

How sensitive you are may be partly down to your genes – new research

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Credit: AI-generated image ([disclaimer](#))

People differ substantially in how much they're affected by experiences in their lives. Some people seem to be more affected by daily stress, or the loss of someone close to them. On the other hand, some people seem to get through the same experiences relatively unscathed. Similarly, some people benefit strongly from counselling, or having a support

system of close family and friends. Others seem better able to manage on their own.

But understanding why some people are more sensitive than others isn't just a question of how they were raised, and the experiences they've been through. In fact, previous research has found that some people in general seem [more sensitive](#) to what they experience—and some are generally less sensitive.

According to psychological theories, differences in such "[environmental sensitivity](#)" reflect how able a person is to perceive and process information about the events in their life. Essentially, this is how sensitive you are. A person's sensitivity level can be measured by a short questionnaire.

But many also believe that sensitivity has a genetic basis. Previous studies have investigated whether [specific genes](#) make some people more sensitive. However, no study so far has provided an estimate for how much genetic factors contribute to how sensitive a person is.

In our [latest research](#), we looked at data collected from more than 2,800 identical and non-identical twins from the UK who have taken part in the [Twins Early Development Study](#) in order to investigate the heritability of sensitivity and how it relates to other personality traits. Heritability describes what proportion of the differences between people in relation to a particular trait can be attributed to genetic factors alone.

Participants were asked to [fill out a questionnaire](#) that measured their sensitivity levels. The questionnaire asked them how much they usually get affected by a various psychological and sensory experiences. For example, they were asked how much they notice when small things around them have changed, whether loud noises make them feel uncomfortable, and whether they dislike watching violent TV

programmes. The participants were about 17 years old when the data were collected.

Comparing the similarity of identical with non-identical twin pairs allowed us to estimate the degree to which a trait is inherited. Identical twins share the same genes, but non-identical twins only share half of their genes. However, both types of twins share the same environment. If siblings in identical twin pairs are more similar to each other than non-identical twins, this indicates the existence of a genetic basis for the examined trait. Twin studies have long been used to estimate heritability.

However, these types of studies have also been [criticised for their limitations](#). For example, [identical twins](#)' experiences, such as how they're raised, or the environment they're raised in, may be different than that of [non-identical twins](#), which can lead to an overestimation of heritability estimates. This could mean that the heritability is not as high as sometimes indicated when using this type of research method.

Genetics versus environment

We found that 47% of the differences in peoples' sensitivity are indeed explained by genetic factors. But the remaining 53% of a person's level of sensitivity is shaped by life experiences. In other words, genetics accounts for just under half of the reason you may be a more sensitive person.

Importantly, our research examined the genetic basis of sensitivity in more detail. We wondered whether sensitivity was made up of one [genetic component](#) or multiple ones. We found that sensitivity is composed of multiple genetic components that together make up a person's specific shape of sensitivity.

Besides a general genetic component for sensitivity, we also found a

component associated with sensitivity to negative experiences and a component that reflects sensitivity to more positive experiences. This means that genetics influence why some people may be more sensitive in general, while others may be more sensitive to either the positive or negative things that happen to them.

Finally, we also investigated how inherited genetic sensitivity relates to other common personality traits: openness, conscientiousness, agreeableness, extraversion and neuroticism. We found that the genetic component of sensitivity was related to neuroticism and extraversion but not with any of the other personality traits.

Although this study didn't examine what the [specific genes](#) are that make some people more sensitive than others, it did show that sensitivity is a heritable trait with a substantial [genetic basis](#). We also found that a large part of this heritability is shared with other common [personality traits](#), such as neuroticism and extraversion.

Future studies on sensitivity may look at identifying the specific genes that underlie this complex trait. Uncovering how genes shape [sensitivity](#) is important in our understanding of why some individuals fare worse in response to traumas and stressors—and why some benefit more from interventions aimed at promoting resilience and health.

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