

GENETICS OF PERSONALITY

Evolution has left us with an array of innate, stereotyped behaviors that newborn animals could not survive without: a human infant's readiness to suckle, a duckling's imprinting on its mother, a spider spinning its species' particular web on the first attempt. These behaviors are typically simple, rigid and under fairly direct genetic control. But what about a far more complex layer of behavior, the constellation of traits we call personality: how sociable, organized, anxious, curious or agreeable a person tends to be? Unlike a suckling reflex, personality varies enormously between individuals, and for decades it has been unclear how much of that variation, if any, is written into our DNA, and how.

A landmark study just published in *Nature* (the Revived Genomics of Personality Consortium) (1) offers the most complete answer so far. Combining genetic data from 46 cohorts and more than 1.1 million people, the authors searched for genetic variants associated with each of the "Big Five" personality traits: extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. They found 1,260 genome wide significant genetic variants, more than 800 of them entirely new, spread across the genome. There is no single "gene for extraversion" or "gene for anxiety": each variant nudges a trait by a barely measurable amount, and it is only their combined, cumulative effect, spread across thousands of loci, that adds up to a modest but real 5 to 13% of the differences we see between people.

Crucially, the study also tackles a problem that has long plagued personality genetics: how trustworthy are these signals? Using data from siblings and twins raised in the same family, the authors show that genetic associations with personality are only minimally confounded by shared family environment, unlike, for instance, educational attainment, where a substantial share of the apparent genetic effect actually reflects family circumstances rather than DNA itself. The associations also hold up remarkably well across countries, age groups, and regardless of whether personality was rated by the person themselves or by someone close to them.

Perhaps most strikingly, these tiny genetic nudges are not inert. They correlate with real outcomes: risk of anxiety, depression and other psychiatric conditions, smoking and drinking habits, body weight, even the type of neighborhood a person is likely to move into as an adult. A trait built from thousands of minuscule genetic effects turns out to have a remarkably coherent, and consequential, biological architecture behind it.

From the single reflex that lets a newborn survive its first hours, to the diffuse, polygenic signature behind who we are as adults: two very different chapters of the same story, evolution shaping behavior at every level of complexity.

1. <https://www.nature.com/articles/s41586-026-10992-9>