
Genes, Race, and Psychology in the Genome Era

An Introduction

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The mapping of the human genome has reawakened interest in the topic of race and genetics, especially the use of genetic technology to examine racial differences in complex outcomes such as health and intelligence. Advances in genomic research challenge psychology to address the myriad conceptual, methodological, and analytical issues associated with research on genetics and race. In addition, the field needs to understand the numerous social, ethical, legal, clinical, and policy implications of research in this arena. Addressing these issues should not only benefit psychology but could also serve to guide such thought in other fields, including molecular biology. The purpose of this special issue is to begin a discussion of this issue of race and genetics within the field of psychology. Several scholars who work in the fields of genetics, race, or related areas were invited to write (or had previously submitted) articles sharing their perspectives.

In February 2001, with great fanfare and hope, an announcement was made that the Human Genome Project, a federal government effort, and Celera Genomics, a private company, had successfully completed drafts of the entire human genome (International Human Genome Sequencing Consortium, 2001; Venter et al., 2001). These accomplishments were made possible, in part, by technological advances that fostered dramatic leaps in our understanding of DNA. The mapping of the human genome and the often dizzying pace of genetic research that has followed it have the potential to accelerate advances in a number of domains, including biological and health science, and health care (Cowan, Kopnisky, & Hyman, 2002; Guttmacher, Collins, & Drazen, 2004). For example, in the field of cancer genetics, scientists have identified thousands of genes expressed abnormally in cancer cells. More than 100 of these have been directly implicated in cancer (National Cancer Institute, 2004). High-risk genes like BRCA1 and BRCA2 in breast cancer have been identified and are currently being used as clinical screening or predictive tools (Mincey, 2003). Similar efforts are being made for Alzheimer's disease (Pastor & Goate, 2004). In addition, pharmaceutical companies are actively pursuing research in what is being called "individualized medicine," which has the goal of optimizing drug therapy by customizing drugs to a person's unique DNA profile (Evans & Relling, 2004).

New genetic discoveries also have the potential to improve our understanding of human behavior, psycholog-

ical and emotional processes, and mental health and illness. As such, the mapping of the genome has created new professional and research opportunities for psychologists (e.g., see Patenaude, Guttmacher, & Collins, 2002; Plomin & Colledge, 2001; Plomin & Spinath, 2004). Even before the completion of the Human Genome and Celera projects, psychology had long been involved in a variety of research and professional activities in genetics (see, e.g., Crawley, 1999; Crawley & Paylor, 1997; Gatz, Pedersen, Plomin, Nesselroade, & McClearn, 1992; Lerman et al., 1999; Lerman, Croyle, Tercyak, & Hamann, 2002; McGue & Bouchard, 1998; McGue & Christensen, 1997; Patenaude, 2004; Patenaude et al., 2002; Shiloh, 1996). With the mapping of the human genome, the opportunities for psychologists in related clinical service, research, and policy arenas have increased significantly (Patenaude et al., 2002). In order to capitalize on these opportunities, psychologists should become knowledgeable about the new tools of genome research, the new discoveries related to health and mental health, and the attendant ethical, legal, and social implications of those discoveries (Patenaude et al., 2002; Plomin & Colledge, 2001; Plomin & Spinath, 2004).

Paralleling the developments in genetics research has been a national focus on racial and ethnic differences in health. This interest in what has become known as "health disparities" was initiated by epidemiological research demonstrating profound differences between ethnic and racial groups in morbidity and mortality (Hummer, Benjamins, & Rogers, 2004; Hummer, Rogers, Nam, & LeClere, 1996; Kington & Nickens, 2001; Williams, 2001). Health disparities has become a major priority area for research funding at the National Institutes of Health (2002), and the topic has spawned several reports in recent years (Bulatao & Anderson, 2004; Smedley, Stith, & Nelson, 2003).

The convergence of interest in health disparities and discoveries in genetics in the 1990s have led to speculation that the latter might well enlighten us about the former.

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That is, the genetic level of analysis might help solve the mystery of why some groups live longer and in better health than others (Collins, Green, Guttmacher, & Guyer, 2003). However, this speculation has not gone uncontested (Sankar et al., 2004). Implicit in the notion of a genetic basis for any observed racial or ethnic group differences in health or in other complex characteristics, such as intelligence, is that particular groups differ genetically in some fundamental ways that might influence the outcome of interest.

The topic of genetically based racial or ethnic group differences has a long and troublesome history (Guthrie, 1998; Richards, 1997; Tobach & Rosoff, 1994; Winston, 2004; Yee, Fairchild, Weizmann, & Wyatt, 1993). In the United States, there are few topics more controversial than that of genetics and race, owing largely to the systematic and sometimes government-funded efforts to scientifically “document” the inherent inferiority of many groups as a justification for discriminatory treatment (e.g., American Eugenics Society, 1928–1931; Davenport, 1923). Although such efforts have largely been discredited (e.g., Gould, 1981/1996; Selden, 1999), interest in the genetic underpinnings of racial differences has not disappeared. In fact, the mapping of the human genome and other efforts to define human genetic diversity (International HapMap Consortium, 2003) have reawakened the discussion of whether genetics can be used to define race (Collins, 2004; “Genetics for the Human Race,” 2004; Henig, 2004).

The renewed interest challenges the scientific community to address a series of questions. For example, are there racial or ethnic group differences in specific illnesses or complex characteristics? Do genes play a role in those specific illnesses or characteristics? What then is the role of genes in racial group differences in those illnesses or characteristics? Although these three questions appear straightforward, they in fact raise additional and substantially more complex ones. For example, on what basis are people classified into racial or ethnic groups, or on what basis do they classify themselves into such groups? How should such classifications be used in scientific research? Is there a “theory” about the meaning of race for psychological or biomedical research? Do racial and ethnic groups constitute different genetic populations? What is the best research methodology for studying race and genetics? What are the larger implications of research on genes, race, and psychology for public policy and practice, and what are some of the ethical, legal, and social issues that might result from such research? These are some of the questions addressed by the articles in this special issue.

Genes, Race, and Psychology in the Genome Era: An Overview of the Special Issue

Given the growing salience of research on race and genetics, it is critically important for psychology to grapple with this sensitive issue. Psychology needs to begin the task of addressing the myriad complex conceptual, methodological, analytical, and interpretational problems and questions

associated with research on genetics and race. In addition, psychology needs to address some of the numerous social, ethical, legal, clinical, and policy implications of research in this arena. Addressing these issues should not only benefit psychology but could also serve to guide such thought in other fields, including molecular biology.

The purpose of this special issue is to begin a discussion of the topic of race and genetics within the field of psychology. Several scholars who work in the fields of genetics, race, or related areas were invited to write (or had previously submitted) papers sharing their perspectives.

Bonham, Warshauer-Baker, and Collins (2005, this issue) provide the first article for this special issue. The authors have leadership roles at the National Human Genome Research Institute (NHGRI) at the National Institutes of Health—one of them (Francis S. Collins) is director of NHGRI—so they are particularly qualified to provide an overview of the advances in genome science. The NHGRI played a lead role in the Human Genome Project. This article provides a glimpse into the future of genomics research and some perspectives on the definitions of race as seen from the field of genomics. Bonham et al. also provide an introduction to some of the ethical, legal, and social implications (ELSI) related to genomic research. ELSI is a field in which psychologists are especially poised to make contributions.

Smedley and Smedley (2005, this issue) provide an anthropological and historical perspective on the use of the term *race* and scientific attempts to define it. Although this topic is touched upon by each of the authors contributing to this special issue, Smedley and Smedley offer more of an anthropological and historical analysis. One of the authors (Audrey Smedley) is an anthropologist who has been involved in that discipline’s efforts to address the race issue. Smedley and Smedley also discuss how constructions of race have implications for social and health policy.

Helms, Jernigan, and Mascher (2005, this issue) and Ota Wang and Sue (2005, this issue) provide a critique of the use of the construct of race, specifically as used in psychology. They emphasize that some of the hallmarks of the best psychological research are the premium placed on conceptual clarity, the appropriate operational definition of constructs, the careful measurement of such constructs, and the recognition of limitations of various research approaches for internal and external validity. Yet Helms et al. and Ota Wang and Sue argue that in terms of research on race, psychology has frequently not met these standards. They assert that, to date, there has been little conceptual clarity about the meaning of race or what it is supposed to represent in psychological studies.

In addition, although many scholars believe that race is not a valid biological construct and that racial and ethnic groups are not discrete biological groups, psychological studies frequently rely on research designs and statistical analyses that essentially use race (or analyze race) as if it were a categorical variable. As others have done in the past (e.g., Tate & Audette, 2001; Yee et al., 1993; Zuckerman, 1990), Helms et al. (2005) and Ota Wang and Sue (2005) offer alternative approaches to studying aspects of cultural

experiences, life experiences, and identity for which race is often used as a proxy.

One of the most controversial issues in research on race and genetics is that of intelligence. Three articles in the special issue address this topic. The most comprehensive of these is by Sternberg, Grigorenko, and Kidd (2005, this issue), who provide a sweeping overview and critique of the concept of intelligence and the relationship of intelligence to race, geography, and population genetics. The article by Rowe (2005, this issue) argues that in studies on genetic and environmental factors in research on racial differences in intelligence and other characteristics, greater attention should be devoted to genetic factors than has been the case. This article and the rebuttal to it by Cooper (2005, this issue) were originally scheduled to be published in an earlier issue of *American Psychologist*, but given the topics they address, we decided to include them in this special issue.

As noted, health is another area where race and genetics meet, and two articles address this topic. Shields et al. (2005, this issue) use the example of genetic research on smoking to comprehensively outline the methodological, conceptual, and socioethical difficulties in the use of race in health research and in the study of complex traits and diseases. This multidisciplinary team of authors also provides detailed recommendations for alternatives to the use of race in genetics research and recommendations for policymakers who fund this type of research. Whitfield and McClearn (2005, this issue) examine the topic of health by focusing on the interaction of genes and the environment, highlighting quantitative genetics and the use of twin research methodology.

Finally, Ossorio and Duster (2005, this issue) present some of the important ethical, legal, and social implications of the use of genetic information and genetic technologies in the context of criminology. They caution, among other things, that the use of DNA databanks or forensic genetic profiles in genetics research can lead to profound misinterpretations of the genetics of race.

Useful Web Resources

Given the highly technical nature of genetics research, many of the terms used in some of the articles may be less familiar to psychologists. Therefore, we have provided links to Web sites that provide glossaries of genetic terminology. In addition, we have provided other online resources for more information about the Human Genome Project, information on the ethical, legal, and social implications of genomics, and the application of genomic discoveries to public health.

National Human Genome Research Institute's Talking Glossary of Genetic Terms

This site provides a useful glossary of terms and concepts used in genetic research.

Web site: www.genome.gov/10002096

National Institutes of Health, National Human Genome Research Institute

The NHGRI is an institute of the National Institutes of Health whose original goal was to sequence the entire human genome. Now NHGRI supports the development of resources and technology that will accelerate genome research and its application to human health.

Web site: www.genome.gov

Centers for Disease Control and Prevention (CDC), Office of Genomics and Disease Prevention

This site provides information about human genomic discoveries and how they can be used to improve health and prevent disease. It also provides links to CDC-wide activities in public health genomics across the life span.

Web site: www.cdc.gov/genomics/default.htm

NHGRI, Ethical, Legal and Social Implications (ELSI) Research Program

The ELSI program identifies, analyzes, and addresses the ethical, legal, and social implications of human genetics research while the basic science is being studied. The goal is to help identify problem areas and develop solutions before scientific information is integrated into health care practice.

Web site: www.genome.gov/10001618

National Coalition for Health Professional Education in Genetics

An "organization of organizations" promoting health professional education and access to information about advances in human genetics.

Web site: www.nchpeg.org/

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