RECONCEPTUALIZING THE MEASUREMENT OF MULTIRACIAL STATUS FOR HEALTH RESEARCH IN THE UNITED STATES

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Abstract

The assessment of multiracial status in U.S. health research is fraught with challenges that limit our ability to enumerate and study this population. This paper reconceptualizes the assessment of multiracial status through the development of a model with three dimensions: *mixed ancestry multiracial status*, *self-identified multiracial status*, and *socially assigned multiracial status*. We present challenges to studying multiracial populations and provide recommendations for improving the assessment of multiracial status in health research.

Keywords: Multiracial, Mixed Ancestry, Race, Ethnicity, Racial Classification, Racial Identification

INTRODUCTION

Using race to classify individuals remains critical to monitoring rates of birth, disease, and death and enforcing government policies in the United States. However, these classifications are useful only when they are accurate and inclusive. The clas-

Du Bois Review, 8:1 (2011) 25–36.
 1742-058X/11 $15.00
doi:10.1017/S1742058X11000038

sification of multiracial individuals in U.S. health research has recently gained attention as research aimed at understanding the growth and well-being of this population has increased. Despite this scrutiny, the current assessment of multiracial status is fraught with methodological and conceptual challenges that limit our ability to enumerate and study this population. The purpose of this paper is to reconceptualize the assessment of multiracial status for U.S. health research through the development of a multidimensional model.

In this paper, *race* refers to a group of people who share physical characteristics such as skin color, facial features, and other traits. We consider race to be a social construct where differences in health outcomes are due primarily to differential access to societal resources and are a marker of oppression, exploitation, and inequality (Williams et al., 2010). In contrast, *ethnicity* refers to a group of people who share a common heritage, national origin, and/or cultural practices such as language, beliefs, values, and food. Studies of U. S. multiracial populations are typically composed of individuals who report identification with two or more *racial* groups.

THE MULTIDIMENSIONALITY OF MULTIRACIAL STATUS

Multiracial status is a complex construct not well captured by commonly used racial classification systems. We propose that multiracial status has three unique dimensions: *mixed ancestry multiracial status*, *self-identified multiracial status*, and *socially assigned multiracial status* (see Figure 1).

These dimensions are used interchangeably in U.S. health research despite their complexity. The dimensions correspond to distinct but overlapping populations, they can be assessed using varied measures of racial status, and they may be independently associated with unique health outcomes.

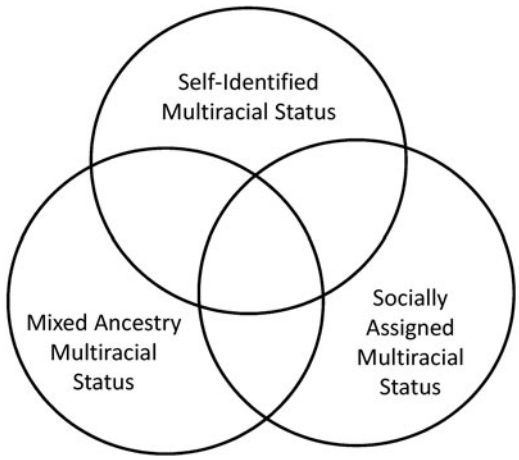

Fig. 1. The Multidimensionality of Multiracial Status

Mixed Ancestry Multiracial Status

Definition

This dimension encompasses those with two or more racial ancestries in their genealogic history, even when removed many generations (Goldstein and Morning, 2000).

https://doi.org/10.1017/S1742058X11000038 Published online by Cambridge University Press

Mixed ancestry attempts to take an objective view of race that is devoid of personal interpretations of racial identification and outsider perceptions of racial group membership. This dimension also reflects the interaction of social exposures with biology that occurs across the individual life course and even across generations. Of the three dimensions, mixed ancestry has been studied the least in health research.

Measurement

The measurement of mixed ancestry is evolving. The most commonly used method is to determine the race of a participant's biological parents. A participant is considered multiracial if s/he has biological parents who identify with different single-race groups or at least one parent who identifies multiracially (Harris 2002). Parent race is often used in health and demographic studies due to its ease of administration, particularly when a participant is too young to self-report his/her own race. It is the primary method of identifying multiracial infants on birth records and child health surveys.

A second approach, which is still in development and requires further examination in the multiracial population, involves population ancestral admixture testing. Through advances in the study of the human genome, efforts have been made to differentiate individuals on the basis of their genetic make-up into continental ancestral groups (Kuzawa and Sweet, 2009). Data from multiple loci on the human genome are thought to provide characterizations of individuals into continental ancestral groups that approximate our current racial categories[2]. Through this method, an individual of mixed ancestry is defined as anyone with differing racial ancestries in their genealogic history.

Impact on Health

The link between mixed ancestry and health is not well understood; the emergence of genetic research on race and health may provide insight into this relationship. Evidence overwhelmingly suggests that genes alone do not make a major contribution to health disparities across racial groups (Olden and White, 2005). In fact, the contribution of genetics to population health is thought to be modest. Still, genetic research is a growing field that allows for the study of how social and environmental exposures interact with biology to affect patterns of disease across racial groups (Williams et al., 2010). Therefore, it is also important to understand how genetic research can be applied to multiracial populations.

There are two key ways in which genomics can help us understand racial disparities in health. The genetic risk variants that predict susceptibility to common diseases tend to be differentially distributed and inherited across racial groups. As an example, in the case of prostate cancer, where rates are markedly elevated among African American men, a greater proportion of risk variants are found in African Americans than in Whites. This disproportionate distribution may account for a modest proportion of the disparity in prostate cancer incidence (Ramos and Rotimi, 2009). Understanding the distribution of genetic markers for diseases across mixed ancestry groups is also needed in order to document whether this population is at elevated risk for certain health outcomes.

Secondly, the field of epigenetics, which examines changes in gene expression that can arise from environmental exposures, suggests that there is a connection between racial ancestry, environmental exposures, and biology. Racial group membership and ancestral origins are strongly related to social exposures that may pro-

duce changes in gene expression and tissue and organ function across generations (Kuzawa and Sweet, 2009; Williams et al., 2010). A small collection of birth outcome studies suggests that differential exposure to social stressors may alter biology in mixed ancestry populations. Among infants born to Black-White unions, those with a Black mother and White father had a higher rate of low birthweight (Collins and David, 1993) and preterm births (Polednak and King, 1998) than infants with a White mother and a Black father. These disparities are attributed to disproportionate exposure to psychosocial stressors among Black women compared to White women and demonstrate the importance of knowing a person's ancestral origins in order to document and understand his or her health outcomes. More research is needed to identify whether there are social exposures specific to multiracial populations that may result in biological adaptations, including epigenetic changes.

Limitations

There are limitations to relying on mixed ancestry as the sole dimension of multiracial status. Data on parents' race is unreliable when self-reported by either the parent or participant. Also, this method typically identifies only those individuals who have mixed ancestry within one or two generations.

A key challenge to following a genetic admixture definition of multiracial status, particularly in a diverse country such as the United States, is that almost all U.S. residents would meet criteria for mixed ancestry at some point in their genealogy. To date, studies have not examined whether adverse health outcomes across mixed ancestry lessen as the number of generations since genetic admixture increases. Although it is likely that recent mixed ancestry has a greater impact on health than distant mixed ancestry, this supposition requires empirical support. Moreover, it is not clear whether observed differences by mixed ancestry are due to genetic traits that differ across racial groups, differential exposure to social and physical exposures resulting in epigenetic changes, or to some combination of these factors. Finally, this method does not capture how the individual processes his/her own racial identification.

Self-Identified Multiracial Status

Definition

Self-identified multiracial status refers to how multiracial individuals racially classify and designate themselves through words and actions (Brunsma 2005). Multiracial individuals have the unique opportunity to choose how they racially identify themselves (Coleman and Carter, 2007). For example, a person may have parents of two different races yet s/he may choose to express a single-race identification rather than a multiracial identification. Multiracial identification is therefore distinct from the mixed ancestry dimension because for many multiracial individuals, the presence or knowledge of mixed ancestry may be unrelated to the racial identification(s) they choose to express (Binning et al., 2009; Hitlin et al., 2006). It is important to note that the concept of multiracial *identification*, or the groups a person uses to racially classify himself/herself, is distinct from the concept of multiracial *identity*. Multiracial *identity* is a separate area of study which focuses on the set of roles and behaviors a person uses to exhibit his/her connection with a particular culture or cultures (Herman 2010). The measurement of multiracial *identity* is not covered in this review.

Measurement

Self-reported racial identification is the primary method used to measure multiracial identification, due to its ease of administration (Harris 2002). However, the type of self-report measure used varies from study to study. Some surveys allow respondents to select a general "multiracial" category, while others incorporate an open-ended question where respondents are able to indicate any racial identification(s) that they choose. In 1997, the Office of Management and Budget (OMB), which sets data collection criteria for all federal government agencies, implemented a third option where respondents are given a list of racial categories and then asked to "mark one or more" (Tucker et al., 1996). This is the preferred method of self-identification for multiracial respondents (Johnson et al., 1997). It is also becoming standard in survey research as researchers seek to collect data that are compatible with data from government agencies.

The approach used by the National Health Interview Survey (NHIS) for the past thirty years (Sondik et al., 2000) is another method that should be more carefully tested and understood. After respondents indicate all of the groups that represent their race, multiracial persons are asked to identify, "which of those groups would you say best describes your race?" The overwhelming majority of multiracial respondents select a single-race category. The answer to this primary racial identification question allows for a nuanced exploration of multiracial self-identification, but requires further examination regarding its meaning, determinants, and consequences.

Links to Health

Multiracial self-identification has been used most often to study health outcomes among multiracial populations. Developing positive beliefs about one's racial identification is considered essential for successful psychological adjustment (Phinney 1990). Multiracial development theories hypothesize that in order to establish psychological well-being, multiracial individuals must embrace an integrated multiracial identification that encompasses all of their racial backgrounds (Poston 1990). However, the formation of an integrated multiracial identification is challenged by external factors such as cultural ideologies about race, racial composition of social networks, and physical appearance (Brunsma 2005; Herman 2004). These challenges are thought to be a key cause of psychological distress among multiracial individuals and recent studies have sought to empirically test this hypothesis.

Binning et al. (2009) found that among high school students with parents of two different races, those who self-identified as multiracial reported higher levels of psychological well-being, social engagement, positive affect, and school citizenship behavior and significantly lower levels of stress and alienation than students with parents of two different races who self-identified as single-race (Binning et al., 2009). Coleman and Carter (2007) found that a self-reported multiracial identification was associated with lower anxiety and depressive symptoms than a single-race identification among multiracial college students. Efforts should be made to replicate these findings in nationally representative samples.

Limitations

This approach has limitations. First, it captures only a subsample of the total population with mixed ancestry. Studies have demonstrated substantial differences in the multiracial population when data are collected by self-report compared to data based solely on parents' race. Phinney and Alipuria (1996) compared multiracial identity using both measures among college students and found that of all the respondents

who reported having parents of different races, only thirty-four percent self-identified as multiracial. Therefore, self-reported multiracial data from the Census and national health surveys may provide an underestimate of the multiracial population. Second, given that multiracial individuals who develop an integrated multiracial identification are thought to be better adjusted than those who embrace a single-race identification (Binning et al., 2009; Coleman and Carter, 2007), self-reported race measures may capture only the most well-adjusted members of this population. As a result, health studies that rely on self-report measures may be overestimating the health of multiracial populations.

A third limitation relates to the inconsistent use of racial/ethnic categories across self-report surveys, which is problematic for efforts to monitor the size and characteristics of racial/ethnic groups in the United States. Although not specific to this group, confusion over how to include Latinos in studies of multiracial populations exemplifies this problem. According to the Office of Management and Budget (OMB), Latino/Hispanic origin is an ethnic category and is therefore distinct from the racial categories that are tracked in the United States (Jones and Smith, 2001). As a result, when Latino ethnicity is assessed separately from race, Latinos are often excluded from studies of multiracial populations. However, Latinos in the United States are racially quite heterogeneous and are among the racial/ethnic groups most likely to identify as multiracial (Jones and Smith, 2001). Although beyond the scope of this paper, it is important to note that Latinos (and the general U.S. population) also have difficulty distinguishing Latino *ethnicity* from *race*, with the majority of Latinos preferring the terms Hispanic/Latino to be treated as racial categories (Hitlin et al., 2007; Tucker et al., 1996). By excluding Latinos and other similar racial/ethnic groups from studies of multiracial populations, researchers may be limiting their definition of multiraciality and potentially missing subpopulations.

Socially Assigned Multiracial Status

Definition

Socially assigned multiracial status represents categorizations that are quickly and routinely assigned by third-party observers in everyday settings without the benefit of inquiries about self-identification, ancestry, culture, or biological inheritance (Jones et al., 2008). Studying external attributions of racial categories helps us understand the impact of discrimination on health (Jones et al., 2008) and may clarify the causes of health disparities that have been documented for the multiracial population.

Measurement

Health care settings often use socially assigned race by relying on third-party reports of race from physicians and/or admitting clerks (Hasnain-Wynia et al., 2004). Death certificates also regularly rely on third-party assessments of race from funeral directors. To assess self-reported socially assigned race, the Centers for Disease Control and Prevention (CDC) recently developed the question, "How do other people usually classify you in this country?" for the Behavioral Risk Factor Surveillance System (BRFSS) (Jones et al., 2008).

Links to Health

Exposure to racial discrimination has been associated with poor physical health, substance use, and mental illness across a variety of racial/ethnic groups in the

Table 1. The Dimensions of Multiracial Status: Definition, Measurement, Links to Health, and Limitations

Dimension	Definition	Measures	Pathways Linked to Health Outcomes	Limitations
Mixed Ancestry Multiracial Status	• Differing racial ancestries in a person's genealogic history, even when removed many generations	• Parents' race • Genetic testing	• Genetic variation in gene frequency across racial groups • Changes in gene expression from exposure to environmental contexts (epigenetics)	• To date rarely studied in multiracial populations • Patterns of health outcomes among the heterogeneous multiracial population is unclear
Self-Identified Multiracial Status	• The racial identification that an individual articulates through words and actions	• Self-reported racial identification	• Psychological factors related to racial identification processes and health	• Identifies only a subsample of the multiracial population • Self-reported measures may be identifying the most well-adjusted multiracial individuals • Inconsistent use of racial/ethnic categories across self-report surveys
Socially Assigned Multiracial Status	• Racial categorizations that are quickly and routinely assigned by third party observers in everyday settings	• A person's perception of how others classify his/her race • Third-party observer reports of race	• Experiences of discrimination and the social consequences of race on health	• Potential undercount of the multiracial population and numerator data due to discrepancies between observed and self-reported race • Discordance between observed and self-reported race may negatively impact health

United States and elsewhere (Williams and Mohammed, 2009). Among multiracial populations, racial discrimination has been associated with substance use and violent behaviors in adolescents (Choi et al., 2006). However, exposure to discrimination may not be universally experienced across multiracial populations. In a recent study from the BRFSS, the relationship between socially assigned race and general health status was examined (Jones et al., 2008). Among those who self-identified as multiracial, being classified by others as White rather than Black was associated with significant advantages in health status. It is unclear if being classified by others as "multiracial" is associated with unique health outcomes. However, regardless of which racial group is socially assigned, discordance between self-identified race and outsider perceptions of race on its own has also been linked to psychological distress among multiracial populations (Cheng and Lee, 2009) and single-race groups such as Native Americans (Campbell and Troyer, 2007).

Limitations

When data are collected for enumerative purposes, a primary limitation to socially assigned race relates to the undercount of multiracial individuals. U.S. studies suggest that when observers socially assign race, they tend to use a single-race category. In the 1978 National Health Interview Survey, more than eighty percent of respondents who self-identified as multiracial were classified by an interviewer as White (Massey 1980). More recently, in a study where college-student observers were asked to indicate the race of multiracial adolescents (based on photographs), the observers perceived close to half of the multiracial targets as single race (Herman 2010). The misclassification of racial data on health records and death certificates is problematic because it most likely suppresses death rates and health numerator data for multiracial populations.

A final limitation relates to the detrimental effect of discordance between self-identified race and outsider perceptions of race. The continued use of third-party-observer socially assigned race in health research may exacerbate negative outcomes by perpetuating the misclassification of multiracial status. Until more research can be done to better understand this relationship, researchers should use caution when applying socially assigned race as the only measure of multiracial status in health research. Table 1 presents a summary of each dimension.

RECOMMENDATIONS

Given the multidimensionality of multiracial status, the challenges to assessing this construct are numerous and complex. We offer recommendations to improve data collection techniques, the interpretation of multiracial data, and the development of more advanced methodologies in order to better understand the characteristics and health of multiracial populations.

The optimal way to assess multiracial status depends on the purpose for which the data are being collected. The mixed ancestry dimension is ideal for understanding the intersection between biological inheritance and social/environmental stressors, while the multiracial self-identification dimension should be utilized when studying the psychological impact of multiracial status on health. Finally, the socially assigned race dimension is best for examining the effects of discrimination on health.

Although each dimension can be applied on its own, it is also necessary to consider the areas where the dimensions of multiracial status do and do not overlap.

A more comprehensive exploration of multiracial status would first designate multiracial respondents by parents' race and then by self-reported identification. This approach attempts to capture the mixed ancestry and multiracial identification dimensions of multiracial status and would ideally identify respondents who have mixed ancestry, but do not express a multiracial self-identification. Exploring self-identification and socially assigned race together is also vital to understanding the dynamic relationship between public perceptions and private identities (Rockquemore and Brunsma, 2002). These approaches allow for the more comprehensive inclusion of multiracial populations in studies as well as the examination of differences in characteristics and health outcomes across the different dimensions.

New measures that explore the unique aspects of multiracial status should also be developed. Rockquemore (1998) has created a multiracial identification scale based on a taxonomy of racial identification options that more accurately assesses the multidimensional nature of multiracial status than existing racial/ethnic measures. Specifically designed for Black-White biracial populations, respondents are able to select one of four different racial identification options: singular identity (exclusively Black or exclusively White); border identity (exclusively biracial); protean identity (sometimes Black, sometimes White, sometimes biracial); and transcendent identity (no racial identity). This measure should be validated across multiracial subgroups and new measures should be developed.

One strategy for better incorporating Latinos into studies of multiracial populations is to re-classify Latino/Hispanic origin as a racial category. Due to the fact that the majority of the U.S. Hispanic population already regards Hispanic/Latino origin as a racial category (Hitlin et al., 2007), this revision would be consistent with commonly held beliefs about race and Latino ethnicity. Given the current OMB directive to check as many categories as apply, special outreach efforts to the Hispanic population to always check Hispanic/Latino as well as any other applicable racial category could ensure that this approach does not lead to an undercounting of the Hispanic population. This strategy is also in line with a growing movement in the social science literature that views race as capturing ethnicity and encompassing common geographic origins, ancestry, family patterns, cultural norms, and traditions (Williams 2005). Applying this approach would more comprehensively represent the multiracial experience.

More qualitative work is needed to better understand how multiracial individuals conceptualize their racial status. The collection of qualitative data would allow for in-depth exploration into the process of how one comes to feel secure and comfortable when presented with a racial self-identification task or how s/he feels when outsider perceptions of race differ from self-identification. This work will result in improved understanding of the measurement of multiracial status and ultimately improve measures.

Given the fluid nature of multiracial identification, longitudinal studies are needed to examine changes in identity across the lifecourse (Harris and Sims, 2002; Hitlin et al., 2006). Examination of adult multiracial populations is also an important area of research given that most existing studies examine child or adolescent populations. Determining whether multiracial identification becomes more stable in adulthood would have important implications for understanding health outcomes in this population as well as implications for the measurement and statistical modeling of multiracial status.

The field of multiracial research must also move beyond the identification of multiracial populations to discover those specific factors linked to race that affect health. These factors may include aspects of socioeconomic status, family dynamics, and exposure to discrimination.

Finally, these recommendations cannot be enacted without a shift in research and funding priorities. Given that multiracial populations are one of the fastest growing groups in the United States, funders should both support research that examines new and innovative methods that more accurately assess multiracial status in health research and also examine health outcomes in this population. However, in order to establish new research initiatives, advocacy on behalf of multiracial populations is also necessary. In particular, advocacy aimed at the OMB to improve the collection of racial/ethnic data for government agencies and the next U.S. Census would be an important and effective place to start.

CONCLUSION

The current conceptualizations and operationalizations of multiracial status in U.S. health research are flawed. As a result, it is challenging to compare findings and population characteristics across studies and we are likely missing multiracial subgroups who are not captured through commonly used classification systems. It is our position that the current limitations and challenges to studying multiracial populations result from the conceptualization of multiracial status as a one-dimensional construct when it is in fact multidimensional. Only by reconceptualizing multiracial status can we push the field of multiracial research forward in order to more accurately identify multiracial individuals and understand the extent and magnitude of the health problems within this population.

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NOTES

1. This paper was written while Dr. Woo was a doctoral candidate at the Harvard School of Public Health in the Department of Society, Human Development, and Health.
2. Risch et al. (2002) note that genetic differentiation is greatest when defined on a continental basis. Populations have been clustered into five continental groups that roughly approximate racial groups in the United States. They are the African branch (sub-Saharan Africans), the Caucasian branch (Northern Europeans and Northern Italians), the Pacific Islander branch (Australians and Pacific Islanders), the East Asian branch (Chinese, Japanese, and other East Asians), and the Native American branch (indigenous Latin American groups). U.S. populations have provided distinct and non-overlapping clustering of the Caucasian, African, and Asian samples. Hispanics, who represent recently admixed groups, did not form a distinct subgroup.

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