

Study sheds new light on relationship between personality and health

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Researchers have found new evidence that explains how some aspects of our personality may affect our health and wellbeing, supporting long-observed associations between aspects of human character, physical health and longevity.

A team of health psychologists at The University of Nottingham and the University of California in Los Angeles carried out a study to examine the relationship between certain [personality](#) traits and the expression of genes that can affect our health by controlling the activity of our immune systems.

The study did not find any results to support a common theory that tendencies toward negative emotions such as depression or anxiety can lead to poor health (disease-prone personality). What was related to differences in immune cell [gene expression](#) were a person's degree of extraversion and conscientiousness.

The study used highly sensitive microarray technology to examine relationships between the five major human [personality traits](#) and two groups of genes active in human [white blood cells](#) (leukocytes): one involving inflammation, and another involving antiviral responses and antibodies.

A group of 121 ethnically diverse and healthy adults were recruited. These were comprised of 86 females and 35 males with an average age of 24 (range 18-59) and an average [body mass index](#) of 23. The

participants completed a personality test which measures five major dimensions of personality—extraversion, neuroticism, openness, agreeableness and conscientiousness—(NEO-FFI McCrae and Costa, 2004). Blood samples were collected from each volunteer for [gene expression analysis](#) and their typical smoking, drinking and exercise behaviours were also recorded for control purposes. Gene expression analysis was carried out at the Social Genomics Core Laboratory at UCLA.

Leading the research, Professor Kavita Vedhara, from The University of Nottingham's School of Medicine, said: "Our results indicated that 'extraversion' was significantly associated with an increased expression of pro-inflammatory genes and that 'conscientiousness' was linked to a reduced expression of pro-inflammatory genes. In other words, individuals who we would expect to be exposed to more infections as a result of their socially orientated nature (i.e., extraverts) appear to have immune systems that we would expect can deal effectively with infection. While individuals who may be less exposed to infections because of their cautious/conscientious dispositions have immune systems that may respond less well. We can't, however, say which came first. Is this our biology determining our psychology or our psychology determining our biology?"

These two clear associations were independent of the recorded health behaviours of the participants and subsets of white blood cells which are the cells of the body's [immune system](#). They were also independent of the amount of [negative emotions](#) people experienced. The study also found that expression of antiviral/antibody-related genes was not significantly associated with any personality dimension.

In the remaining three categories of personality, 'openness' also trended towards a reduced expression of pro-inflammatory genes and 'neuroticism' and 'agreeableness' remained unassociated with gene

expression.

The research concludes that although the biological mechanisms of these associations need to be explored in future research, these new data may shed new light on the long-observed epidemiological associations between personality, [physical health](#), and human longevity.

More information: 'Personality and gene expression: Do individual differences exist in the leukocyte transcriptome?' by Kavita Vedhara, Sana Gill, Lameese Eldesouky, Bruce Campbell, Jesusa Arevalo, Jeffrey Ma and Steven Cole, is now available online in *Psychoneuroendocrinology*.

Provided by University of Nottingham

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