

The murky history of the nature and nurture debate

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

Self-righteousness, gratitude, sympathy, sincerity, and guilt – what if these social behaviours are biologically influenced, encoded within our genes and shaped by the forces of evolution to promote the survival of the human species? Does free will truly exist if our genes are inherited and our environment is a series of events set in motion before we are

born?

American biologist E O Wilson made these arguments when he published [Sociobiology: The New Synthesis](#) in 1975 and [On Human Nature](#) in 1978. Wilson is the father of [sociobiology](#), a field that believes [social behaviour](#) in animals, including humans, is biologically determined – partially shaped by genes and the forces of evolution. Time magazine picked up the emerging new scientific field, dedicating the [August 1977 cover](#) to "Sociobiology: A New Theory of Behavior."

Today, it is a field still shrouded with controversy, but one which is offering new views on how our environment influences who we are and what we do.

Likened to eugenics

At its conception, sociobiology ignited [heated criticism](#) from prominent biologists including Stephen Jay Gould and Robert Lewontin. They argued that the field was biologically determinist and perpetuated eugenic ideologies that sought to legitimise racial and social hierarchies. As critics pointed out, while "sociobiology" as a formal field did not come into existence until the 1970s, research that used biological explanations to justify social phenomena was not new.

To figures such as Gould and Lewontin, this "biosocial" scientific language lived in the fields of physical anthropology and eugenics. In the early 20th century, eugenicists like Madison Grant had used this kind of language to [explain](#) and justify class and race hierarchies. Supporters of such ideas used them to [advocate](#) for social policies prohibiting class and racial mixing, and restrictions on immigration.

Biosocial science was soon used as a guise for the eugenics movement. The American Eugenics Society changed its name in 1972 to the Society

for the Study of Social Biology, three years before the field of "sociobiology" was formally established. The society's official journal *Eugenics Quarterly*, whose first volume in 1954 focused heavily on IQ differences between population groups, changed its name to *Social Biology* in 1969. It continues to exist today under the name of [Biodemography and Social Biology](#).

Social life in 'molecular terms'

Sociobiology has also influenced the development of "sociogenomics" – a term coined in 2005 by molecular biologist Gene Robinson whose [work](#) examines the genetic mechanisms governing social behaviour in the honeybee. Though early sociogenomics work focused primarily on insect populations, the field has moved to include an examination of human populations.

Sociogenomics is a field driven by two desires. The first is to identify the genes and pathways that regulate aspects of development, physiology and behaviour that in turn influence the way animals or humans develop social links and form cooperative communities. The second is to determine how these genes and pathways themselves are [influenced by social life](#) and social evolution. Yet in practice, these two main components of sociogenomics research seem to be in conflict.

One side tries to identify genetic markers associated with behaviours commonly thought to be shaped by social interactions. Researchers have looked at everything from [political orientation](#) to [educational attainment](#) and antisocial behaviour [linked to criminality](#).

Some studies have [sought](#) to find genetic variations linked to social phenomena like social deprivation and household income. One [study](#) claimed to have identified common genetic variations that can explain up to 21% of the observed differences in [social deprivation](#) between

individuals.

Such research has, however, garnered some more recent criticism from researchers critical of the [underlying methods](#) used and the field's [ethical implications](#).

Nature and nurture

The other side of sociogenomics examines how the environment moderates what's called "gene expression". This is the process by which genes are "activated" to synthesise proteins that allow the genotype (an individual's genetic makeup) to give rise to a phenotype (an observed behaviour or trait).

In this form of sociogenomics, the classical argument of "nature versus nurture" becomes more clearly a matter of both "nature and nurture". Social or environmental conditions such as low social status, social isolation or low socioeconomic status have been found to change the expression of hundreds of genes in both [animals](#) and humans.

This is now considered by some to be potentially [transformative](#) in our approach to addressing inequality. For example, biosocial research which shows how structural or environmental aspects influence biological processes could throw much needed weight behind socially-oriented policies. On the other hand, biosocial researchers might argue that rather than fix what's happening in society, we could focus on trying to treat biological deficits.

"Gene x environment" studies, as they are called, have [found](#) that in the US, low socioeconomic status represses an individual's genetic potential. This means, for example, that the high estimates for genetic influence on [educational attainment](#) may only fully apply to those living in well-off circumstances, where money, status, and comfort are not pressing

concerns.

Mixing the hard and social sciences

[Some advocates](#) for the biosocial sciences believe the social sciences will become more robust and more highly regarded with the incorporation of genetics research. There are sociologists, economists, and political scientists who are already beginning to bring genetic analyses into their work. They [argue that](#) this additional data may help the social sciences "better understand patterns of human behavior, enhance individuals' self-understanding, and design optimal public policy".

Such mixing of the traditionally hard and social sciences has produced studies in sociogenomics [examining](#) how high taxation of tobacco products meant to discourage people from purchasing harmful products may not be beneficial for those with a particular variant of the nicotine receptor that might make them willing to pay more for tobacco. It has also contributed to research looking at cortisol levels in young ethnic-minorities as they note racism or discrimination. This [work has highlighted](#) how everyday micro-aggressions and social inequality can have real and harmful biological consequences.

These studies point to the continued desire to explain [social phenomena](#) through biology. As the biosocial sciences continue the journey to analyse everyday human life and behaviour, they have the potential to have a profound impact – both positive and negative – on our understandings of how we as individuals and we as a society operate.

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