

# My Genes Made Me Do It: Behavioral Genetics and Free Will

By Aviva  
Landau

Secular American law and Jewish religious legal systems both hold that people are responsible only for actions done voluntarily with free will. In Jewish law, G-d does not hold accountable for sin those forced to break a law, or who did not know they were breaking a law, or broke the law unintentionally while trying to fulfill a positive commandment [1]. Such individuals did not willingly choose to sin; since they lacked free will, they are not liable for their actions. This concept gets complicated when considering behavioral genetics. If a person carries a gene that predisposes impulsivity or aggression, and ultimately sins, is that person still accountable for transgressive behavior? Should a person's genome be considered a coercive force that does not allow for free will and decision making?

Many decades of studies on twins, families and adoptees have shown that about half of the variation in behavioral traits is due to genetics. Scientists have tried to pinpoint genes responsible for everything from IQ, marital success, coping skills, addiction, and anxiety. These studies are very complex because a multitude of genes can impact one trait, and the environment greatly impacts how much these genes are expressed [2].

Scientists have tried to link specific genes with criminal activity. Studies indicate that a disproportionately high frequency of men with the XYY genome are convicted criminals. An extra Y chromosome is claimed to cause extreme height, increased aggressive tendencies, decreased intelligence, and abnormal features of the central nervous system, all of which are possible explanations for the increase in criminal convictions [3]. However, these hypotheses cannot be fully proven without larger sample sizes and without accurately calculating the frequency of XYY in the general population [4]. Additionally, it is important to control for socioeconomic environmental factors since they greatly impact results [5].

A mutant gene linked to aggressive behavior is a variant of the normal gene for monoamine oxidase-A (MOA-A), an enzyme breaks down neurotransmitters

including dopamine, norepinephrine and serotonin [2, 6]. People with this gene variant exhibit impulsive and sometimes threatening behavior, so it is nicknamed the "warrior gene" [7]. In a study conducted by the National Institute for Mental Health, participants were shown neutral and emotional faces while key brain regions were monitored. Researchers found that those with the "warrior gene" were hyperresponsive to the images, suggesting that they have trouble regulating their emotions and are therefore more likely to act on aggressive impulses [2]. In two European legal cases and one American court, defense attorneys attempted to admit the MOA-A gene as evidence for reduced capacity [7]. However, similar to the individuals with XYY, environmental socioeconomic and cultural factors play a crucial role in how the MOA-A gene is expressed and must be examined when studying behavioral genetics [8]. The gene only expresses itself as antisocial and violent behavior in people who have experienced trauma [2]. Additionally, although the gene regulates emotions and impulsivity, it doesn't necessarily lead to aggressive or antisocial behavior [7].

There are some Torah sources that seem to support the idea of a genetic susceptibility to certain types of behavior. Genesis 25:25 describes Esav as "red and hairy" at birth. Rashi takes this physical manifestation as a sign that Esav was predestined to be a murderer. Additionally, Genesis 36:24 recounts Anah breeding a dangerous cross-bred mule [1]. *Gemara Shabbat 156* blames Anah's proclivity for creating "evil" creatures on the fact that he was the product of an incestuous relationship [1].

While the previous sources speak of predestination and lack of free will, other Torah sources consider free will significant. *Gemara Nidda 16b* tells that an angel appointed to oversee the conception of new embryos takes a drop of semen and reveals the destiny of the person who develops from it, including characteristics like strength, intelligence and wealth, but not wickedness or righteousness. The Rambam reaffirms this idea in his *Mishnei Torah, Hilchot Teshuva*, chapter 5, "Free will is bestowed on every human being ... Let no notion ... pass through your mind

---

that at the beginning of a person's existence the Almighty decrees that he is to be either righteous or wicked" [1]. According to these sources, G-d decides an individual's personal situation, but no more than that. G-d sets before each person "life and good, and dead and evil" (Deuteronomy 30:15); G-d may know the future, but each person has the power to choose a path [9].

This leads to another question: if people are genetically predisposed to act in a certain way, how do they also have free will? *Pirkei Avot* 3:19 says, "Everything is foreseen, yet the freedom of choice is given." The *Be'er Avos* comment on this *Mishna* and answers the question. "Even though a person has genetic or socially habituated inclinations, whether positive or negative, he is not a prisoner of these tendencies. G-d allows us the free choice to rise above our so-called 'natural' limitations." The *Be'er Avos* makes a clear distinction between predetermined character traits and predetermined actions. G-d, through genetics, may determine certain character traits of an individual, but that individual still has free will to make decisions [10].

This concept can be seen in *Tanach* as well. After Cain kills Abel in Genesis 4:9 and G-d asks him where Abel is, Cain responds with the famous question, "Am I my brother's keeper?" Rabbi Tendler explains what Cain means: "G-d, You are my brother's keeper. You are in charge. If you did not want me to be a murderer, you should not have given me the ability to murder. I am not to blame. My genes predestined by G-d are responsible for my actions." But G-d's position is explained in Genesis 4:7 "...sin is crouching at the door. It lusts for you, but you can master it." According to Rabbi Tendler, G-d tells Cain that He gave Cain a genetic predisposition to be quick tempered when his ego is not satisfied, but He also gave Cain the ability to master these negative impulses and lead a moral life [1].

In the ancient world, many believed that the position of the stars at birth decided one's personality. For example, those born under Mars were destined to spill blood. In *Gemara Shabbat 156* Rav Ashi explains that this does not necessarily mean murder; the person can become a surgeon, butcher, or *mobel* [11]. On the same *daf* Rava says, "I was born under the sign of Mars and I'm not a murderer." Abayeh responds, "Yes, but you do spill blood. [When you judge] in your court, you rule who is to be given whiplashes and who deserves death; so you are

indeed expressing your personality" [1]. In this case, the genetic impulse is being used for a morally ethical and correct action according to Jewish law.

Scientific evidence for behavioral genes clearly exists but it is difficult to identify which gene or combination of genes causes criminal behavior because genes can impact personalities but do not directly control actions. MOA-A may affect impulsivity and emotional activity, but does not automatically result in aggressive behavior [7]. A high proportion of individuals with XYY genomes may be in prison, and their genes may have given them a greater disposition towards ending up in this type of situation, but ultimately their decisions, and not their genes, got them in trouble. Genes cannot be considered a coercive force that does not allow for free will and true decision making. G-d endowed the gift of free will and the power to choose to do good or evil, regardless of underlying genetic makeup.

## Acknowledgements

I would like to thank Dr. Babich for helping me gather the sources for this article and encouraging me to write for *Derech Hateva*. I would also like to thank Rabbi Bernstein for looking over the Torah sections of this article. Lastly, I would like to thank my parents for their continuous support and commitment to my science and Torah education. I'm very thankful to Hashem for free will and the genes that gave me the ability to write this paper.

---

## References

- [1] Tandler, M. (2011). Behavioral Genetics and Free Will - on a Collision Course? B'or HaTorah. 21:35-42.
- [2] Holden, C. (2008). Parsing the Genetics of Behavior. *Science*. 322:892-895.
- [3] Schroder, J., De La Chapelle, A., Hakola, P., Virkkunen M. (1981). The Frequency of XYY and XXY Men among Criminal Offenders. *Acta Psychiat. Scand.* 63:272-276.
- [4] Witkin, H., Mednick, S., Schulsinger, F., Bakkestrom, E., Christiansen, K., Goodenough, D., Hirschhorn, K., Lundsteen, C., Owen, D., Philip, J., Rubin, D., Stocking, M. (1976). Criminality in XYY and XXY men. *Science*. 193:547-555.
- [5] Stockholm, K., Bojesen, A., Jensen, A. S., Juul, S., Gravholt, C. H. (2012). Criminality in Men with Klinefelters Syndrome and XYY Syndrome: a Cohort Study. *BMJ Open*, 2:1-8.
- [6] Mcdermott, R., Tingley, D., Cowden, J., Frazzetto, G., Johnson, D. D. P. (2009). Monoamine oxidase A gene (MAOA) predicts behavioral aggression following provocation. *Proc. Nation. Acad. Sci.* 106::2118-2123.
- [7] Gonzalez-Tapia, M., Obsuth, I. (2015). "Bad genes" & Criminal Responsibility. *International Journal of Law and Psychiatry*. 39:60-71.
- [8] Wensley, D., King, M., (2008). Scientific Responsibility for the Dissemination and Interpretation of Genetic Research: Lessons from the "Warrior Gene" Controversy. *J Med Ethics*. 34:507-509.
- [9] Magriso, Y., (1979). *Avoth: MeAm Lo'ez*. Maznaim Publishing Corporation, New York, NY.
- [10] Lieber, A., (1996). *The Perkei Avos Ethics of the Fathers Treasury: The Sages' Guide to Living*. Mesorah Publications, Ltd, Brooklyn, NY.
- [11] Tandler, M., (2006). Genetic Predestination and Free Will: The Judeo-Biblical Perspective on Moral Behavior. *B'Or HaTorah*. 16:7-18.