

Faith genes? Can DNA predispose us to religion and spirituality?

Do our genes predispose us to follow a religion? I searched Google Scholar for reports on the inheritance of religiosity.

I sought something scientific – does being religious favor the survival-to-reproduce that fuels natural selection of an adaptive inherited trait?

I skipped regular Google and mainstream media, seeking data and not opinions, and included “*inheritance*” and “*religiosity*” in my search. To me inheritance means genes that encode proteins that affect the phenotype (trait or illness). But inheritance also means passing something from parents to offspring – such as money, property, possessions, or ideals.

Surely someone had done a genome-wide association study for “religiosity.” A “GWAS” is a survey of single-DNA-base positions (SNPs) in a genome where individuals vary, having any of the four DNA bases. These studies have been around for two decades, seeking evidence for genetic underpinnings of such traits as [antisocial behavior](#), [loneliness](#), and even [political ideologies](#).

Follow the latest news and policy debates on sustainable agriculture, biomedicine, and other ‘disruptive’ innovations. Subscribe to our newsletter.

[SIGN UP](#)

Today researchers use an abbreviated “[polygenic risk score](#)” to describe so-called complex traits – those influenced by several genes as well as environmental factors. In contrast to an either-or diagnosis like cystic fibrosis, a PRS tallies variants of many genes that contribute to a trait or illness.

The investigations that Google Scholar returned came more from the social sciences, using language with which I am admittedly unfamiliar. Here’s a brief chronology of five studies that probed whether religiosity is in our genes.

1996: “An Interactive Model of Religiosity Inheritance: The Importance of Family Context”

In this report in [American Sociological Review](#), Penn State’s Scott M. Myers estimated “the magnitude of religious inheritance” using “interviews with 471 parents in 1980 and their adult offspring in 1992.” Not surprisingly, he discovered that a person’s religiosity depends on exposure to parental religiosity. But I was stunned at the archaic language, as recently as 1996:

Parent’s marital happiness, parent-child support, moderate strictness, and a working husband/nonworking wife increase the ability of parents to transmit their religious beliefs and practices.

Yikes.

2004: “The God Gene: How Faith Is Hardwired into Our Genes”

[Dean Hamer](#) tackled the concept of a God gene in his oft-quoted “God gene” book. He’s the National Cancer Institute researcher who made headlines in 1993 with his now-debunked discovery of a “gay” gene, which I wrote about [here](#).

In *The God Gene*, Hamer attributes “predisposition of humans towards spiritual or mystic experiences” to variants of a gene, vesicular monoamine transporter 2 (*VMAT2*). According to [Online Mendelian Inheritance in Man](#), the “bible” of human genetics, the gene’s “proper function is essential to the correct activity of the monoaminergic systems that have been implicated in several human neuropsychiatric disorders. The transporter is a site of action of important drugs.”

The monoamine neurotransmitters include serotonin, dopamine, adrenaline, and noradrenaline, which have powerful effects on mood. Might variations on the monoamine theme indeed account for religious thoughts and even visions?

Hamer’s supreme being gene candidate resurfaced in 2017 in a report by Linda A. Silveira from the University of Redlands in the journal [Life Sciences Education](#), “Experimenting with Spirituality: Analyzing The God Gene in a Nonmajors Laboratory Course.” Students looked at variants in their *VMAT2* genes. She evaluated the exercise as a learning tool. And that it is, because the class *disproved* the hypothesis that variants of the gene have anything to do with following a religion.

2011: “Religion, Fertility and Genes: A Dual Inheritance Model”

In a publication of [The Royal Society](#), University of Cambridge economist Robert Rowthorn used a model to explore the evolutionary implications of the fact that religious people “have more children on average than their secular counterparts.” This statement is unreferenced, presented as common knowledge.

Rowthorn stated his assumptions: (1) culture determines fertility and (2) “genetic endowment” influences predisposition towards religion. “People who carry a certain ‘religiosity’ gene are more likely than average to become or remain religious,” he stated. This is a variation of the overly simplistic “a-gene-for” mindset, aka genetic determinism.

I couldn’t help but wonder, what might a religion gene actually be? A stretch of DNA that encodes a hemoglobin variant? A form of collagen? A clotting factor? A digestive enzyme? Is it Hamer’s defrocked *VMAT2* variant after all?

Rowthorn’s wrote, “The paper considers the effect of religious defections and exogamy on the religious and genetic composition of society.”

I knew *endogamy* in genetics means mating within a group. So I wasn’t surprised to discover that *exogamy*

is “the social norm of marrying outside one’s social group.” In biology exogamy means *outbreeding* (animals) or *cross pollination* (plants). Single-celled organisms like bacteria, amoebae, and certain slime molds, lacking social norms, simply grow and then split.

The economist attempted to explain the science behind his hypothesized “religiosity gene,” unwittingly touching on the concepts of natural selection and genetic linkage:

Defections reduce the ultimate share of the population with religious allegiance and slow down the spread of the religiosity gene. However, provided the fertility differential persists, and people with a religious allegiance mate mainly with people like themselves, the religiosity gene will eventually predominate despite a high rate of defection. This is an example of ‘cultural hitch-hiking’, whereby a gene spreads because it is able to hitch a ride with a high-fitness cultural practice.

(According to Darwin, fitness has an explicit meaning: surviving long enough to reproduce.)

Math-based simulations, Rowthorn concluded, support his “theoretical arguments” about the spread of a religiosity gene.

2017: “Religious Delusions In Schizophrenia”

A study published in [European Neuropsychopharmacology](#) edges into diagnostic medicine. Researchers from Germany used polygenic risk scores to show correlation of “strong religious activity” to increased severity of schizophrenia.

“Of 271 patients (217 Christian, 9 Muslim, 45 without religious denomination), 102 (38%) experienced religious delusions during illness episodes,” the researchers found. Just following a religion didn’t correlate with higher likelihood of delusions, but “strong religious activity” did.

“Other factors examined – age, gender, education level, marital status, and even if a patient was in the midst of a delusion during the interview – didn’t seem to matter. And the higher the reported religiosity, the greater the risk of delusions,” the researchers concluded.

But having more predisposing genes (higher PRS) also correlated with likelihood of delusions. “Our results suggest that the occurrence of religious delusions in schizophrenia and schizoaffective disorders is associated with environmental as well as genetic influences. But moderate religious activity seemed to have no negative effect and may even be helpful for coping with these disorders,” the researchers conclude.

2021: “The Origins of Religious Disbelief: A Dual Inheritance Approach”

A study in [Social Psychological and Personality Science](#) addressed underpinnings of being a nonbeliever. The article opens describing atheists as if we are space aliens.

This social science investigation discusses “theoretical frameworks of key predictors of religious disbelief.” We atheists “witness fewer credible cultural cues of religious commitment, ... followed distantly by reflective cognitive style, ... and less advanced mentalizing.”

Because my mentalization is apparently stunted, I thought I’d investigate further. Wikipedia’s definition is obtuse: “*Mentalization* can be seen as a form of imaginative *mental* activity that lets us perceive and interpret human behaviour in terms of intentional *mental* states.”

Definition of a term shouldn’t use the term, something I found rampant in this small sampling of the sociology literature. I think my poor mentalization means that I do not have an open mind, which may be a roundabout way of saying that I think like a scientist – I prefer evidence to imagination and feelings.

Atheism, according to this report, tends to be more likely among people “relatively low in cultural exposure to religion.” Startling insight!

My parents *did* expose me to our religion. In the third grade, I attended after-school “religious instruction” on Wednesdays.

In the first session, I listened intently to the story of genesis, constructing a third grader’s version of a pedigree in my head. I was puzzled. *Where did Cain and Abel’s wives come from?*

I asked, and was told to keep quiet. But I kept raising my hand. *Were Cain and Abel’s wives australopithecines, Neanderthals, or chimps?* I was thinking about the mesmerizing display of hominid heads at the American Museum of Natural History.

I never went back to “religious instruction.” My mother didn’t want to stifle the innate curiosity of a future scientist.

If there is a gene for religiosity, mine is certainly deleted. But that’s ok.

Ricki Lewis has a PhD in genetics and is the author of the textbook *Human Genetics: Concepts and Applications*, soon to be published in its fourteenth edition. Follow her at her [website www.rickilewis.com](http://www.rickilewis.com) or Twitter [@rickilewis](https://twitter.com/rickilewis)

A version of this article appeared originally at [PLOS](#) and is posted here with permission. Check out PLOS on Twitter [@PLOS](#)