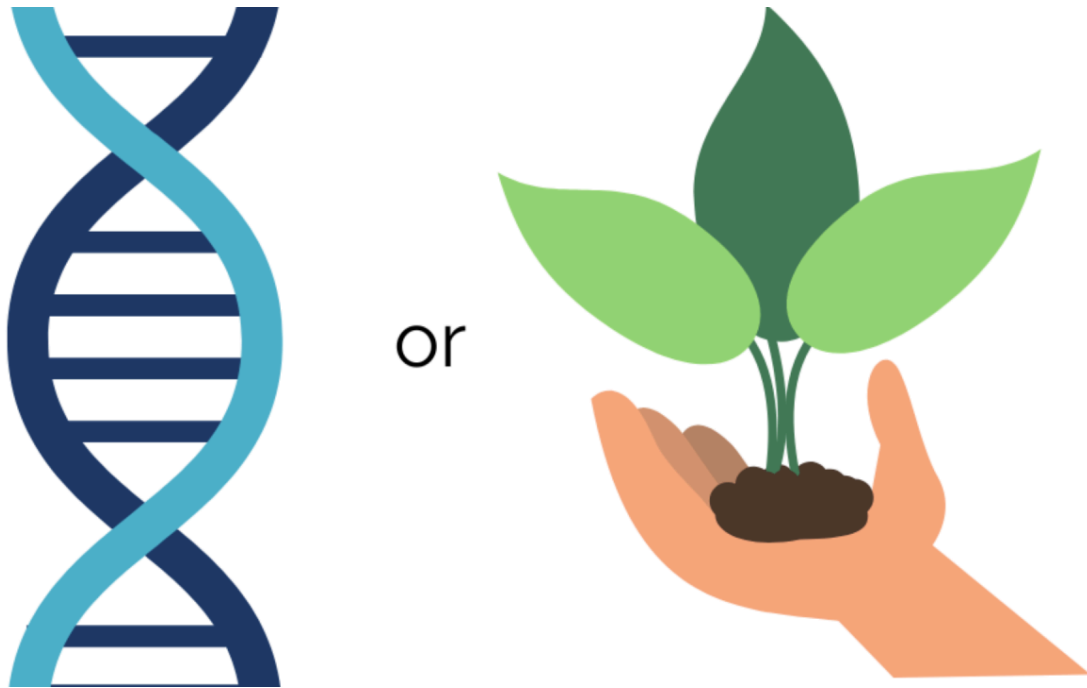

Nature vs Nurture: The Interesting Case of Jim Lewis and Jim Springer

By Abeer Iftikhar



As part of my 'Introduction to Psychology' course during my first semester at university, we were studying the influence of genes and the influence of environment on our personalities when my professor introduced me to a fascinating case of this debate: the Jim & Jim case.

Jim Lewis and Jim Springer were both about 3 weeks old when they were separated and grew up in different states, namely Ohio and Florida. It was not until 1979 that both brothers reunited at 39. The similarities between the lives that the brothers had led were surprising, to say the least.

The Similarities:

- Both named their son James Alan.
- Both had dogs named Toy as children.
- Both were married twice, first to a woman named Linda and then to a woman named Betty.
- Both had a habit of nail-biting.
- Both were chain-smokers.
- Both enjoyed woodworking.
- Both had worked as deputy sheriffs.
- Both drove Chevrolets.



Jim Springer & Jim Lewis

I remember reading out these similarities to my brother with pure excitement only to be met with his unimpressed expression, 'What if this is all just a coincidence? This could all be by chance' he rebutted. Could it be? Is it possible that all of this is a mere accident and our personalities are solely dependent on our environment?

Twin studies have always been of great interest to researchers as it allows them to estimate the proportion of variance in traits that are attributed to human genes and traits attributed to the environment. On a molecular level, identical twins share 100% of similar DNA, and to understand the inheritance of traits, we must understand how the DNA is formed.

Inheriting Traits:

A new life is formed when a female gamete is fertilized by the male gamete, which joins together to form the first cell of a human life: the zygote. The nucleus in the zygote consists of 23 pairs of chromosomes, one member of each pair coming from each parent. Men have X and Y chromosomes and women have two X chromosomes. DNA is a complex molecule that consists of genetic information. Genes are the basic units of heredity and are responsible for our inherited characteristics. The reason why some characteristics are more common than others is due to the property of genes being either dominant or recessive. A dominant gene will show whenever it is present, while it takes a pair of recessive genes to show. Most characteristics are determined by the interaction of several genes, called polygenic inheritance.



DNA (Credit: STANISLAW PYTEL/GETTY IMAGES)

Inheriting Personality – GWAS for Personality:

One of the most intriguing studies about the relationship of genetic variations to characteristics was conducted in 2012, called the ‘Meta-analysis of genome-wide association studies (GWAS) for personality’. The purpose of the study was to identify genetic variants associated with personality traits by pooling data from various GWAS studies.

Methodology: The study focused on several personality traits including extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience which were assessed using scientific questionnaires. The researchers then combined data from multiple GWAS studies that investigated the genetics of personality traits which involved large-scale genomic analysis to identify common *single nucleotide polymorphisms* (SNPs) associated with personality traits.

Key Findings and Conclusions: The meta-analysis identified several regions that possessed genetic variants associated with personality traits. Specific SNPs were found to be significantly associated with traits like extraversion & neuroticism. The findings also highlighted the complex interplay of the polygenic nature of personality traits which was further proved after the studies’ observations were replicated across multiple data sets, providing *further evidence* for the genetic basis of personality traits.

The Effect of Environment & Epigenetics:

It is inevitable that our environmental factors also have a great influence on our personalities. Studies have shown how socioeconomic status, peer pressure, parenting

styles, cultural factors, social norms, family dynamics, religious beliefs, etc shape human development. Another fascinating aspect of how the environment affects us is through the study of *epigenetics*.

Epigenetics refers to the changes in gene expression that occur without alterations to the underlying DNA sequence which can be influenced by various environmental factors such as nutrition, stress, and environmental toxins. These changes have also been implicated in various diseases such as cancer and neurodevelopmental disorders.

Both genes and our environment shape who we are as a person. The Jim & Jim Case inspired me to look more into the basis of human development and just how intricate the process is.