WORKING TITLE: SELF-RATED HEALTH AMONG MULTIRACIAL YOUNG ADULTS IN THE UNITED STATES

Abstract

Few studies provide data on the health of self-identified multiracial (two or more races) Americans. Subsequently, we know little about this population and existing health disparities. Three areas relevant to multiracial health include health status and health related to racial stability over the life course. Using data from the National Longitudinal Study of Adolescent Health (N = 20,774) in-home sample taken during the period 1994-2008 to examine factors related to multiracial health as individuals enter different phases of life. The framing question for this paper is "Do multiracial young adults have better or worse self-rated health than monoracial groups?" In the multivariate logistic regression results, I found that there are differences in self-rated health for some specific multiracial groups. These findings contribute to the wider understanding of health disparities for vulnerable populations and assist in identifying salient mechanisms of health disparities over the life course.

Background

A growing body of research finds multiracial Americans are at increased odds of experiencing psychosocial and physical health problems (Udry, Li, & Hendrickson-Smith, 2003; Vandervoort, Divers, & Acojido, 2000), engaging in violence and substance use (Choi, 2007) and sexual risk taking (Choi, 2007; Jayakody et al., 2011; Whaley & Francis, 2006) compared with monoracial Americans. Depression is one of the most notable findings in the literature, where multiracial (two or more races) adolescents have a higher prevalence of depressive symptoms and clinical depression compared with monoracial (single race) adolescents (Cheng & Lively, 2009; McKelvey & Webb, 1996; Milan & Keiley, 2000; Shih & Sanchez, 2005). Past

studies also find that multiracial Americans are at increased odds of engaging in adverse health behaviors such as illicit drug use, tobacco use, and heavy alcohol use (Chavez & Sanchez, 2010; Jackson & Lecroy, 2009; Sakai, Wang, & Price, 2010). Chronic health conditions are another concern for multiracial Americans. For example, a study on the health of children age 0 to 17 years found higher rates of asthma for multiracial children compared with monoracial children (Flores & Tomany-Korman, 2008). Additionally, another study found that compared with White adults, multiracial adults who identify as American Indian-White or Alaskan Native-White were more likely to have increased odds of asthma, hay fever, sinusitis, and chronic obstructive pulmonary disease (Pleis & Barnes, 2008).

Despite growing knowledge of the potential health issues experienced by multiracial Americans, very little is known about whether certain multiracial subgroups may be at higher risk for adverse health outcomes, because the majority of earlier studies failed to examine multiracial subgroups. In fact, the common approach is to group all multiracial respondents into a single residual category (Liebler & Halpern-Manners, 2008). A single multiracial category might potentially mask the heterogeneity within the multiracial groups. Thus the use of specific multiracial categories might reveal specific health outcomes for distinct subgroups. An example of this distinction can be found by contrasting two studies that present findings for Asian and Pacific Islander populations. First, Sakai and colleagues reported the differences in substance use for multiple-race Asians compared with single-race Asians and single-race Whites. One particular finding suggests that multiple-race Filipinos may be at a higher risk for drug use and alcohol dependence. The study found that for multirace Asians, prevalence rates for lifetime alcohol use fell between those for Asians and Whites. Within the study, however, a clear explanation and further specification of specific multiracial categories is lacking. It is not

apparent whether there are differences for specific multiracial subgroups within the all-inclusive multirace category. In contrast, a recent study found striking differences in low birth weight and preterm birth rates when examining multiracial mothers by specific multiethnic subgroups (Schempf, Mendola, Hamilton, Hayes, & Makuc, 2010). The study compared specific multiracial groups with monoracial ethnic groups. The researchers then examined nine subgroups of multiracial Filipino women and compared them with subgroups of monoracial Filipino women. The results showed that Filipino-White (odds ratios [OR] = 0.70, $p < .05$) and Filipino-multiracial (all mixes) ($OR = 0.77$, $p < .05$) women were less likely to have adverse birth outcomes. This analysis of the specific categories shows that specific multiracial groups are not always statistically different from monoracial groups.

Examining the multiracial subgroups might help explain some of the past findings on adverse health outcomes because it would allow an examination of within-group heterogeneity for the multiracial population. Additionally, the respective risk and protective factors may differ across specific multiracial subgroups.

In expanding the literature on multiracial young adults, this paper has two central goals:

1) to describe the health status of multiracial young adults; and

2) to test two hypotheses related to monoracial-multiracial differences in health status.

This paper addresses gaps in the previous literature by investigating the differences in health status by race with the inclusion of multiracial categories. The research question guiding this investigation is "Do multiracial adults have better or worse self-rated health than monoracial majority and monoracial minority groups?" This paper tests two hypotheses and reports data on monoracial-multiracial differences based upon a nationally representative sample of young adults. *The first testable hypothesis is that multiracial individuals are "variant" and will differ in*

an assessment of self-rated health compared with monoracial groups. The second testable hypothesis is that specific multiracial groups are different from monoracial groups; thus, inclusion of these specific groups will explain some of the effect of differences in fair/poor self-rated health. Accordingly, the paper will extend past work by including five specific multiracial categories and comparing these multiracial groups with monoracial majority and monoracial minority counterparts.

Multiracial Categorization and Health Research

Racial categorization in health research is an extensive topic due to its implications for health care behaviors and service use including cultural competence and relevancy. The literature on racial categorization also includes the issue of selecting two or more race or ethnic categories. In addition to the issue of understanding the role of mixed-race or multiracial respondents in health research, there exists the issue of classification. There is a lack of consensus in how to deal with multiple-race responses. For example, it is not clear whether a single multiracial group designation can capture the outcomes for the multiracial population in a given study or whether specific categories are needed to capture substantial differences that may exist between groups.

Theoretical Considerations

In this chapter I introduce a conceptual framework that builds upon three existing theoretical bodies of work, because a unified theory of multiracial identity formation has yet to be fully developed.

Multiracial Identity Formation.

The perspective of multiracial identity formation is an amalgamation of various approaches that conceptually frame the phenomenon of identity development. Based on this perspective, the study of multiracial/multiethnic Americans is dependent upon the social and

political context of the time (Root, 1992). Arguably, in a postracial era, which scholars call "generation-mix" (Spencer, 2011), the topic of race and mixed-race questions past and current practices of collecting race data, especially in health research.

There are three predominant and competing hypotheses around the health and health trajectories of multiracials compared with monoracials. The first hypothesis is known as the equivalent approach. It posits that multiracial persons will reflect patterns of experience similar to the group with the least status (another term that is used to describe this phenomenon is *hypodescent*). Using the case of a White-Native American multiracial person as an example, this individual's decision to self-categorize would reflect the health status of the Native American group and not the monoracial majority (or White) group. The second hypothesis is known as upward iteration. Studies of social class and social mobility find that multiracial groups might reflect an upward iteration where the group patterns reflect patterns similar to those of the group with greater status. The third hypothesis is called the variant approach and is the one most often found in current literature. This approach is based upon the premise that multiracial Americans as a group are distinct and therefore do not reflect patterns of any other group. Hence, multiracials should be conceptualized as a group distinct from monoracials. The variant approach has been extended to the ecological approach to encompass the significance of place (reflecting mostly regional differences) and time. The ecological approach is consistent with life course perspectives in the sense that racial self-categorization changes over time for multiracial persons in the United States (Rockquemore, Brunsma, & Delgado, 2009). The premise of the ecological approach as related to the intersection of self-categorization and health behaviors across time is that exposure to events (e.g., incarceration) or critical factors (e.g., appearance) are associated with how people categorize themselves. Hypothetically, health behaviors will change as

individuals define group membership based upon the norms or stereotypes of a group. Central to all of these factors are time and changes over the life course. For example, physical appearance, which affects the self-categorization process, can change over time.

Self-Categorization

Self-categorization theory, first established by Turner (1987), posits that categorization is a process which includes a number of assumptions that cannot be understood outright. Several scholars use self-categorization as a theory to support the self-selection of one or more racial categories. When individuals select group membership, there are a number of traits or characteristics associated with the categorization process. Perception is relevant to self-categorization. In this framework, an outside observer's categorization might not match the self-categorization of an individual. Turner established there must be perceived commonalities between oneself and an influence group (Turner 1987). Self-categorization theory posits that prospective group members perceive a normative fit of group norms or stereotypes (Oakes, Haslam, & McGarty, & Turner, 1994). Good, Chavez, and Sanchez (2009) use the example of an Asian-White individual who identifies with the Asian group, the White group, and, at times, the multiracial group. This decision, coming at a given time point, captures only a momentary fluctuation in the self-categorization process of a multiracial person. The end result of their study is that self-categorization is a sociopsychological process that is shaped by one's own perception of group membership or connectedness and is reinforced by the way that observers perceive the individual. Another important caveat of self-categorization theory and race is that individuals might categorize themselves into categories they do not physically appear to belong to. According to Root and Kelley (2003), multiracial individuals are often racially ambiguous and/or do not exhibit physical traits similar to those of their minority counterparts. This situation

presents yet another justification for self-categorization and acknowledgement of how individuals classify themselves.

Life Course Theory

Life course theory emerged as a paradigm that can be used to understand the complexities of human lives and the importance of context in research studies. This theory takes into account development over the lifespan, individual agency, time and place, timing of events, and "linked lives" versus interdependence (Mortimer & Shanahan, 2003). Within this theory I specifically use life course epidemiology, which is a perspective used to study the long-term consequences of temporal events on health outcomes at critical points in an individual's life. Within life course epidemiology I am specifically interested in early life exposure to lower socioeconomic conditions, measured by mother's educational attainment. The life course perspective offers a theoretical model that links early exposures or risks to interrelated factors for health outcomes or disease (Kuh & Ben-Shlomo, 2004). Some of the critical time points include birth, childhood, early adulthood, or even events across generations. In this paper, I use the life course perspective due to the critical time period of early adulthood for a birth cohort of American adults. I also use the life course perspective given the temporal sequence of exposures in early adolescence and emerging adulthood that influence outcomes in early adulthood. Examples of early life-exposures measures include caregivers' level of education as a proxy for respondents' socioeconomic status in early life or chronic health conditions in adolescence as predictors for early adult health behaviors.

Research Question and Hypotheses

The research question that frames this study—"Do mulitracial adults have better or worse self-rated health than monoracial majority and monoracial minority groups?"—will be addressed through the testing of two hypotheses.

H1: Self-identified multiracial adults will differ in fair/poor health assessment on self-rated health compared with their monoracial counterparts.

H2: The inclusion of specific multiracial groups will explain some of the effect of the differences in self-rated health when compared with monoracial groups.

A large number of studies have reported racial differences in health assessments, such as self-rated health, across groups. Self-rated health is a widely used health assessment measure that has been validated across age groups and is predictive of mortality (Idler & Benyamini, 1997; Mossey & Shapiro, 1982), and chronic health conditions (Vandervoort et al., 2000). Few studies have examined reports of self-rated health from multiracial (two or more races) Americans. Past studies have examined health assessments of multiracial children (Flores & Tomany-Korman, 2008) and multiracial older adults (Bratter & Gorman, 2011); however, few have examined health assessments during adolescence and early adulthood for multiracial Americans. Vandervoort and colleagues (2000) found that multiracial individuals reported the poorest health compared with their White and Asian counterparts. Therefore, self-rated health may be an important health assessment and an appropriate measure to determine whether multiracials have better or worse health than monoracials.

Data and Methods

Sample

The data used in this study are from the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative, school-based probability sample of Americans. Add Health is a study of youth, beginning in 1994 with data collection on social and behavioral factors. The details of the sample design have been described elsewhere (Harris, 2011). The sample was taken from a stratified probability sample of 132 schools in the United States. The original sample included more than 90,118 students, and some respondents were selected for in-home interviews with youth and their parents. In the Add Health sample, 20,774 respondents were included in the in-home interviews. The response rate was 79%. Data for the present study were drawn from Waves 1, 3, and 4 of Add Health. Wave 1 (n = 20,745) was collected in 1994, Wave 3 (n = 15,197) was collected in 2002, and Wave 4 (n = 15,701) was collected in 2008. Data on parental level of education is taken from the Wave 1 in-home parent survey. In Wave 1 15,984 female caretakers completed the in-home parent survey. The response rate for the parent survey was 85.4%. For the present study I draw from a subset of Wave 4 non-Hispanic respondents who participated in all three waves. In addition, I exclude respondents whose Wave 4 sampling weights were unavailable. Respondents with missing data for any of the independent and dependent variables were also excluded from the present analyses. The final sample consisted of 7,947 and 7,880 in the multivariate analyses when weights are applied. The present study was approved by the Center for Studies on Demography and Ecology at the University of Washington under contractual agreement from the Carolina Population Center at the University of North Carolina–Chapel Hill.

Dependent Measure

The dependent measure is self-rated health in early adulthood. All respondents were asked to rate their health in every wave on a 5-point scale from poor to excellent. In this analysis I use the self-rated health measure from Wave 4. The survey item reads "In general, how is your health?" with possible response categories of excellent, very good, good, fair, and poor. This single item is used in a number of settings as a health assessment. We recoded this measure to a dichotomous measure: poor health (1 = poor or fair) to good health (0 = good, very good, or excellent). This dichotomous measure is an important distinction because past studies have found that use of a single dichotomous measure of fair/poor self-rated health is an evident predictor of mortality and morbidity (Idler & Benyamini, 1997). This single-item health assessment has also been used to predict morbidity (Vingilis, Wade, & Seely, 2002) and mortality (DeSalvo, Bloser, Reynolds, He, & Mutner, 2005). Furthermore, this single-item assessment has been used in an array of populations including elderly (Mossey & Shapiro, 1982; Idler & Angel, 1990), adults and young adults (Lantz et al., 2001; Manderbacka, Lundberg, & Martikainen, 1999; Shi, Starfield, Politzer, & Regan, 2002), and adolescents (Heard, Gorman, & Kapinus, 2008; Wade, Pevalin, & Vingilis, 2000).

Independent Measures

The main independent measure is self-reported race. Since 1994, respondents have had the option of selecting one or more racial groups to classify themselves ("What is your race? You may give more than one answer."). Those reporting more than one race were asked to additionally select a single best-racial-fit category ("Which one category best describes your racial background?"). In this study I use race taken from Wave 1 and Wave 3. The distinction of multiracial reporting across two waves of data is important, because past studies have shown that

it is an appropriate mechanism to capture multiracial race diversifiers (changing from one to many races) and race consolidators (changing from many to one race) (Hitlin, Brown, & Elder, 2006). As presented in a number of studies, multiracials as a population present challenges both conceptually and analytically. Therefore, in this study, I used self-categorization of respondents in the in-home interviews conducted in Waves 1 and 3, at which point the respondents were aged 12-22 and 18-28 years, respectively. The use of self-categorized race in two waves of data (previous to the health outcome measure) provides a measure of race over the life course and possible changes in categorization. The race variable includes six race categories: White (reference), Black, American Indian (Native American), Asian, Other (other-only) race, and multiracial. Examining the full sample, I found 36 multiracial groups in these data. For this study I used the full multiracial sample along with five multiracial subgroups: White-American Indian, White-Asian, White-Black, White-Other, and Black-Native. These specific categories were designated due to larger sample sizes (>30) and in accordance with past studies that used these data to examine multiracial outcomes (Campbell & Eggerling-Boeck, 2006; Harris & Sim, 2002; Harris & Thomas, 2002).

Covariates

The control measures include the following: demographic characteristics, socioeconomic status, health behaviors, chronic health conditions, and adverse health behaviors.

Demographic variables. In the present study, I will control for several demographic factors. In this analysis the sociodemographic characteristics include Wave 4 self-reported sex (1 = male versus 2 = female), Wave 4 self-reported age at Wave 3, adjusted to reflect age in Wave 4 (range, 24-34 years; mean age, 27 years), Wave 4 self-reported partner status, which includes currently married or cohabitating (*Are you still married?* or *Are you still living together?)*

compared with not married (widowed, never married, divorced, separated); and Wave 1 self-reported nativity (*Were you born in the United States?*) (0 = not U.S. born versus 1 = U.S. born). Past studies find associations between self-rated health demographic variables such as age (Wade et al., 2000), sex or gender (Mossey & Shapiro, 1982), partner status (Bratter & Gorman, 2011), and employment outside of the home (Bratter & Gorman, 2011).

Socioeconomic status. Socioeconomic status (SES) includes three measures shown to be good proxies for socioeconomic position. Education is a widely used indicator of socioeconomic status and has been used in several studies on self-rated health (Phillips, Hammock, & Blanton, & 2005). Self-reported educational attainment, or the highest grade of school completed, was assessed at Wave 4: less than high school (reference), high school diploma, vocational training, some college, college degree, and graduate or professional degree. This variable is treated as a categorical measure (1 = less than high school, 2 = high school, 3 = vocational training, 4 = some college, 5 = college degree, 6 = graduate or professional degree). Self-reported employment status (*Are you currently working for pay at least 10 hours a week?*) (1 = currently working ≥10 hours versus 0 = not working) was also assessed at Wave 4. Past studies find there is a relationship between early life socioeconomic status including parent's educational attainment and self-rated health (Heard, Gorman, & Kapinus, 2008). Parental educational attainment was obtained in the Wave 1 parent survey. The majority of parent survey respondents were female caretakers of the adolescents in the study. Parent survey respondents were asked about the highest level of education they had achieved to date (*How far did you go in school?*), coded as less than high school, high school, or college.

Chronic health conditions. As discussed previously, chronic health conditions include conditions that are shown to disproportionately affect racial and ethnic minority populations

(Smedley & Smedley, 2012). Chronic health conditions during adolescence have been shown to predict health behaviors in early adulthood (Vingilis et al., 2002). Therefore all measures of chronic health are drawn from wave 3 data when respondents were age 18 or older. In accordance with past research on self-rated health and related chronic health conditions for adults I use several measures that are common chronic health problems (Bratter &Gorman, 2011). The health conditions in this model include asthma diagnosis (*Have you ever been diagnosed with asthma?*) (0 = no, 1 = yes), diabetes diagnosis (*Have you ever been diagnosed with diabetes?*) (0 = no, 1 = yes), cancer or leukemia diagnosis (*Have you ever been diagnosed with cancer or leukemia?*) (0 = no, 1 = yes), hypertension or high blood pressure diagnosis (*Have you ever been diagnosed with high blood pressure or hypertension?*) (0 = no, 1 = yes), and depression diagnosis (*Have you ever been diagnosed with depression?*) (0 = no, 1 = yes).

 Adverse health behaviors. Health behaviors are drawn from Wave 4 self-report responses. Health behaviors will include 30-day tobacco use, including either smoking or chewing of tobacco (*During the past 30 days, on how many days did you smoke cigarettes? During the past 30 days, on how many days have you used chewing tobacco [such as Red Man, Garrett, or Beechnut) or snuff (such as Skoal, Skoal Bandits, or Copenhagen]?* (>1 = yes, 0 = no); 30-day heavy alcohol use (*Think of all the times you have had a drink during the **past 30 days**. How many drinks did you usually have each time? A drink is a glass of wine, a can or bottle of beer, a wine cooler, a shot glass of liquor, or a mixed drink*.) equal to five drinks per day for men and four drinks per day for women (1 = yes, 0 = no); or any 30-day illicit substance use (*During the past 30 days, on how many days did you use {favorite drug}?*), including cocaine (either powder or "crack"), methamphetamines, marijuana, or heroine (1 = yes, 0 = no).

Analysis

All analyses were conducted using STATA software version SE 10.1 (Stata Corp., College

Station, TX). Given the sampling framework, I used Wave 4 grand sampling weights (accessed

via the STATA software's "svy" command) to account for the general population in 2008. This

weighting technique accounts for the sampling technique (oversampling) and inconsistencies in

response across four waves of data. Racial differences in self-rated health were tested using

univariate and multivariate analyses. The analysis used a time-ordered sequence to account for

the temporal nature of the data. Early life predictors were accounted for temporally in

accordance with the life course framework. My analysis proceeded in three steps. First, I

provided sample characteristics and performed the chi-square test of bivariate association

between self-rated health and race. Second, I provided sample characteristics including

demographic characteristics, SES, health behaviors, and chronic health conditions by fair/poor

self-rated health. Third, I examined the association between fair/poor self-rated health and race

(using six racial categories), adjusting for all covariates by using weighted multivariate logistic

regression analysis. Third, I examined the association between race and self-rated health to see

whether there are differences when examining specific multiracial categories. Last, I conducted a

multivariate logistic regression to compare specific multiracial groups with both monoracial

majority and monoracial minority groups. A p value less than .05 is considered significant in this

study. I used a design-based Wald test to account for significance in all multivariate analyses.

Results

Descriptive Analysis

Table 2.1 presents the proportions of self-rated health status by race. The bivariate

association between race and self-rated health is statistically significant, χ^2 (20) = 227.24, $p <$

.001. When sample weights were applied, this pattern remained, with 10.29% of multiracial adults reporting fair/poor self-rated health compared with 7.87% of Whites and 11%-17.50% of monoracial minority respondents. Overall, in the weighted sample, 8% of young adults reported that their health is fair to poor.

Table 2.2 presents the descriptive characteristics of the analytic sample along with cross-tabulations with fair/poor self-rated health. The percentage of respondents with fair/poor self-rated health is slightly lower than for studies with older populations, yet slightly higher than for studies with adolescents (Boardman, 2005; Mossey & Shapiro, 1982). In this analysis the average age of respondents is 27 years, and the majority of respondents (92%) have completed at least high school. The sample is evenly split by gender, half men (50%) and half women (50%), and the proportion of fair/poor self-rated health (9%) is the same by gender. The majority of respondents' parents (84%) completed high school. There is a gradient of self-rated health by mother's education: 13% of respondents whose mother completed less than high school reported fair/poor self-rated health, whereas only 7% of respondents whose mothers had more than high school education reported fair/poor self-rated health. Furthermore, there is a graded association between education and self-rated health, with the proportion of respondents with fair/poor self-rated health decreasing with educational attainment in Wave 4. Nearly one fifth or 19% of respondents with less than a high school education reported fair/poor self-rated health. Of respondents who completed graduate or professional degrees, only 3% reported fair/poor self-rated health. In this sample there are high rates of reported problem health behaviors including tobacco use (40%), heavy alcohol use (23%), and illicit substance use (15%). Nearly one in five respondents reported a chronic health condition.

Multivariate Analysis

In an effort to test my first hypothesis I performed a multivariate analysis with six racial groups. Using the multivariate analyses found in Tables 2.3 through 2.5 I examined whether there was an association between self-reported race and self-rated health, adjusting for demographic variables (Model 1); adjusting for SES (Model 2); adjusting for chronic health conditions (Model 3); and adjusting for adverse health behaviors (Model 4).

Table 2.3 shows the odds of reporting fair-to-poor self-rated health for each racial group, compared with monoracial majority (White) adults. In this table I present the estimated effects of self-rated health, adjusting for demographic variables, SES, chronic health conditions, and adverse health behaviors. In all four models I found that multiracial Americans as a single group were not more likely to report fair/poor self-rated health when compared with monoracial Whites. When I built in covariates there was a trend away from an odds ratio (OR) of 1 in each adjusted model for multiracial compared with monoracial White adults. I also found Black and Native Americans were more likely to self-report fair/poor health compared with their White counterparts, after adjusting for covariates. Native American were four times more likely ($OR = 4.23$; 95% confidence interval [CI] [1.67-10.69]) and Black adults were nearly twice more likely ($OR = 1.66$; 95% CI [1.28-2.15]) to report fair/poor self-rated health compared with White adults in the fully adjusted model. Additionally, in the fully adjusted model there is not a statistically significant difference between multiracial and monoracial majority adults ($OR = 0.84$; 95% CI [0.52-1.36]).

To test the second hypothesis, I performed a multivariate analysis to include specific multiracial subgroups. Table 2.4 presents an iteration of the analysis in Table 2.3 on adjusting for demographic, SES, chronic health, and adverse health behaviors characteristics with the

inclusion of specific multiracial groups, as follows: Black-White, Native-White, Asian-White, Other-White, and Black-Native. In this table I present the same adjusting odds for monoracial groups as those in Table 2.3; the key difference is the detail of specific multiracial subgroups. I found that there are no statistically significant differences between White adults and Black-White, Native-White, Other-White, and Black-Native adults. There is one multiracial subgroup that is the exception: The Asian-White multiracial subgroup was less likely ($OR = 0.07$; 95% CI [0.01-0.45]) to report fair/poor self-rated health compared with White adults in Model 1, and this trend remained after adjusting for all other factors. In the fully adjusted model Asian-White multiracial adults were less likely to report fair/poor self-rated health compared with White adults ($OR = 0.08$; 95% CI [0.014-0.51]). Table 2.5 further compares specific multiracial groups with both the monoracial majority and monoracial minority groups in which they self-categorize. When compared with both Black and White monoracial groups, there are no statistically significant differences in Black-White multiracial self-reported health. When compared with White monoracials, there are no statistically significant differences for Native-White respondents across all four models after adjusting for all factors. However, when I compared Native-White multiracial to Native monoracial respondents I found significant differences. After adjusting for all factors, Native-White respondents were less likely to report fair/poor self-rated health (OR = 0.16; 95% CI [0.05-0.51]) than Native monoracial adults. The trend in the effect remained throughout all four models. I found that Asian-White multiracial adults were significantly less likely to report fair/poor self-rated health compared with both their White and Asian counterparts after adjusting for other factors. Compared with White adults, Asian-White adults were less likely to report fair/poor self-rated health in the fully adjusted model (OR = 0.08; 95% CI [0.014-0.51]). Compared with Asian adults, Asian-White adults were less likely to report fair/poor self-

rated health (OR = 0.04; 95% CI [0.004-0.38]). Furthermore, Native American-Black multiracial adults were no more or less likely to report fair/poor self-rated health compared with their Native American and Black counterparts after adjusting for other factors.

Discussion

The central aim of this study is to identify whether multiracials have better or worse health than monoracial groups. This aim consisted of two study goals: first to describe the health status of multiracial young adults and then to test two hypotheses related to multiracial-monoracial differences in health. I examined whether there were racial differences in self-rated health in a nationally representative longitudinal sample of young adults. This study contributes to the existing literature on self-rated health and race in the following ways. First, the present study contributes to the literature by the inclusion of six categories of multiracial respondents as well as comparisons between multiracial and monoracial young adults. In line with the multiracial identity formation theory, in my first hypothesis I posited that multiracial adults are a variant group, and, therefore, I would find differences in reported health status. In doing so, I found that, when multiracials are examined as a single category, there are no statistical differences in their assessment of self-rated fair/poor health compared with their monoracial counterparts. Second, I examined differences between specific multiracial groups and White young adults on a group-by-group basis. My second hypothesis posited that the level of detail in categorization might reveal differences between specific multiracial groups and the monoracial majority group. I tested this hypothesis by conducting a series of multivariate analyses. In my analysis I discovered that there are indeed differences in health status when comparing specific multiracial groups with the monoracial majority group. Third, in a further test of the second hypothesis, I did find differences in self-rated health for some specific multiracial categories (for

example, Asian-White versus Native-White multiracial adults) compared with monoracial

majority and minority groups, after adjusting for several factors. For example, Native American-

White respondents were significantly less likely to report fair/poor self-rated health compared

with Native American monoracial respondents, but their reports were not significantly different

from those of White monoracial respondents. This finding confirms that some multiracial adults

do not fit documented patterns of health disparities (Bratter & Gorman, 2011). Moreover, I found

differences (when comparing specific multiracial groups with monoracial majority and

monoracial minority groups [Udry et al., 2003]) that do explain the effect of the differences in

self-rated health. The findings in this study assist in conceptualizing social determinants of

health research within a methodological framework that is inclusive of multiracial Americans.

Specifically, the findings presented in this study provide support for self-categorization theory

for a variant group of multiracial Americans. The findings in this study show that there are

differences in fair/poor self-rated health when examining differences be self-categorized race.

When the level of detail is examined further the use specific self-categorized race categories

uncovers differences for some subgroups. Self-categorization theory posits that individuals

categorize in certain ways given the context of time, place, and a lived experience. In the

analyses of specific multiracial subgroups I found that reports of self-rated health varied from

monoracial majority and monoracial minority counterparts. This study illustrates that the

incorporation of specific multiracial categories provides evidence to enhance understanding of

the pathways that are linked to health outcomes and the implications for health disparities.

Methodological Considerations

Inclusion of multiracial subjects in research is a particular challenge due to the way in

which racial identification is used in research. The current approaches to including multiracial

respondents in the analysis of survey data are very limited. It is common for researchers to exclude respondents who self-report as belonging to multiple racial groups. Even where multiracial respondents are presented, it is rare for researchers to analyze data according to specific categories of multiracial respondents. This approach is possible when using very large surveys such as state birth registries or the Behavioral Risk Factor Surveillance Survey. Allocating respondents who report two or more races to a single multiracial category is another common approach. However, as shown in this chapter, using a single multiracial group to cover all multiracial combinations might conceal some of the heterogeneity of specific multiracial groups. More work is needed to understand the health outcomes of specific multiracial subgroups to provide support if the multiracial identity formation perspective of a variant group exists in terms of health. Finally, there is the practice of reassigning race, which tends to classify multiple-race respondents into the racial group with the least status (Poston & Micklin, 2006). In past studies, I found there is complexity when examining race over time, and some of this could be attributed to changing definitions of race. Moreover, the changes in race could be associated with exposures to specific events over the life course (Saperstein, 2006, 2009; Saperstein & Penner, 2010) or related to the aging process and the development of individual phenotypes over time. Regardless of why individuals switch categories, researchers can use a "were you ever" status to capture individuals who considered themselves multiracial at a given time point. As reinforced in this chapter, race is not always a stable characteristic. Classifications of race can be fluid and can change according to place and time (Hitlin et al., 2006). By using a measure of race captured at two time points I was able to examine individuals that self-categorized as multiracial at least once during the life course. Future studies are needed to examine differences in health among self-identified multiracial persons that report fluid categorization over the life course.

Limitations

Although this study has a number of strengths, certain limitations bear mention. The first limitation is the school-based sampling framework of the study. Although the nationally stratified probability sampling technique captured a diverse sample, I was able to examine only outcomes of those individuals who were attending middle and high schools. Another limitation to this study is that I used responses from the in-home interview sample only. By contrast, past studies have found that respondents were more likely to self-identify as being one or more races in the in-school sample, resulting in a larger and more accurately defined multiracial sample (Harris & Sim, 2002). Given the focus on health outcomes in early adulthood, I lacked a sufficient weighted sample. Therefore, my analytic sample was not as large as that of past studies (Udry et al., 2003).

Implications for Social Work

The topic of multiracial health is relevant to social welfare research and social work practice (Jackson, 2010). Multiracial Americans present multiple challenges to practice-based care across the micro, mezzo, and macro levels of practice. Micro practice-related issues exist at the individual and family level, where youth may not share the same identity as their parents, which might present an identity conflict for the youth. Other potential issues include parents de-emphasizing the importance of race, youth not having social support from peers (Shih & Sanchez, 2005), families receiving conflicting messages around race, multicultural parents expressing conflicts over cultural values (Dhooper & Moore, 2001), individuals experiencing double rejection or increased discrimination (Root, 1992; Sullivan, 1998), and groups discriminating against individuals who are seen as racially impure or confused (Root, 1992). At the micro level, there is a need for development of best practices on issues of identity formation

and psychological well-being for individuals and families. Mezzo practice at the agency and community levels is defined as social workers engaging and interacting with multiracial and multicultural families. Additionally, in mezzo practice, social workers determine what types of services to provide to multiracial and multicultural families. At the mezzo level, there is a need to address issues of identity formation within families and groups and to develop best practices of racial categorization and classification within the community. Macro practice is where social work can advocate for the multiracial population through national policy implementation and health disparities research (Dhooper & Moore, 2001; Jackson, 2010). At the macro level, there is a need to further explore how the racial classification system and racial categorization are connected to population health and mental health. Future social work research studies are needed to investigate the health and mental health of self-categorized multiracial adults as connected to macro health policy and practice.

Table 2.1
Sample Characteristics Self-Rated Health by Self-Categorized Race, Add Health 2008 (*n* = 7,880)

Variable	White (*n* = 4,969)	Black (*n* =1,750)	Native (*n* = 32)	Asian (*n* = 499)	Other (*n* = 55)	Multiracial (*n* = 575)	Total Sample Proportions (standard error)	Unweighted Sample Size
Self-Rated Health (Wave 4)								
Excellent	20%	20%	6%	17%	18%	17%	19% (0.75)	1,574
Very good	42%	33%	38%	38%	44%	36%	39% (0.76)	3,100
Good	30%	35%	38%	33%	27%	38%	32% (0.88)	2,564
Fair	7%	10%	9%	11%	9%	8%	8% (0.44)	624
Poor	1%	1%	9%	1%	2%	1%	1% (0.2)	84

Table 2.2
Sample Characteristics of Demographic, Socioeconomic, Chronic Health, and Health Behaviors, Add Health 2008 (*n* = 7,880)

Variable	Sample Proportions (standard error)	Unweighted Sample Size	Fair/Poor Self-Rated Health
Race (Non-Hispanic)			
White	73% (2.55)	4,969	8% (0.01)
Black	16% (2.21)	1,750	13% (0.01)
Native American	0.4% (0.25)	32	30% (0.08)
Asian	3% (0.8)	499	10% (0.03)
Other	0.7% (0.14)	55	7% (0.03)
Multiracial (all)	6% (0.47)	575	8% (0.02)
Demographic Controls			
Gender (Wave 4)			
Male	50% (0.73)	3,584	9% (0.63)
Female	50% (0.73)	4,363	9% (0.65)
Partner Status (Wave 3)			
Not married or cohabitating	51% (0.64)	3,980	9% (0.71)
Married or cohabitating	49% (0.64)	3,967	9% (0.64)
Nativity (Wave 1)			
U.S. born	97% (0.53)	7,599	8% (2.42)
Not U.S. born	3% (0.53)	348	9% (0.53)
Socioeconomic Status Controls			
Mother Education (Wave 1)			
Less than high school	16% (1.0)	1,107	13% (1.3)
High school	57% (1.4)	4,051	8% (0.5)
College	27% (1.7)	2,384	7% (0.6)
Education (Wave 4)			
Less than high school diploma	8% (0.7)	549	19% (2.1)
High school	16% (0.9)	1,185	13% (1.2)
Vocational training	9% (0.5)	746	10% (1.6)
Some college	33% (0.9)	2,611	9% (0.7)
College graduate	26% (1.3)	2,242	3% (0.4)
Graduate or professional degree	6% (0.6)	612	3% (0.9)
Employment (Wave 4)			
Employed	35% (0.83)	2,752	8% (0.57)
Not employed	65% (0.83)	5,190	11% (0.83)
Chronic Health Conditions *(Wave 4)*			
Asthma	18% (0.5)	1,356	10% (1.2)
Diabetes	1% (0.15)	74	32% (6.5)
Cancer	1% (0.12)	73	14% (5.4)
Hypertension	6% (0.3)	419	18% (2.0)
Depression	13% (0.5)	908	15% (1.6)
Health Behavior Controls *(Wave 4)*			
Tobacco use	40% (1.1)	2,904	12% (0.8)
Heavy alcohol use	23% (0.9)	1,022	9% (0.9)
Substance use concerns	15% (0.7)	1,681	10% (1.1)

Table 2.3

Multivariate Logistic Regression Models to Predict Fair/Poor Self-Rated Health in a Sample of Young Adults, Add Health 2008

	Model 1[a]	Model 2[b]	Model 3[c]	Model 4[d]
	OR (95% CI)	*OR* (95% CI)	*OR* (95% CI)	*OR* (95% CI)
Variable				
Race				
White	reference	reference	reference	reference
Black	1.77*** (1.35-2.32)	1.48** (1.16-1.88)	1.55*** (1.21-2.00)	1.66*** (1.28-2.15)
Native American	5.20*** (2.45-11.01)	3.31** (1.37-7.98)	3.78** (1.62-8.85)	4.23** (1.67-10.69)
Asian	1.46 (0.67-3.16)	1.79 (0.82-3.89)	2.02 (0.92-4.39)	2.08 (0.96-4.50)
Other	0.92 (0.33-2.54)	1.02 (0.36-2.84)	1.07 (0.37-3.04)	1.08 (0.37-3.09)
Multiracial	1.03 (0.64-1.65)	0.88 (0.54-1.42)	0.85 (0.52-1.37)	0.84 (0.52-1.36)
Demographic Controls				
Gender (Wave 4)				
Female	1.04 (0.87-1.26)	1.14 (0.94-1.38)	1.02 (0.84-1.25)	1.07 (0.88-1.30)
Marital status (Wave 3)				
Not married or cohabitating	1.00 (0.81-1.24)	1.00 (0.80-1.24)	0.99 (0.79-1.24)	0.99 (0.79-1.25)
Nativity (Wave 1)				
Not U.S. born	0.88 (0.44-1.73)	0.95 (0.46-1.93)	0.93 (0.48-1.82)	0.99 (0.79-1.25)
Socioeconomic Controls				
Education (Wave 4)				
Less than high school diploma		reference	reference	reference
High school		0.65** (0.46-0.91)	0.72 (0.50-1.04)	0.77 (0.52-.113)
Some college		0.51** (0.32-0.82)	0.57* (0.34-0.93)	0.60 (0.36-1.0)
Vocational Training		0.43*** (0.31-0.60)	0.47*** (0.33-0.68)	0.52** (0.36-0.76)
College graduate		0.14*** (0.09-0.21)	0.16*** (0.10-0.25)	0.19*** (0.12-0.31)
Graduate or professional degree		0.13*** (0.06-0.27)	0.15*** (0.07-0.31)	0.18*** (0.08-0.39)
Employment (Wave 4)				
Currently employed		0.79* (0.63-0.99)	0.81 (0.64-1.02)	0.81 (0.64-1.03)
Chronic Health Conditions				
Asthma			0.90 (0.67-1.19)	0.90 (0.68-1.20)
Diabetes			0.29*** (0.14-0.59)	0.28*** (0.13-0.57)
Cancer			0.69 (0.25-1.9)	0.72 (0.26-1.97)
Hypertension			0.54*** (0.38-0.76)	0.54** (0.39-0.77)
Depression			0.49*** (0.36-0.65)	0.51*** (0.38-0.68)
Health Behaviors				
Tobacco use				0.68** (0.52-.88)
Heavy alcohol use				1.01 (0.75-1.35)
Substance use concerns				0.93 (0.73-1.18)

Note. $N = 7,880$; *p < .05, **p < .01, ***p < .001.

[a] Controlling for demographic characteristics.

[b] Controlling for demographic characteristics and socioeconomic characteristics.

[c] Controlling for demographic characteristics, socioeconomic characteristics, and chronic health conditions.

[d] Controlling for demographic characteristics, socioeconomic characteristics, chronic health conditions, and health behaviors.

Table 2.4

Logistic Regression Models to Predict Fair/Poor Self-Rated Health, by Specific Multiracial Categories in a sample of young adults, Add Health 2008

	Model 1[a]	Model 2[b]	Model 3[c]	Model 4[d]
	OR (95% CI)	*OR* (95% CI)	*OR* (95% CI)	*OR* (95% CI)
Variable				
Single-Race Adults				
White	reference	reference	reference	reference
Black	1.77*** (1.35-2.32)	1.48** (1.16-1.88)	1.56** (1.21-2.00)	1.66*** (1.28-2.16)
Native American	5.19*** (2.45-11)	3.32** (1.38-7.9)	3.79** (1.62-8.86)	4.23** (1.67-10.7)
Asian	1.43 (0.65-3.13)	1.76 (0.80-3.86)	2.00 (0.91-4.37)	2.07 (0.95-4.48)
Other	0.92 (0.33-2.52)	1.01 (0.55-6.2)	1.06 (0.37-3.03)	1.07 (0.37-3.07)
Multiracial Adults				
Black-White	1.90 (0.59-6.1)	1.86 (0.55-6.2)	1.75 (0.53-5.80)	1.88 (0.58-6.10)
Native American-White	0.92 (0.46-1.82)	0.73 (0.36-1.47)	0.70 (0.35-1.43)	0.68 (0.34-1.37)
Asian-White	0.07** (0.01-0.45)	0.07** (0.01-0.42)	0.08** (0.01-0.48)	0.08** (0.014-0.51)
Other-White	2.48 (0.41-14.9)	2.74 (0.56-10.86)	2.21 (0.61-7.32)	2.20 (0.61-7.85)
Black-Native	2.06 (0.73-5.8)	1.69 (0.61-4.68)	1.71 (0.62-4.73)	1.77 (0.63-4.98)

Note. $N = 7,880$; *p < .05, **p < .01, ***p < .001.

[a] Controlling for demographic characteristics.

[b] Controlling for demographic characteristics and socioeconomic characteristics.

[c] Controlling for demographic characteristics, socioeconomic characteristics, and chronic health conditions.

[d] Controlling for demographic characteristics, socioeconomic characteristics, chronic health conditions, and health behaviors.

Table 2.5:
Multivariate Logistic Regression Models to Predict Fair/Poor Self-Rated Health, Multiracial Compared With Single-Race Categories: Add Health Sample 1994-2008

	Model 1[a]	Model 2[b]	Model 3[c]	Model 4[d]
	OR (95% CI)	*OR* (95% CI)	*OR* (95% CI)	*OR* (95% CI)
Category				
Black-White				
White	1.90 (0.59-6.1)	1.86 (0.55-6.22)	1.75 (0.53-5.80)	1.88 (0.58-6.10)
Black	1.07 (0.32-3.47)	1.25 (0.37-4.22)	1.12 (0.34-3.72)	1.13 (0.34-3.67)
Native-White				
White	0.92 (0.46-1.82)	0.73 (0.36-1.47)	0.70 (0.35-1.43)	0.68 (0.34-1.37)
Native	0.013*** (0.001-1.01)	0.22** (0.07-0.69)	0.18*** (0.06-0.56)	0.16** (0.05-0.51)
Asian-White				
White	0.07** (0.01-0.45)	0.07** (0.13-0.42)	0.08** (0.01-0.48)	0.08** (0.014-0.51)
Asian	0.04** (0.005-0.45)	0.04** (0.004-0.37)	0.04** (0.004-0.32)	0.04** (0.004-0.38)
Native/Black				
Black	1.15 (0.41-3.24)	1.13 (0.94-1.37)	1.09 (0.39-3.05)	1.06 (0.37-3.01)
Native	0.39 (0.11-1.42)	0.50 (0.13-1.94)	0.45 (0.11-1.70)	0.41 (0.10-1.66)

Note. $N = 7,880$; *p* < .05, **p* < .01, ***p* < .001.

[a] Controlling for demographic characteristics.

[b] Controlling for demographic characteristics and socioeconomic characteristics.

[c] Controlling for demographic characteristics, socioeconomic characteristics, and chronic health conditions.

[d] Controlling for demographic characteristics, socioeconomic characteristics, chronic health conditions, and health behaviors.

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