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The Double Helix and Double-Edged Sword: How the Public Thinks about Genes

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In some settings, claims regarding the genetic causes of human behavior are enormously controversial. In the early 1990s, the National Institutes of Health's efforts to explore the biological and genetic antecedents of violence ignited a storm of controversy, partly in response to the suggestion that the research might help to explain why violence was especially high in poor communities [1]. Likewise, publication of *The Bell Curve* elicited a strong and divisive debate, especially surrounding its claims about the role of genes in economic inequality [2]. More recently, James Watson's statements regarding race, genes, and intelligence—in which he stated that he was “inherently gloomy” about the prospects for Africa—ultimately led to his resignation from Cold Spring Harbor Laboratory, with which he had been affiliated for nearly 40 years. In these and many other instances, genetic arguments are lightning rods for controversy—and, indeed, scandal—because of their association with a host of other concerns, including responsibility and agency; the enduring nature of a person; and the ability of societies to reduce suffering, inequality, and disadvantage.

Yet these controversies, no matter how pitched they are in science and politics, are simply not as pronounced in public opinion. Despite the lingering scientific and political disputes, the public is increasingly likely to accept genetic arguments for a variety of behaviors and traits. Most Americans, for example, accept that genes are at least somewhat important for health, mental illness, intelligence, and personality [3]. In some of these cases, public support is overwhelming. For example, more than 90 percent of Americans believe genes are important for physical illness, and 65 percent view them as important for “success in life,” a measure that is clearly less immediately biological than disease. Furthermore, the public remains optimistic about the potential fruits of the genetic revolution, especially with respect to DNA testing and medical intervention. In 1996, for example, most Americans believed that genetic screening would produce more good than harm [4].

Genetic arguments are also less divisive in the public sphere. In science and politics, the disputes that surround genetic arguments stem from their seemingly conservative implications juxtaposed against the progressive leanings of many scientists and politicians. Certainly some social scientists fear that genetic research will, in the minds of policy makers, reduce social problems to genetic and, hence, deterministic abnormalities, thereby diminishing the apparent value of social interventions [5]. Yet popular support for genetic arguments is unrelated to political orientation—

endorsement is common among liberals and conservatives alike [3]. Although some link genetic attributions to prejudice and stereotyping, the public is often quick to offer nondiscriminatory interpretations of genetic causes [6, 7]. Nor is popular support more common among younger cohorts, for whom cutting-edge molecular genetics might seem less remarkable and arcane. Indeed, if anything, older Americans are more likely to embrace the role of genetic influences.

How should we understand this pervasive enthusiasm? What are its sources? And, more importantly, what are its consequences? If the public is increasingly likely to see genes as the “keys to life,” are they also more tolerant of abnormality? Although science may be the authority on the role of genetics in human behavior, public opinion about genes is hardly epiphenomenal—it is influential in legislative decisions about research funding, including funding for stem-cell research. Public opinion is important in other ways as well. Physicians, for example, need to appreciate public beliefs to understand how their patients respond to genetic information and advice.

Complexity of Public Beliefs about Genes

The successful mapping of the human genome received an unusual amount of attention, and this accomplishment was merely the tip of the iceberg for popular media. The amount of news surrounding genetic research has increased over time, starting well before 2003 [8, 9]. At present, the public is exposed on a near-daily basis to reports about the discovery of “a gene for” for a variety of conditions, including depression, obesity, diabetes, alcoholism, and cancer, but also a range of behaviors and traits, such as personality, religion, political beliefs, sexual orientation, and morality. Apparently these messages are reaching their audience. Public support for genetic arguments has increased over time, as one would expect given the expanded coverage [8, 10].

Perhaps more importantly, the public appears to have absorbed the positive slant these stories often take. Most news stories about genetic research take an optimistic point of view, wherein the discovery of a gene or set of genes for disease is also linked, often prematurely, to a potential cure [11]. The public rarely hears about conflicting evidence or failures to replicate key results. And the public may be less inclined to accept them should they appear—opinion research reveals that the public often spontaneously associates genetic causes with the possibility of treatment [11].

This is not to say that the public is unduly credulous or unsophisticated. Most media consumers recognize the contribution of social causes to health and behavior and do not view genes as narrowly deterministic. For example, while endorsement of genetic explanations for mental illness has grown over time, it has not come at the expense of social explanations, like family upbringing or stress, which remain common [10]. Even when presented with a “blueprint” metaphor for genes, the public is quick to provide a nondeterministic interpretation [7]. At the same time, public enthusiasm for genes does not stretch to all potential applications of genetic research. While cautiously supportive of DNA testing, for example, the public

generally opposes selective abortion for conditions that are treatable or not especially severe, such as obesity [4, 12]. Perhaps not surprisingly, the public also remains concerned about privacy, which is, of course, entirely reasonable. In short, endorsement, while strong, is not without caution, nuance, or knowledge.

From some perspectives, this enthusiasm is a good thing. Many advocates believe that genetic arguments will foster understanding and tolerance in places where blame and fear once prevailed. Along these lines, some see a strong link between support for genetic causes and support for a traditional medical model—what’s good for genetics is good for medicine. In the area of mental health, for example, some welcome the rise of a genetic model, hoping it will further cement the view that psychiatric conditions are real, severe, and deserving of treatment. The National Alliance for the Mentally Ill has been especially vocal in promoting the view that genes are responsible for mental illness. Similarly, some gay-rights activists hope that a demonstrable link between genes and sexual orientation will help to allay the stigma surrounding homosexuality by, in effect, “naturalizing” an orientation that is seen by some as a blameworthy and deviant choice. These efforts have not been entirely misplaced. There is some evidence, for example, that the growing acceptance of psychiatric medications is partly due to the public’s widespread adoption of a genetic model [10].

Yet the public’s endorsement of a genetic model carries a shadow, and we should not expect the wave of support for genetic explanations to have the same positive consequences when applied to all traits, behaviors, and disorders. Genetic arguments occasionally foster a more divisive view of human nature [8]. Although they situate many behaviors within the realm of the natural, genetic arguments also raise fears that genes are destiny. In a genetic framework, behaviors that were once seen as freely chosen actions or personal characteristics can, instead, be interpreted as symptoms of a genetic weakness. In this way, genetic explanations might be used by the public to identify latent predispositions and threats, even when no problems are apparent. And genetic arguments are sometimes associated with the idea that interventions, no matter how effective, can never truly “cure” behavioral problems. Acceptance of a genetic cause of mental illness, for example, increases support for use of psychiatric medications, but it does not increase the perceived effectiveness of such medications [10].

Reflecting the double-edge of genetic arguments, some medical conditions benefit from their association with a genetic framework while others suffer the consequence of provoking fatalism and fear. On the positive side, those who believe that depression is caused by genetic factors tend to be more tolerant of people with depression because genes are thought to say something about the condition’s origin [14, 15]. In particular, genetic arguments dispel the idea that depression is caused by personal weakness (e.g., “He just needs to get over it”), thereby transforming what was once seen as a moral weakness into a medical condition. This is more than a small victory, given the long-standing misunderstanding that depression is no different than ordinary sadness, reflecting, as it does, the usual ups and downs of life.

On the other hand, those who believe schizophrenia is caused by genetic factors tend to be less tolerant than those who believe it is caused by environmental factors, including stress and family upbringing. Indeed, those in the former group are, on some dimensions, similar to those who believe schizophrenia is caused by bad character—both groups see people with schizophrenia as even more dangerous and suspicious because their condition reflects, albeit in different ways, inherent abnormality more than a situational response [10].

Genetic explanations have similarly complex implications when applied across the spectrum of behaviors, traits, and disorders linked to genes, implications that are likely to depend on whether the condition in question is thought to be sufficiently unusual to pose some kind of a threat. Genetic explanations for violent and aggressive behavior are likely to incite fear and intolerance by making the individual appear more distinctive, sick, and uncontrollable. As a result, should scientists conclusively demonstrate a genetic influence on crime, some will begin to perceive criminals as essentially flawed and, therefore, at risk for future criminality, even when those criminals attempt to atone for their acts. Few can be truly reformed when the origins of their deviance are believed to lie within the biological “code” of their body. When applied to abnormal but nonviolent behavior, however, genetic arguments are likely to promote greater tolerance by reducing perceived personal responsibility. Sickness is tolerated even when weakness is not. In short, the public uses genetic information in divergent ways, sometimes to explain behavior and other times to assess threat, which, of course, leads to different responses.

Conclusion

It is tempting to believe that science will eventually be the arbiter of public beliefs. Having already fostered public acceptance of genetic influences, science may further contextualize the nature of genetic influence and, in doing so, help to eliminate some of the more negative aspects of genetic arguments. If, for example, science can develop cures for genetic disorders, just as it has already discovered causes, then genetic arguments might reinforce the clinical enterprise rather than increase fear. Likewise, if science can better understand how genes and environments interact, the public might be less inclined to see genes as revealing something essential about a person, and instead, view genes as malleable in the same way that environments are malleable. Biological arguments need not be in sole service of the status quo.

Yet public opinion is not a perfect corollary of scientific understanding. Nor is scientific knowledge a perfect corollary of good policy. What a society chooses to do with genetic research and information is ultimately a social and political question [13]. In the early 20th century, support for eugenics was common among both conservatives and progressives [16]. For progressives, eugenics provided a means of improving the conditions of the working class by attacking the root cause rather than the symptoms of disadvantage. For conservatives, it offered an explanation for social problems that seemed to undermine the relevance of economic regulation and government intervention. Thus, through different rationales, both groups saw value

in selective restrictions on immigration, fertility control, and, in extreme cases, forced sterilization.

By the same token, what the public chooses to do with genetic arguments will ultimately depend on its other beliefs, attitudes, and values. The public already accepts that genes are important to life, but this acceptance will not lead, of necessity, to greater tolerance. In public opinion, as in politics, the controversy surrounding genes rests not with whether they matter at all, but rather with their implications.

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