender and culture were a contributory factor, but tendency remained true for children who were adopted by non-alcoholic parents
  - Results clearly show that there is a strong genetic link between family members in terms of inheriting behaviours

- Nobel et al (1991) found there was an A1 variant on the DRD2 gene in more than 2/3 of deceased alcoholics, whereas, only 1/5 of deceased non-alcoholics had the A1 variant.
  - Supports the ideas that genetics can play a part in addiction in the initiation of addiction.

### Deterministic

- Reduces the amount of blame placed on the addict
- An addict can’t control own addiction
- However, unstoppable (i.e. the consequence of genetic make-up)
- They are less likely to take responsibility (important when overcoming addiction)
- Dopamine: Relationship between addiction and genetics is more complex (e.g other genes involved in addiction other than (DRD2 or ADH))