

Chapter Four—Genes and Human Behavior

“In popular culture, Elvis Presley has become a genetic construct, driven by his genes to his unlikely destiny. In a 1985 biography, for example, Elaine Dundy attributed Presley’s success to the genetic characteristics of his mother’s multiethnic family: “Genetically speaking,” she wrote, “what produced Elvis was quite a mixture.” To his “French Norman blood was added Scots-Irish blood,” as well as “the Indian strain supplying the mystery and the Jewish strain supplying spectacular showmanship. . . .”

“Another Elvis biographer, Albert Goldman, focused on his subject’s “bad” genes, describing him as “the victim of a fatal hereditary disposition. . . .” Goldman attributed Elvis’s character to ancestors who constituted “a distinctive breed of southern yeomanry” commonly known as hillbillies. A genealogy research organization, Goldman said, had traced Presley’s lineage back nine generations to a nineteenth-century “coward, deserter and bigamist.” In Goldman’s narrative, this genetic heritage explained Elvis’s downfall: his addiction to drugs and alcohol, his emotional disorders, and his premature death were all in his genes. His fate was a readout of his DNA.”¹

Introduction

These examples from Elvis’ biographers may be unabashedly stereotypic and deterministic, but they illustrate how references to genetics have become commonplace. Genetic knowledge is increasingly used, and misused, to explain human behavior, and it is impossible to ignore its impact upon our understanding of human nature. The nature of the connection between genes and human behavior will remain controversial because the research is relatively new and involves flash points about personality traits, gender differences, intelligence, sexual orientation, and others. Yet, at the very least, the new genetic knowledge presses our society to confront the meaning of statements like “genes made her like that.” It prods dearly held personal and theological beliefs about the character of human nature. It raises questions about responsibility and freedom. It demands our attention.

This chapter will help you explore this controversial subject. After completing it, you should have a better grasp of the science involved in questions about genes and behavior. You should gain, along the way, a new appreciation for how scientific developments impact theological ideas. You should be able to spot instances of genetic essentialism or determinism (*the gene myth*) that continually pop up in our culture. Finally, the chapter intends to acquaint you with several theological resources that respond to these challenging topics. These resources are part of what is called theological anthropology; that is, the understanding of the human person from a standpoint of faith.

Several significant questions serve as threads for this chapter. The primary one asks: What role do genes play in behavior? This question inevitably raises the long-standing *nature vs. nurture* debate in a renewed way. Is nature (genes) or nurture (upbringing and environment) the *most* significant factor in shaping human behavior? Related questions include: a) Are we really determined by our genes, and b) Are my genes the true “me?” Theologically, we must ask what it means when the study of genes uncovers inherited predispositions to adverse social behavior patterns—or to favorable ones. Each of these questions rubs up against an ancient and key Christian concept called the *imago dei* (a Latin term meaning the image of God, see Genesis 1:26). What is the relation of genes to the image of God *in us*? Keep these in mind as you explore the rest of this chapter.

Personal Experience and Values

Each person brings to controversial topics some “pre-understandings.” (As described in earlier chapters, this term indicates preexisting views based on experience and upbringing.) Take a moment to unearth some of your pre-understandings by reflecting on these questions.



GENETICS!

Where Do We Stand as Christians?

The first is: *What are your present ideas about the relationship of genes and human behavior?* Do you hold the view, a fairly common one, that a human being at birth is a “blank tablet” and is therefore almost exclusively shaped by nurture (parents or others)? Or do you believe the opposite view, another common idea, that it is mostly “in the genes?” If you think both nature and nurture are involved, then what is the character of their relationship and interaction?

The second matter to consider is the term *self*? *What is the essence of being a “self”?* The term *myself* is often used without much reflection about what it means. What is it that makes you, you? What aspects about your identity could you *not* change without changing what is the truest you? Is it your physical features? Is it your genes? Is it your capacity to think? Is it your capacity to relate to others? Is it your personal history? These questions become important when thinking about the relation of genes and behavior.

Gathering Input

Science

Behavioral genetics (see sidebar) relies on several kinds of research to explore the influence of genes on behavior. The following examples provide a general familiarity with this genetic research. The first kind of research involves human twin studies, in which identical twins who were permanently separated soon after birth, are studied over an extended period of their lives. Since these twins share an identical genome, research proceeds by comparing the differences and similarities in these individuals. Differences are considered largely the result of environmental factors. Another means of research involves the comparison of behavior profiles with the presence or absence of genetic material, such as that known to code for the production of dopamine (a neurotransmitter). Scientists also use “nature-nurture” experiments with generations of animals that are selectively bred for particular traits, and are then closely monitored in different settings. Much of this research is still relatively new and such scientific research is characteristically contested and incomplete. Still, it seems to support several general conclusions.

First, scientists do not consider genes as the “cause” of specific choices made by any individual. Rather, genetic research explores the influence of genes on human *temperaments* (long-term manners of thinking, behaving, or reacting that are characteristic of individuals) that impact choices. *Novelty seeking, social boldness, anxiety, and aggressiveness* are examples of such temperaments. The research suggests that casual correlation (one to one) does not exist, but statistically significant correlation does. One summary of multiple studies of thousands of identical twins (raised separately), for instance, found that the inherited characteristics of assertiveness, altruism, extroversion, or introversion indicate a correlation range of 39 to 58 percent.² Measures of inheritable intelligence factors run around 50 percent.

Secondly, the relation of gene interaction with the environment remains difficult to pin down, but it is possible to classify certain relationships. One standard way, for instance, categorizes the gene and environment interaction in a threefold manner: **a)** *passive*, **b)** *reactive*, and **c)** *active*. Each of these has a very specific meaning in this scheme (See the sidebar) and most behavioral geneticists would caution that these categories, though conceptually necessary, must be understood as approximate and porous.

Behavioral Genetics

Behavioral genetics is a relatively new branch of inquiry that investigates the relationship of genes and behavior. It seeks to determine the causative influence of genes on behavior and to generalize these findings. Behavioral geneticists, for instance, have conducted experiments to determine whether differences in the gene that codes for dopamine (a chemical in the brain) correlate with individual differences in novelty seeking temperament.

About the Categories

The meaning of terms in this scheme is as follows:
Passive: the environment and the genes are provided by the same forces (that is, parents); thus, most early verbal learning is of a “passive” type.
Reactive: the genotype elicits different types of responses from social and physical environments that are not necessarily a matter of heredity; for instance, a “smiley” child tends to bring out the smiles in others around them.
Active: the individual seeks out environments compatible with or supportive of one’s genetic potential; this is the most direct expression of genotypic influence on individual experience.³



Finally, some of the most intriguing recent evidence suggests that the treatment of a child by parents and others in the early environment can clearly influence which genes are “turned on.”⁴ Recall that the activation or suppression (being turned on) of certain genes is a fundamental mechanism of genetic activity. Skin cells become what they are because only the appropriate genes for making skin cells (from the entire set carried in every cell) are activated by physical mechanisms. In a similar way, genes that influence behavior often seem to be activated or suppressed by environmental influences.

What lessons can we safely summarize from this brief exploration of behavioral genetics? The primary one is that genotype *underdetermines* phenotype. This pithy summary indicates that a person’s genetic inheritance (genotype) plays a recognizable role, but does not determine the observable consequences (phenotype). The recognizable role of genes means that a child cannot literally be any kind of person that a parent wants him or her to be. The belief that parenting and social environment alone shape personality does not fit with recent evidence.

Yet the evidence does not support the opposite notion that genes are one’s fate. Predispositions do exist, but they do not predetermine. The complex interaction of gene and environment, in fact, seems to be a two-way street. Again, this is a recent claim, but one championed by numerous researchers. Just as the genotype gives significant direction to an individual’s development, the environment, in turn, gives significant direction to the genotype. If true, this means the genetic predisposition to a temperament like *shyness* will be shaped by the interactions a child has with the important people in his or her life. A child with a strong predisposition to *novelty seeking* will certainly push on the boundaries in any setting. The outcome, however, will more likely be socially positive in an environment with constructive opportunities than in one dominated by destructive ones (for example, poverty and discrimination). In short, rather than determining one’s fate, the research suggest that the genetic basis of behavior increases environment’s importance.⁵

Theological Considerations

Conclusions drawn from scientific data, while crucial, cannot answer the tough questions about genes and human behavior. Moral and theological reflection on the issues of personhood, moral responsibility, sin, and others require a different kind of investigation. Such thinking should take the measure of scientific input, but involves careful interpretation and discernment.

Much of the confusion about the relation between genes and behavior can be laid at the door of what may be called the *gene myth* (any notion that “it’s all in the genes”). The gene myth is a mindset that reduces everything significant about being human to the genes. We can identify two forms of this myth that often overlap. The first is *genetic determinism*. The scientific research above has largely responded to that notion. The other form is often called *genetic essentialism*. This is the idea, explicit or implicit, that whatever is essentially human can be reduced to the genes.

The Nature of Personhood

Simplistic media coverage contributes to the gene myth. So does the error of *reductionism*, which is more difficult to spot because it also appears in scientific contexts. Scientists must necessarily reduce complex phenomena into simpler pieces for purposes of investigation. For this reason, researchers necessarily look at the genetic code in isolation. Errors, however, follow when researchers (or others) transfer this necessary reductionism of scientific method into an interpretation of the human being. It is an interpretation that reduces the *essential* person to his or her genetic material. Such statements are common. Prominent geneticist Walter Gilbert begins public lectures with a compact disk of a gene sequence in hand, telling the audience: “Here is a human being; it’s me.”⁶ James Watson, co-discoverer of the double helix and Nobel Prize winner, has told Time Magazine, “We used to think our fate was in our stars. Now we know, in large measure, our fate is in our genes.”⁷ At best, such statements leave a reductionistic impression.

At their worst, as social ethicist Elizabeth Bettenhausen notes, such statements play into a dangerous social mindset. “For many people,” she writes, “DNA has taken on the social and cultural functions of the soul. It is the essential entity—the location of the true self—in the narratives of biological determinism. Perfect DNA is salvation.”⁸ We might term this problematic view *personhood-in-the-genes*. Bettenhausen believes it is as dangerous as other attempts to determine the value of a person by reducing personhood to any single factor, such as skin color. Any such interpretation endangers a person’s human integrity and social dignity. It also insults divine creativity.

In contrast to these views, Bettenhausen advances the notion of personhood as “a matter of living reciprocally in the presence of God, of oneself, of other persons, and of all creation. . . .”⁹ We might term this contrasting view *personhood-in-relationship*. This definition of personhood is one she finds rooted in Scripture and developed in the writings of Martin Luther. In this view, personhood is not identifiable with any single factor of the human being. Instead, it is described properly only by a reciprocity involving the individual, the community, and God. Only from this interaction is the human being given a genuine identity as a person. This view can incorporate the part played by the genetic code, but that sequence can never be the essence of the person. This is a powerful counter-message to an individualistic society that often falls into the reductionistic trap.

Responsibility

Theologian Ted Peters also challenges the gene myth because he is concerned about the issue of responsibility. This issue has two interrelated forms—legal and moral. He approaches the aspect of legal accountability by asking whether a genetic predisposition to antisocial behavior should make a person guilty or innocent before the law. He points out, as we have seen, that scientific research cannot prove a direct causal link between a person’s genes and specific behavior. Correlation is not cause. Nevertheless, sometimes the gene myth is used to justify the judgment that genetic predispositions equals a compulsion to act. He points out that, if accepted, this view means society would have to choose legally between either setting free or social isolation. The first choice would jeopardize the welfare of others, while the second would violate individual rights.¹⁰

Peters seems to suggest that Christian thinking about this legal dilemma should take a clue from how most courts have handled cases of the *genetic defense*. The courts, with some notable exceptions, have held that a genetic predisposition does not eliminate the free choice to control it. The genetic predisposition has been accepted as a mitigating factor in sentencing, but not as a determinative factor in obtaining a verdict.

When he turns to the question of moral responsibility, Peters critiques the line of thinking that we might term *if natural, then acceptable*. This is yet another example of the gene myth, and he critiques it on two counts: **a)** it leads to logical contradiction, and **b)** it does not square with Christian insights. In this line of reasoning, moral right is determined by whether something is natural (natural here means “physically given”). In this case, the genetic predisposition is the “given,” and this line of thinking holds that if a certain kind of behavior is established (as a scientific fact) to be in the genes, then that behavior must be morally acceptable, or at least excusable. Peters points out the logical fault line of this belief by indicating the contradictions to which it leads. For instance, if gay bashing and homophobia, as well as homosexuality were found to be “in the genes” and were therefore natural, would both then be equally moral? (He uses this example in light of scientific claims that certain forms of male homosexuality result from genetic predispositions. Whether or not these claims are validated does not change the larger point.)¹¹ Obviously not, but this line of reasoning leads inevitably to this contradiction. The point is that scientific fact does not itself determine the moral interpretation of that fact.

This point is reinforced on Christian grounds in the nearly forgotten doctrine of original sin. An adequate exploration of this doctrine is not possible in these pages, but its central theme is straightforward. The doctrine’s theme is the recognition that things are corrupted, not necessarily but inevitably, by sin and are not the way God intends for them to be. This central theme, at the very least, means that there is a certain distance between God’s intention for what should happen in creation and what may be physically given in the genes. This theme implies that the morally good should not be determined by the leading of biology but rather by the loving intention of God. As Peters writes, “This theological tradition will be skeptical of arguments that seek moral approval on the basis of genetic determinism. The gene myth has no automatic theological endorsement. To reiterate: the scientific fact does not itself determine the direction of the ethical interpretation of that fact.”¹² In short, the Christian must look beyond the biology of a genetic predisposition to settle any question of what behavior is morally acceptable.

The Image of God

This search for determining the morally good will point the Christian to Jesus Christ. Christian teaching holds that genuine selfhood and the morally good are defined in him. Jesus’ genome was completely human, and yet his life was the full expression of the IMAGE OF GOD (the *imago dei*). The human race finds its true definition in him. It finds its genuine identity and its salvation from original sin in God’s life and work in him. The Christian points to Christ as the response to statements about the human genome as the essence of human nature. Christ, not the human genome as isolated by the Human Genome Project, is the prototype of a true human being.



We could say that these Christian views about personhood, moral responsibility, sin, and the selfhood move the nature-nurture controversy around genetics into a new and fuller key. They respond to the gene myth in our culture with a dramatic redirection of the discussion. Human behavior is indeed rooted in our genetic substratum, but the human person results from an awesome combination of heredity and environment within the handiwork of God. This identity is a gift emerging from the activity of the creating, redeeming, and sustaining God known in Jesus Christ.

Deliberation

“I always knew that something was wrong with me,’ Glenda Sue Caldwell told reporters. ‘I was not responsible for what I did. I’m a good person.’ As her son, Freeman, walked through the front door of their Georgia home, Caldwell shot and killed him. She also shot at her daughter, who was sleeping in bed. The daughter lived. Convicted of murder and assault in 1986, Caldwell was sent to prison.

“By 1994, she was out of prison because Superior Court Judge Kenneth Kilpatrick granted her a new trial and found her innocent by reason of insanity. On what grounds? Caldwell has Huntington’s Disease [see glossary], a genetic disorder afflicting 25,000 Americans. Some Huntington’s sufferers exhibit the symptoms of depression and a growing predisposition to violent behavior. Judge Kilpatrick seems to have reasoned that if one is born with the Huntington’s gene, and if it predisposes a person to violent behavior, then this constitutes innocence in the eyes of the law. He reasoned Glenda’s case was one of diminished mental capacity due to genetic disorder.”¹³

Reflect on Glenda’s case, using the input sketched above. Use the relevant scientific information and the theological considerations employed by the Christian thinkers. The questions to consider here include: What would you say to someone who agrees with Glenda Sue Caldwell that her genetic disorder made her innocent? What legal judgment should be made? What moral judgment about responsibility? What theological judgment about her status before God?

Taking the Conversation With You

Armed with the examples of the gene myth in this chapter, the reader might examine current media reports about genetics. In doing so, look for examples of genetic determinism or genetic essentialism. In what ways are these statements reductionistic? How might these examples influence thinking in our society? How might a congregation play a role in countering the gene myth?

For Further Investigation

Peters, Ted. *Playing God? Genetic Determinism and Human Freedom*. (Routledge, New York, 1997). This text examines the concept of genetic determinism from several perspectives, many that develop the ideas above. Peters’ goal is to uncover concerns regarding human nature while building a theology of freedom and moral responsibility that is fully conversant with the science of genetics.

Willer, Roger A., ed. *Genetic Testing & Screening: Critical Engagement at the Intersection of Faith and Science*. (Kirk House Publishers, Minneapolis, 1998). Themes about personal identities appear in several chapters, but the most direct thread is found in the chapter by Elizabeth Bettenhausen.

Citations

1. Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Gene As a Cultural Icon*. (New York: W.H. Freeman & Co., 1995), 79.
2. J. L. Petersen, “Genetics of Personality and Psychiatric Illness.” *Behavioral Science for Medical Students*, ed. F. S. Sierles, (Baltimore: Williams & Wilkins, 1993), 67.
3. J. G. Holiandsworth, *The Physiology of Psychological Disorders: Schizophrenia, Depression, Anxiety and Substance Abuse*. (New York: Plenum Books, 1990), 47-48.
4. “The Nature of Nurturing.” *Newsweek* (March 27, 2000), 64-66.
5. Winifred Gallagher, “How We Become What We Are.” *Atlantic Monthly* (September 1994), 39.



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6. Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Gene As a Cultural Icon* (New York: W. H. Freeman and Co., 1995), 7.
7. Leon Jaroff, "The Gene Hunt." *Time Magazine* (March 1989), 67.
8. Elizabeth Bettenhausen, "Genes in Society: Whose Body?" *Genetic Testing & Screening: Critical Engagement at the Intersection of Faith and Science*, ed. Roger A. Willer. (Minneapolis: Kirk House Publishers, 1998), 113.
9. *Ibid*, 113/4 .
10. Ted Peters, "Genes, Theology, and Social Ethics: Are We Playing God?" *Genetics: Issues of Social Justice*, ed. Ted Peters. (Cleveland: Pilgrim Press, 1998), 19.
11. *Ibid*, 21.
12. *Ibid*, 24.
13. Ted Peters, "'My Genes Made Me Do It!'" *The Lutheran* (March 1995), 26.

