A Life Course Perspective on the Social Determinants of Multiracial American Health

Karen Tabb Dina

A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2012

Reading Committee:

David Takeuchi, Chair

Gunner Almgren

Amelia Gavin

Program Authorized to Offer Degree:

School of Social Work

University of Washington

Abstract

A Life Course Perspective on the Social Determinants of Multiracial American Health

Karen Tabb Dina

Chair of the Supervisory Committee:
Professor David Takeuchi

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, health care service utilization, and health related to racial stability over the life course. Although some investigations report the health service use of children and adolescents, almost no studies report the health service use of multiracial young adults. Most studies on multiracial groups are cross-sectional and thus focus on a single time point, so it is difficult to establish how health indicators change for multiracial groups over time. This dissertation employs epidemiological methods to investigate the health of self-identified multiracial young adults in a series of three papers. There are three guiding questions in this dissertation. First, “Do multiracial adults have better or worse self-rated health than monoracial groups?” Second, “Do multiracial young adults use health care services at the same rate as monoracial groups?” Third, “How is consistency in racial categories over time related to self-rated health for multiracial young adults in the United States?” I used 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.

Using multivariate logistic regression I tested a series of hypotheses for three distinct research questions. In the first paper, I found that there are differences in self-rated health for

some multiracial groups. In the second paper, I found that there are differences in the rates of health care service utilization when comparing specific multiracial groups to the monoracial majority. In the third paper, I found that there are differences in report of self-rated health when comparing monoracial adults with multiracial adults who switch racial categories over time. 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. These results also demonstrate the importance of critically examining changes in racial categories as related to health status over time.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Table Number Page

ACKNOWLEDGMENTS

Mentors
University of Washington—My supervisory committee receives the first acknowledgment of gratitude for working with me to further shape and refine my ideas on health and health disparities. Thank you to Drs. David Takeuchi, Amelia Gavin, Gunner Almgren, and Stewart Tolnay for your expertise and instruction throughout the doctoral program. Thank you Cori Mar for teaching me how to manage complex data and to physically juggle.
University of Michigan—Thank you to Drs. Michael Spencer, Eddie Kieffer, Reach Detroit (especially Gloria Palmisano and Brady Sinco), Trina Shanks, Larry Gant, and Sean Joe for preparing me with the skills to critically work within the community on health issues.
Eastern Michigan University—Thank you to Drs. Daryl Hafter, Jay Weinstein, Kristine Adjouch, and Anthony Adams for not only shaping my early thoughts on social stratification but for encouraging me to pursue graduate-level education.

Family
Utmost thanks to my family and friends for going through the journey of higher education with me. Thank you in particular to my multiracial/multiethnic nieces and nephews: Hannah, Kenneth, Coleman, Layla, Patryce, Sophie, Addison, and Yaseen for the added inspiration to write this dissertation. Thank you to Dr. F. Elaine Martin for 16 years of guidance, support, friendship, and modeling of an academic lifestyle—you are my hero. Added appreciation to my colleague-friends for the many hours spent writing together and discussing social inequality: Eric Waithaka, JoAnn Lee, Shannon Petz, Hsiang Huang, Sherira Scerracso, Soliel Boyd, and to all members of our weekly and virtual "study halls," thank you.

Funders
Special thanks to Senator Warren Magnuson and surviving family for your generous support from June 2011 to June 2012 to assist me in completing my studies. Thank you also to the Graduate Opportunities Minority Achievement Program and Bank of America Diversity Fellowship for support during my first and final years in the doctoral program.

Data
This research uses data from Add Health, a program project directed by Kathleen Mullan Harris, designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (http://www.cpc.unc.edu/addhealth). No direct support was received from grant P01-HD31921 for this analysis.

Dedication

To Matthew, for revolving around the sun.

CHAPTER 1: INTRODUCTION TO MULTIRACIAL AMERICAN HEALTH

Racial and ethnic minority groups face a heightened burden of disease and more severe illnesses. In past years, a focus on the health of large minority groups, including African American, Asian American, and Native American populations, has provided insight into not only the epidemiology of disease but also preventive actions in these populations that have proven beneficial. More recently researchers have sought to learn about the health and health disparities of smaller racial and ethnic minority groups such as Arab Americans (El-Sayed & Galea, 2009). Although there are still many areas for improvement regarding the health of monoracial (one race only) groups, there is a growing need to comprehensively understand the health and health outcomes of the multiracial (two or more races) population. Within the sizable body of literature that explores the demographic transition of multiracial Americans (Harris & Sim, 2002; Korgen, 2010; Saenz & Morales, 2005),Multiracial Americans (Harris & Sim, 2002; Korgen, 2010; Saenz & Morales, 2005), empirical studies tend to implicitly and explicitly test hypotheses based on the assumption that multiracials will be the most disadvantaged and will be at the greatest risk for several psychosocial problems (Bratter & Gorman, 2011; Cheng & Lively, 2009). Most studies on multiracial health center on prisms of identity and psychosocial well-being. Past studies have found that this particular group experiences an increased likelihood of psychosocial and physical health problems, including depression (Shih & Sanchez, 2005), substance use (Jackson & Lecroy, 2009), health risk-taking behaviors (Udry, Li, & Hendrickson-Smith, 2003), and asthma (Pleis & Barnes, 2008), to name a few.

Although these past studies provide some data on the health of multiracial groups, a few gaps in the empirical literature are evident. First, prior studies tended to focus on a limited set of health outcomes that constrains our understanding about the health of multiracial groups. Self-rated health is a salient indicator of overall health status that is not widely used in research with multiracial Americans. Udry and colleagues (2003) found differences in self-rated health for specific multiracial adolescent groups compared with monoracial adolescents. Bratter and Gorman (2011) reported the self-rated health of multiracial adults in the United States using nationally representative data from the Behavioral Risk Factor Surveillance Survey and found that multiracials have lower self-rated health compared with Whites. Though when considered together, these studies provide insight into the health of multiracial Americans, each study employed a cross-sectional analysis of race and health.

Second, prior studies tended to focus on mental health outcomes for children or adolescents and did not typically investigate whether multiracial adults use health services for their health problems. Two recent investigations report the health and health disparities of American children including multiracial children. The findings suggest that multiracial children do not use oral health care services at the same rate as White children. Furthermore, multiracial children are more likely than White children to be denied health insurance and to not make a primary care visit. Similar findings in health utilization and access to care are extended to adults. Past studies found differences in health insurance by race and multiple-race responses. For example, Parker and Makuc (2002) explored the bridging method of multiple-race responses and learned that White-Alaskan Native and White-American Indian respondents were more likely to have employer-sponsored health insurance; however, when forced to select one race, multiracial respondents who switched to Alaska Native or American Indian only were less likely to have health insurance. This presents a challenge for future work on bridging methods for race data to examine the direction of the switch in race and the correlates to adult socioeconomic status and access to health care.

Third, most studies on multiracial groups are cross-sectional; thus it is difficult to establish the relationship between health and changes in self-categorization for multiracial groups over time. For the two-or-more race population in America, categorization can present challenges to the racial identity process. Herman (2004) found that the majority of minority-majority biracial youth chose a minority category. When forced to choose one race, individuals typically chose other if available or the minority group. In Campbell's (2007) study she found that almost all Black-Native respondents select Black only when asked to choose a single category. What is less clear is how categorization and changes across survey measures are related to health outcomes over the life course. A subset of Americans negotiates the bounds of categorization when completing surveys, somewhat because social and political constructs of race and ethnicity are constantly evolving. This negotiation in categorization is often linked to educational outcomes and mental health factors such as self-esteem, but health as an outcome is rarely included in research.

In this dissertation I begin to fill some empirical gaps and examine three critical areas of Multiracial American health and health outcomes over the life course. In addition, the dissertation will contribute to our knowledge of health disparities for the emerging multiracial population. To this end I present three linked papers that ask the broad question, "Are Multiracial American health outcomes different from those of other racial and ethnic groups?" This dissertation contains three aims to contribute to understanding of the social determinants of health and specific mechanisms of multiracial health disparities. First, in Chapter 2, I examine self-rated health for young adults using a longitudinal measure of race taken in adolescence and emerging adulthood, accounting for changes in reports over a 12-year time frame. Using nationally representative data I examine the health of Multiracial Americans during early adulthood, which is a critical stage of the life course (Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003). Second, in Chapter 3, I examine use of health care services including primary, mental, and oral health care in early adulthood. Using the same nationally representative sample of multiracial Americans I seek to learn whether multiracial adults made use of health services in a 12-month period comparable to their monoracial counterparts. I expand upon this question and account for access-related barriers to care such as health insurance to see whether the effects remain. Third, in Chapter 4, I examine changes in racial self-categorization over time to see whether there are differences in categorization and whether associations to health outcomes exist. Few studies have examined the changes in race over time and health in a nationally representative sample, but this study aims to contribute to our grasp of health disparities over time and the use of race in health research. The theories that inform this research are self-categorization theory (Paulus, 1989), multiracial identity formation theory (Jackson, 2009, 2010b; Rockquemore, Brunsma, & Delgado, 2009), and life-course perspectives (Colen, 2011; Krieger, 2001; Kuh et al., 2003).(Paulus, 1989), multiracial identity formation theory (Jackson, 2009, 2010; Rockquemore, Brunsma, & Delgado, 2009), and life-course perspectives (Colen, 2011; Krieger, 2001; Kuh et al., 2003).

Multiracial American Health and Social Work

The topic of multiracial health is relevant to social welfare research and social work practice (Jackson, 2010a).(Jackson, 2010). Multiracial Americans present multiple challenges across the micro, mezzo, and macro levels of social work practice-based care. As an illustration, at the micro level of health practice the question of race might produce conflicting responses based upon context. For example, the question “What are you?” can bring forth perplexing notions of personal and political self-expression (Bullock, 2010). For mixed-race persons, the question “What are you” is a tool for boundary maintenance and often is used to discriminate against multiracial individuals (Dalmage, 2004). Furthermore, as Rainier Spencer (2004) pointed out, the notion of racial categorization invokes false underpinnings of a biological system of race. When asked “What are you?” on surveys, the response can change according to the respondent’s self-perception of genetic makeup at a given time. Several qualitative studies demonstrate that multiracial individuals identify (and ultimately self-categorize) by how others see them (Jackson, 2009; Tashiro, 2002). That said, ascribed characteristics shape racial self-categorization. For many multiracial persons, ascribed characteristics (namely phenotypes) can change over time, and accordingly, racial categorization changes as well. Pauker and Ambady (2009) found that multiracial individuals respond to racial categories differently than monoracial individuals. Tashiro (2002) noted that racial categories are important for understanding population differences in health but can be problematic when used in clinical health practice. Other scholars examined the concordance between self-categorization and observed race categories and found that there are significant implications for categorization (Doyle & Kao, 2007; Herman, 2010). The findings revealed in these three studies that constitute this dissertation are most relevant at the macro level of practice for social welfare research and quantitative studies; however, they are also relevant across the micro and mezzo levels where practitioners work within the prisms of health and race in practice settings.

References

Bullock, J. (2010). *Multiracial politics or the politics of being multiracial?: Racial theory, civic engagement, and socio-political participation in a contemporary society* (Unpublished doctoral dissertation). University of Southern California, Los Angeles.

Campbell, M. E. (2007). Thinking outside the (black) box: Measuring black and multiracial identification on surveys. *Social Science Research, 36*(3), 921-944.

Cheng, S., & Lively, K. J. (2009). Multiracial self-identification and adolescent outcomes: A social psychological approach to the marginal man theory. *Social Forces, 88*(1), 61-98.

Colen, C. (2011). Addressing racial disparities in health using life course perspectives. *Du Bois Review, 8*(1), 79-94.

Dalmage, H. M. (2004). *The politics of multiracialism: Challenging racial thinking*. Albany: State University of New York Press.

El-Sayed, A., & Galea, S. (2009). The health of Arab-Americans living in the United States: A systematic review of the literature. *BMC Public Health, 9*(272).

Harris, D. R., & Sim, J. J. (2002). Who is multiracial? Assessing the complexity of lived race. *American Sociological Review, 67*(4), 614-627.

Herman, M. (2004). Forced to choose: Some determinants of racial identification in multiracial adolescents. *Child Development, 75*(3), 730-748.

Jackson, K. (2009). Beyond race: Examining the facets of multiracial identity through a life-span developmental lens. *Journal of Ethnic & Cultural Diversity in Social Work, 18*(4), 293-310.

Jackson, K. (2010a). Ethical considerations in social work research with multiracial individuals. *Journal of Social Work Values and Ethics, 7*(1).

Jackson, K. (2010b). Living the multiracial experience: Shifting racial expressions, resisting race, and seeking community. *Qualitative Social Work*, 0.

Jackson, K. F., & Lecroy, C. W. (2009). The influence of race and ethnicity on substance use and negative activity involvement among monoracial and multiracial adolescents of the Southwest. *Journal of Drug Education, 39*(2), 195-210.

Korgen, K. O. (2010). *Multiracial Americans and social class: The influence of social class on racial identity*. New York, NY: Routledge.

Krieger, N. (2001). A glossary for social epidemiology. *Journal of Epidemiology & Community Health, 55*(10), 693-700.

Kuh, D., Ben-Shlomo, Y., Lynch, J., Hallqvist, J., & Power, C. (2003). Life course epidemiology. *Journal of Epidemiology & Community Health, 57*(10), 778-783.

Parker, J. D., & Makuc, D. M. (2002). Methodologic implications of allocating multiple-race data to single-race categories. *Health Services Research, 37*(1), 203-215.

Pauker, K., & Ambady, N. (2009). Multiracial faces: How categorization affects memory at the boundaries of race. *Journal of Social Issues, 65*(1), 69-86.

Paulus, P. B. (1989). *Psychology of group influence*. Hillsdale, NJ: Erlbaum.

Pleis, J. R., & Barnes, P. M. (2008). A comparison of respiratory conditions between multiple race adults and their single race counterparts: An analysis based on American Indian/Alaska Native and white adults. *Ethnicity & Health, 13*(5), 399-415.

Rockquemore, K. A., Brunsma, D. L., & Delgado, D. J. (2009). Racing to theory or retheorizing race? Understanding the struggle to build a multiracial identity theory. *Journal of Social Issues, 65*(1), 13-34.

Saenz, R., & Morales, C. (2005). Demography of race and ethnicity. In D. L. Poston & M Micklin (Eds.), *Handbook of population* (pp. 169-208). New York, NY: Kluwer Academic/Plenum.

Sanchez, D. T., Shih, M., & Garcia, J. A. (2009). Juggling multiple racial identities: malleable racial identification and psychological well-being. *Cultural Diversity & Ethnic Minority Psychology, 15*(3), 243-254.

Spencer, R. (2004). Beyond pathology and cheerleading: Insurgency, dissolution, and complicity in the multiracial idea. In H. M. Dalmage (Ed.). *The Politics of multiracialism: Challenging racial thinking*. Albany: State University of New York Press.

Tashiro, C. J. (2002). Considering the significance of ancestry through the prism of mixed-race identity. *Advances in Nursing Science, 25*(2), 1-21.

Udry, J. R., Li, R. M., & Hendrickson-Smith, J. (2003). Health and behavior risks of adolescents with mixed-race identity. *American Journal of Public Health, 93*(11), 1865-1870.

CHAPTER 2: SELF-RATED HEALTH AMONG MULTIRACIAL YOUNG ADULTS IN THE UNITED STATES

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),(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.

References

Boardman, J. D. (2006). Self-rated health among U.S. adolescents. *Journal of Adolescent Health, 38*(4), 401-408.

Bratter, J. L., & Gorman, B. K. (2011). Does multiracial matter? A study of racial disparities in self-rated health. *Demography, 48*(1), 127-152.

Campbell, M. E., & Eggerling-Boeck, J. (2006). “What about the children?” The psychological and social well-being of multiracial adolescents. *Sociological Quarterly, 47*(1), 147-173.

Chavez, G. F., & Sanchez, D. T. (2010). A clearer picture of multiracial sustance use: Rates and correlates of alcohol and tobacco use in multiracial adolescents and adults. *Race and Social Problems, 2*, 1-18.

Cheng, S., & Lively, K. J. (2009). Multiracial self-identification and adolescent outcomes: A social psychological approach to the marginal man theory. *Social Forces, 88*(1), 61-98.

Choi, Y. (2007). Academic achievement and problem behaviors among Asian Pacific Islander American adolescents. *Journal of Youth and Adolescence, 36*(4), 403-415.

DeSalvo, K. B., Bloser, N., Reynolds, K., He, J., & Muntner, P. (2006). Mortality prediction with a single general self-rated health question. *Journal of General Internal Medicine, 21*(3), 267-275.

Dhooper, S. S., & Moore, S. E. (2001). *Social work practice with culturally diverse people*. Thousand Oaks, CA: Sage Publications.

Flores, G., & Tomany-Korman, S. C. (2008). Racial and ethnic disparities in medical and dental health, access to care, and use of services in US children. *Pediatrics, 121*(2), e286-e298.

Good, J. J., Chavez, G. F., & Sanchez, D. T. (2010). Sources of self-categorization as minority for mixed-race individuals: Implications for affirmative action entitlement. *Cultural Diversity and Ethnic Minority Psychology, 16*(4), 453-460.

Harris, K. (2011, September). *Design features of Add Health*. Chapel Hill: University of North Carolina, Carolina Population Center. Retrieved from http://www.cpc.unc.edu/projects/addhealth/data/guides/design%20paper%20WI-IV.pdf

Harris, D. R., & Sim, J. J. (2002). Who is multiracial? Assessing the complexity of lived race. *American Sociological Review, 67*(4), 614-627.

Harris, D. R., & Thomas, J. L. (2002). *The educational costs of being multiracial: Evidence from a national survey of adolescents* (PSC Report No. 02-521). Ann Arbor, MI: University of Michigan, Institute for Social Research, Population Studies Center.

Heard, H. E., Gorman, B. K., & Kapinus, C. A. (2008). Family structure and self-rated health in adolescence and young adulthood. *Population Research and Policy Review, 27*(6), 773-797.

Hitlin, S., Brown, J. S., & Elder, G. H. (2006). Racial self-categorization in adolescence: Multiracial development and social pathways. *Child Development, 77*(5), 1298-1308.

Idler, E. L., & Angel, R. J. (January 01, 1990). Self-rated health and mortality in the NHANES-I Epidemiologic Follow-up Study. *American Journal of Public Health, 80*, 4, 446-52.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38*(1), 21-37.

Jackson, K. F. (2010). Ethical considerations in social work research with multiracial individuals. *Journal of Social Work Values and Ethics, 7*(1).

Jackson, K. F., & Lecroy, C. W. (2009). The influence of race and ethnicity on substance use and negative activity involvement among monoracial and multiracial adolescents of the southwest. *Journal of Drug Education, 39*(2), 195-210.

Jayakody, A., Sinha, S., Tyler, K., Khadr, S. N., Clark, C., Klineberg, E., . . . Viner, R. M. (2011). Early sexual risk among black and minority ethnicity teenagers: A mixed methods study. *Journal of Adolescent Health, 48*(5), 499-506.

Kuh, D., & Ben-Shlomo, Y. (2004). *A life course approach to chronic disease epidemiology* (2nd ed.). New York: Oxford University Press.

Lantz, P. M., Lynch, J. W., House, J. S., Lepkowski, J. M., Mero, R. P., Musick, M. A., & Williams, D. R. (2001). Socioeconomic disparities in health change in a longitudinal study of US adults: The role of health-risk behaviors. *Social Science & Medicine, 53*(1), 29-40.

Liebler, C. A., & Halpern-Manners, A. (2008). A practical approach to using multiple-race response data: A bridging method for public-use microdata. *Demography, 45*(1), 143-155.

Manderbacka, K., Lundberg, O., & Martikainen, P. (1999). Do risk factors and health behaviours contribute to self-ratings of health? *Social Science & Medicine, 48*(12), 1713-1720.

McKelvey, R., & Webb, J. (1996). A comparative study of Vietnamese Amerasians, their non-Amerasian siblings, and unrelated like-aged Vietnamese immigrants. *American Journal of Psychiatry, 153*, 561-563.

Milan, S., & Keiley, M. (2000). Biracial youth and families in therapy: Issues and interventions. *Journal of Marriage and Family Therapy, 26*, 305-315.

Mortimer, J. T., & Shanahan, M. J. (2003). *Handbook of the life course*. New York, NY: Kluwer Academic/Plenum Publishers.

Mossey, J. M., & Shapiro, E. (1982). Self-rated health—A predictor of mortality among the elderly. *American Journal of Public Health, 72*(8), 800-808.

Pleis, J. R., & Barnes, P. M. (2008). A comparison of respiratory conditions between multiple race adults and their single race counterparts: An analysis based on American Indian/Alaska Native and White adults. *Ethnicity & Health, 13*(5), 399-415.

Poston, D. L., & Micklin, M. (2006). *Handbook of population*. New York, NY: Springer.

Rockquemore, K. A., Brunsma, D. L., & Delgado, D. J. (2009). Racing to theory or retheorizing race? Understanding the struggle to build a multiracial identity theory. *Journal of Social Issues, 65*(1), 13-34.

Root, M. P. P. (1992). *Racially mixed people in America*. Newbury Park, CA: Sage Publications.

Root, M. P. P., & Kelley, M. (2003). *Multiracial child resource book: Living complex identites*. Seattle, WA: Mavin Foundation.

Sakai, J. T., Wang, C., & Price, R. K. (2010). Substance use and dependence among Native Hawaiians, Other Pacific Islanders, and Asian ethnic groups in the United States: Contrasting multiple-race and single-race prevalence rates from a national survey. *Journal of Ethnicity in Substance Abuse, 9*(3), 173-185.

Saperstein, A. (2006). Double-checking the race box: Examining inconsistency between survey measures of observed and self-reported race. *Social Forces, 85*(1), 57-74.

Saperstein, A. (2009), Different measures, different mechanisms: A new perspective on racial disparities in health care, in Jennie Jacobsk Ronenfeld (ed.) *Social Sources of Disparities in Health and Health Care and Linkages to Policy, Population Concerns and Providers of Care (Research in the Sociology of Health Care, Volume 27),* Emerald Group Publishing Limited, 21-45.

Saperstein, A., & Penner, A. M. (2010). The race of a criminal record: How incarceration colors racial perceptions. *Social Problems, 57*(1), 92-113.

Schempf, A. H., Mendola, P., Hamilton, B. E., Hayes, D. K., & Makuc, D. M. (2010). Perinatal outcomes for Asian, Native Hawaiian, and Other Pacific Islander mothers of single and multiple race/ethnicity: California and Hawaii, 2003-2005. *American Journal of Public Health, 100*(5), 877-887.

Shi, L., Starfield, B., Politzer, R., & Regan, J. (2002). Primary care, self-rated health, and reductions in social disparities in health. *Health Services Research, 37*(3), 529-550.

Shih, M., & Sanchez, D. T. (2005). Perspectives and research on the positive and negative implications of having multiple racial identities. *Psychological Bulletin, 131*(4), 569-591.

Smedley, A., & Smedley, B. D. (2012). *Race in North America: Origin and evolution of a worldview* (4th ed.). Boulder, CO: Westview Press.

Spencer, R. (2011). *Reproducing race: The paradox of generation mix*. Boulder, Colo: Lynne Rienner Publishers.

Sullivan, P. (1998). What are you? Multiracial families in America. *Our Children, 23*(5), 34.

Turner, J. C. (1987). *Rediscovering the social group: a self-categorization theory*. Oxford, UK: Blackwell.

Udry, J. R., Li, R. M., & Hendrickson-Smith, J. (2003). Health and behavior risks of adolescents with mixed-race identity. *American Journal of Public Health, 93*(11), 1865-1870.

Vandervoort, D. J., Divers, P. P., & Acojido, C. (2000). Psychosocial correlates of health status among Asians, Caucasians, and multiracial subjects. *Current Psychology, 19*(2), 120-128.

Vingilis, E. R., Wade, T. J., & Seeley, J. S. (2002). Predictors of adolescent self-rated health—Analysis of the National Population Health Survey. *Canadian Journal of Public Health–Revue Canadienne De Sante Publique, 93*(3), 193-197.

Wade, T. J., Pevalin, D. J., & Vingilis, E. (2000). Revisiting student self-rated physical health. *Journal of Adolescence, 23*(6), 785-791.

Whaley, A. L., & Francis, K. (2006). Behavioral health in multiracial adolescents: The role of Hispanic/Latino ethnicity. *Public Health Reports, 121*(2), 169-174.

CHAPTER 3: DISPARITIES IN HEALTH SERVICES USE AND ACCESS TO CARE AMONG MULTIRACIAL AMERICAN ADULTS

Introduction

An enduring finding is that some racial and ethnic minority groups are less likely to use health services, including preventive care, than Whites. This finding spans nearly 40 years when Sue, McKinney, Allen, and Hall first reported that African Americans and Asian Americans do not seek treatment for their mental health problems and, when they do, they frequently drop out after one session (Sue, McKinney, & Allen, 1976; Sue, McKinney, Allen, & Hall, 1974). Subsequent studies suggested that mental health service use among racial and ethnicity minority groups is associated with differential use of outpatient and emergency services (Chow, Jaffee, & Snowden, 2003; Hu, Snowden, Jerrell, & Nguyen, 1991) and differing rates of mental health service use (Abe-Kim et al., 2007; Harris, Edlund, & Larson, 2005; O’Sullivan, Peterson, Cox, & Kirkeby, 1989). An Institute of Medicine report, *Unequal Treatment*, found that significant racial and ethnic disparities in health care exist even after adjusting for age, income, and health insurance (Nelson, 2002). Weinick, Zuvekas, and Cohen (2000) found that from 1977 to 1996 there were differences among Black, White, and Hispanic Americans in terms of having a usual source of health care. A third documented disparity is oral health service use. Racial and ethnic minority disparities in oral health are largely related to access to care. Counterintuitively, Black and Hispanic adults are less likely to self-report difficulties in access to dental care compared with Whites (Shi, Lebrun, & Tsai, 2010). Despite the number of well-documented patterns of health service use, there is a dire need to better understand access to and use of medical, oral, and mental health services as related to racial disparities in health.

Although this racial and ethnic pattern of health service use is consistent over time, it is not quite clear whether multiracial Americans (self-identified individuals of more than one racial group) are more likely to follow the trend of minority or majority Americans in their use of health services. Little is known about the help-seeking behaviors of Multiracial Americans. Few studies have examined multiracial American patterns of service use, and these studies have concentrated on the health and health outcomes of children (Flores & Tomany-Korman, 2008; Heslin, Casey, Shaheen, Cardenas, & Baker, 2006; Lewis, Mouradian, Slayton, & Williams, 2007). In this paper, I test two hypotheses related to access to care and service utilization. First, self-identified multiracial young adults will report less service utilization compared with monoracial young adults. Second, self-identified multiracial young adults will report less service utilization when service-related barriers are taken into account. This paper explores monoracial-multiracial differences in service use for a sample of American young adults. Furthermore, this paper accounts for some of the heterogeneity in the multiracial population by examining findings for specific multiracial subgroups.

Literature Review

The majority of research on multiracial health and service use has focused on multiracial children and adolescents. A population-based epidemiological study on children's health reported that multiracial children, when compared with monoracial children, used fewer services and had less access to medical care, dental care, and health insurance (Flores & Tomany-Korman, 2008). In fact, multiracial children experienced higher odds for several problems, including suboptimal teeth condition, emotional difficulties, and respiratory problems, compared with White children (Flores & Tomany-Korman, 2008). Asthma and lung disease are health problems that multiracial children experienced more than White children (Flores & Tomany-

Korman, 2008; Pleis & Barnes, 2008). Despite these health problems, the study found that multiracial children visited health care providers less frequently than monoracial children and were more likely to be overweight. It is notable that multiracial children are prescribed medications six times more than monoracials; thus, examining access and use of health care may help us explain this trend (Flores & Tomany-Korman, 2008). Flores and Tomany-Korman (2008) also found that multiracial children were at the greatest risk for unmet health needs due to access-related barriers. For example, children were not able to access care because providers did not accept a particular health insurance and the likelihood of experiencing this barrier was six times higher for multiracial children than for White children. Hestlin and colleagues (2006) performed an analysis of cross-sectional national survey data and found stark disparities in the rates of unmet need for vision care; their results indicated that multiracial children had the highest rate of unmet need (14.3%) compared with White (4.1%), African American (8.9%), and Latino (10%) children. Unfortunately, other than research focusing on children, there have been few studies that have examined primary care, mental health care, and oral health care service use by multiracial Americans. In fact, the early-adult age cohort across all ethnicities is underrepresented in health services research.

In the research on health service utilization there are three major foci in the literature: medical care (most typically primary care), mental health care, and oral health care. Primary care is a particular concern for all young adults. This age cohort is the least likely to have a routine prevention regime or primary care provider. The transition from pediatric care to adult primary care is a concern for individuals transitioning into adulthood. Health care utilization is also a major concern for individuals with chronic illness and/or disability from childhood. For example, several studies found that multiracial children and young adults report higher rates of asthma

(Flores & Tomany-Korman, 2008; Pleis & Barnes, 2008) than do monoracial individuals in the same age categories. Complications from asthma can be devastating and have long-term effects such as emergency room visits, sleep disturbances, and even death. In general, the delay to seek treatment can be costly if conditions are treated only when they are at their worst. Studies find that young adults are not consistent in locations of usual care. This age group in particular reports a high use of emergency room care (Park, Mulye, Adams, Brindis, & Irwin, 2006). In 2009 the rate of emergency room visits over 12 months was 22%—second only to the elderly population age 65 and up, with a 24.9% rate for emergency room visits (National Center for Health Statistics [NCHS], 2012).

Mental health service utilization is associated with medical care service utilization (Fogarty, Sharma, Chetty, & Culpepper, 2008). Mental health care is clearly an area where gaps in care are evident for Americans during early adulthood. Notably, nearly three quarters of all lifetime cases of diagnosable mental health conditions will occur by age 24. Accordingly, data from a national comorbidity study (National Comorbidity Survey Replication) showed results on mental health care utilization by young adults aged 18-29, who are the least likely to receive health care treatment but are more likely to receive health care treatment than all age cohorts of people 60 and older (Wang et al., 2005). Furthermore, the young adult population aged 18-29 found nonhealth care treatments (e.g., human services or self-help) to be adequate forms of care (Wang et al., 2005). Harris et al. (2005) examined nationally representative data and discovered multiracial Americans were statistically more likely than Whites to have at least one or more mental health symptoms. Multiracial respondents were more likely than Whites to have serious mental illness; however, covariates substantially diminished this relationship (Harris et al., 2005). The caveat to this study is that it used nationally representative data for Americans aged

18 and up and was not restricted to a young adult sample. Some studies found that multiracial Americans do not seek regular mental health care as often as monoracial Americans.

Last, oral health is an important, often overlooked, health factor. Oral health disparities can be costly, especially when emergency rooms are used for dental care. In 2007, Lewis and colleagues presented national findings of the trends of oral health by race. One interesting finding is that multiracial children were more likely than White children to have dental insurance. Only 17% of multiracial children in the sample did not have health insurance. Yet despite higher rates of insurance, multiracial children were less likely than Whites to have an annual preventive dental visit (Lewis et al., 2007). Dental insurance is associated with increased likelihood to seek care and use preventive dental services in the United States.

Access-Related Barriers

Insurance is one of the greatest barriers to seeking and obtaining care for the young adult age group. There are differences in the rates of insurance by race and age. In particular 18.2% of multiracial Americans did not have insurance in 2009 compared with 17% of White Americans and 16.2% of Asian Americans (NCHS, 2012). Since 1984, insurance rates have been highest among the young adult cohort relative to ages birth-64 years old. In 2009 nearly one third (32.8%) of adults aged 19-25 did not have insurance (NCHS, 2012). The lack of insurance is attributed to the transition to adulthood and loss of parents' insurance (Callahan & Cooper, 2005; Kirzinger, Cohen, & Gindi, 2012). Past studies found that the lack of insurance alone does not account for all disparities in health care utilization but is related to certain types of visits such as ambulatory care (Fortuna, Robbins, & Halterman, 2009). Young adults without insurance are likely to forego services when they need them. The lack of insurance is also associated with the number of missed appointments (Callahan & Cooper, 2005, 2006). A similar pattern of differences has been observed in the self-report of service utilization for a variety of health services. In sum, there are documented disparities by race in access to care and utilization of health care services.

Racial Differences in Health Care Utilization

Several competing explanations account for differences in the use of health services by racial and ethnicity. At least two rationales are used in explaining racial and ethnic disparities in health care utilization. First, it is possible that racial and ethnic minorities may have a higher prevalence of health problems. Smedley and Smedley (2012) posited that the burden of disease carried by racial and ethnic minority populations is multifactorial. One of the strongest predictors of health and wellness is socioeconomic status (SES), and subsequently there is a pronounced gradient in health by wealth that adversely affects low income racial and ethnic minorities. In an American context there is an intersection between race/ethnicity and SES. Minority groups are disproportionately found to have lower SES and greater experience of adverse health outcomes. The factors associated with lower SES and adverse health are well documented. Racial segregation is an example of one of these factors. Residents of racially segregated and isolated communities experience a greater incidence of diseases such as diabetes and at the same time do not have access to adequate quality services. Racial bias is another factor often connected to the differences in service use. Patients who perceive bias are less likely to adhere to medical treatment. Past studies confirm that providers hold bias toward racial and ethnic minority patients (Smedley & Smedley, 2012). As scholars have noted, there is an association between race and access to care including place of usual care (Almgren, 2007). One approach to reducing health disparities is establishing regular care with health providers as opposed to using the emergency room for treatment or avoiding treatment when needed. Multiracial young adults might be less likely to have established a health provider relationship and more likely to use the emergency room as a usual source of care. Additionally, a barrier to establishing care is the ability to pay. Young adults are the most likely age group to avoid care when needed, often due to inability to pay, including lack of insurance (Callahan & Cooper, 2005).

Second, racial and ethnic minorities may not have health insurance, which might explain some of the observed variation in service use. The pathways to accessing health services are best understood by examining the variations in insurance status (Zuvekas & Taliaferro, 2003). In 2007, just over 16% of U.S. adults aged 18-65 were uninsured (Collins & Nicholson, 2010). The prevalence rate of uninsured young adults is the highest of all age categories. A report from the Commonwealth Fund states that 13.7 million adults aged 19-29 were uninsured in 2008 (Collins & Nicholson, 2010). According to past studies, there are significant differences in insurance status by race: Black and Hispanic young adults are less likely to have insurance compared with White young adults (Harris, Gordon-Larsen, Chantala, & Udry, 2006).

Research Aims and Hypotheses

The aims of this study are (a) to determine whether multiracial American young adults use health services at the same rate as monoracial majority or monoracial minority groups and (b) to determine whether differences in utilization persist when access-related barriers to services are taken into account. Thus two hypotheses are tested:

> H1: Self-identified multiracials will report less service utilization compared with monoracial groups. Furthermore, the difference will remain after adjusting for health problems and health behaviors.
>
> H2: Self-identified multiracials will report less service utilization even when service-related barriers are taken into account.

The central aim of this study is to provide evidence toward a better understanding of how multiracial Americans interact with our current health care system and the implications for health policy and practice in a multiracial society.

Methods

Sample

This study makes use of a standard set of questions from a longitudinal study of adolescents conducted in the United States and includes comprehensive demographic measures in addition to health behaviors, biological measures, and social factors. 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. Researchers began collecting data on social and behavioral factors for Add Health, a study of youth, in 1994. 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 interview. 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. For this study, I used a subset of Wave 4 non-Hispanic respondents from all three waves. Due to my interest in population estimates, I excluded respondents whose Wave 4 sampling weights were unavailable. I also excluded those with missing data for any of the independent and control variables, which leaves a remaining sample of 7,861when weights are applied.

Dependent Variable Measures

The dependent variable measures in this study are intended to capture health care service utilization and include the following: (a) routine annual physical exam, (b) annual oral health exam, and (c) mental health counseling session. The dependent measures were drawn from Wave 4, which had respondents aged 24 to 33 years old. The annual physical exam question (*How long ago did you last have a routine check-up?* Responses were categorical, ranging from less than 3 months to more than 2 years) is coded as a dichotomous variable (0 = no, more than 12 months; 1 = yes, less than or equal to 12 months). The annual oral health exam question (*In the past 12 months have you had a dental examination by a dentist or dental hygienist*?) is coded as a dichotomous variable (0 = no, 1 = yes). The mental health counseling question (*In the past 12 months have you received psychological or emotional counseling*?) is coded as a dichotomous variable (0 = no, 1 = yes).

Independent Variable Measures

The main independent variable is a composite variable of race taken from Waves 1 and 3. Since Add Health's beginnings in 1994, respondents have had the option of selecting one or more racial group (What is your race? You may give more than one answer.). Those reporting more than one race were asked to then select a single-best race category (*Which one category best describes your racial background?*). Additionally, interviewers were asked to assign race for each respondent from observation alone. Respondents who self-categorized more than one race are considered multiracial. The race categories include the following: White (reference), Black, American Indian, Asian, Other Race, and Multiracial.

Covariate Measures

The remaining covariate measures are grouped into sociodemographic characteristics, health status and health behaviors, and access-related barriers.

Demographic Controls

The sociodemographic characteristics include mean age, gender, education, parents' education, partner status, and nativity. Age is a continuous measure that ranges from 24 to 33 years. Studies on the access to health services and service utilization found that there are differences among ethnic groups and across age groups. Gender is a dichotomous measure taken from Wave 1, coded as 1 = male and 2 = female. Male is the reference group. Parents' education is taken from the parent survey in Wave 1, specifically the responses of the female caregiver who was present at the time of the survey and completed the interview. Responses are coded as 1 = less than high school, 2 = high school diploma, 3 = college degree or more.

Health and Health Behaviors

Health status is captured using three measures of health. Functional impairment (use of cane, walker, or wheelchair) at the time of the interview is presented as limited abilities (0 = no, 1 = yes). Past studies have found varying rates of health utilization by adverse health conditions and disability status. Gum disease or tooth decay are a 30-day measure (*Have you had gum disease* [gingivitis, periodontal disease] *or tooth loss because of cavities in the last 4 weeks?*) and is coded as a dichotomous measure (0 = no, 1 = yes). Depression is a self-report measure (*Has a doctor, nurse, or other health care provider ever told you that you have or had depression?*) and is dichotomous (0 = no, 1 = yes). Approximately 15% of the full sample answered yes to the depression question. The health behaviors included are heavy alcohol use (five drinks for men and four drinks for women in one day, a 30-day measure) and substance use (any illicit drug use in a 30-day period).

Access-Related Barriers to Care

The access-related barriers to care are captured using insurance status, sporadic insurance coverage, and care seeking. Insurance coverage is taken from Wave 4 of the data (*Which of the following best describes your current health insurance situation?*) and is a dichotomous measure (0 = no insurance or don't know and 1 = yes, insured). Sporadic insurance is used to capture gaps in insurance over a 1-year period (*Over the past 12 months, how many months did you have health insurance?*); responses less than 12 months are coded as sporadic insurance (0 = no, 1 = yes). Gaps in coverage are documented and associated with reduced service use. Last, care seeking is measured using a question from Wave 4 (*Has there been a time in the past 12 months when you thought you should get medical care, but you did not?*) and coded as 0 = no, 1 = yes.

Analyses

Univariate analysis will be used to describe demographic and health status characteristics. Multivariate logistic regression will be used to find variations in health service utilization. All analyses were conducted using STATA software version SE 10.1 (Stata Corp., College Station, TX). Given the sampling frame I used Wave 4 grand sampling weights by Stata's "svy" command to account for the general population in 2008, when respondents were aged 24-33 years old. This weighting technique accounts for the sampling technique (oversampling) and inconsistencies in response across four waves of data. Racial differences among the dependent variables were tested using univariate and multivariate analyses. My analysis proceeds in three steps. First, I will provide sample characteristics by racial group. Second, I will provide the prevalence estimates of health service utilization and need for services (including physical/primary care, oral health, and mental health). Third, I will present multivariate logistic regression models that will reveal whether differences in health care utilization are explained by health status, health behaviors, and access-related barriers. A p value less than .05 is considered significant in this study. I used a design-based Wald test to account for significance.

Ethics Approval

Add Health study procedures were approved by the Human Subjects Review Committee at the University of North Carolina, Chapel Hill. The present study was approved by the Center for Studies in Demography and Ecology at the University of Washington under contractual agreement from the Carolina Population Center at the University of North Carolina, Chapel Hill.

Results

Univariate Analysis

Table 3.1 reports the sample sociodemographic characteristics. The average age of respondents in the sample was 27 years of age. The difference in age by race was not significant ($p = .42$). There were not significant differences in the distribution of gender by race ($p = .14$). There were significant differences by race on the proportions of mothers who achieved each level of education. For example, mothers of Asian respondents reported the highest proportion (42%) of college attainment ($p < .001$). The majority of respondents were employed, yet no significant racial differences were found ($p = .35$). There were differences in nativity by race in that 50% of Asian respondents and 16% of Other Race respondents were foreign born ($p < .001$). There were significant differences by race in the proportions of educational attainment. Those who reported less than a high school education varied across racial groups: 19% Native American, 13% Multiracial, and 13% Black. The proportion of college graduates by race were 40% Asian, 30% Other, 28% Multiracial, 17% Black, and 5% Native American respondents.

Partner status was different in proportion by race: 37% Native American, 32% Multiracial, 31% White, 22% Black, 21% Asian, and 13% Other were in a cohabitating relationship. There were differences in the proportion of limited abilities, with Native Americans (14%) and multiracials (5%) reporting limited ability more often than respondents of other races. There were differences found in the proportion of respondents with gum disease or tooth loss, with Native Americans (9%) and Multiracials (6%) reporting these conditions most.

Multivariate Analysis

Table 3.2 presents findings from the multivariate logistic regression. This analysis was used to test two hypotheses related to health care service use. First, I sought to learn whether multiracial respondents reported less service use compared with monoracial respondents. As found in Table 3.2, Model 1 examines the association between race and three measures of health services use while controlling for demographic factors. In Model 1 there is not a statistically significant difference between the single multiracial group and monoracial White respondents for use of primary care, oral health, or mental health care. However, a closer examination of specific multiracial categories reveals that differences do exist for some multiracial subgroups. In Model 1 Black-White multiracial young adults are less likely to report primary care service use (odds ratio [*OR*] = 0.46, 95% confidence interval [CI] [0.24-0.89]) compared with White monoracial respondents. Additionally, Black-Native American multiracial young adults are less likely to report primary care service use (*OR* = 0.29, 95% CI [0.11-0.80]) compared with White monoracial young adults. Model 1 also reveals statistical significant differences for three monoracial minority groups in that Black and Native American young adults are less likely to report an annual oral exam and Black and Asian young adults are less likely to report mental health service use.

Model 2 yields a similar set of results. At first examination of the multiracial group there were not statistically significant differences for primary, mental health, and oral health service use compared with White respondents. A more specific examination of multiracial categories reveals that, similar to Model 1, Black-White respondents were less likely to have a routine physical exam (*OR* = 0.49, 95% CI [0.29-0.91]), and differences remained after adjusting for health status and health behaviors. Black-Native American respondents were also less likely to have a routine physical compared with White respondents, and differences remained after adjusting for health status and health behaviors (*OR* = 0.29, 95% CI [0.11-0.81]). In Model 2 the differences remain where Black and Native American monoracial young adults were less likely to report oral health care compared with White monoracial adults. Asian young adults were less likely (*OR* = 0.39, 95% CI [0.16-0.94]) to report mental health service use compared with monoracial White young adults.

Second, I proposed an additional hypothesis positing that access-related barriers to care might explain some of the differences in health care services utilization. To test this hypothesis I included health insurance status (Model 3) and care seeking (Model 4) in my analysis. When health insurance is included in the analysis the effect sizes remain similar. Multiracial young adults as a group are not statistically significantly different compared with White monoracial young adults. However, when examining specific multiracial subgroups, Black-White multiracial young adults (*OR* = 0.41, 95% CI [0.19-0.90]) and Black-Native American young adults (*OR* = 0.24, 95% CI [0.09-0.63]) are less likely to report a routine check-up compared with White monoracial young adults. Additionally in Model 3, after accounting for insurance, the patterns remain and the Black monoracial young adults (*OR* = 0.70, 95% CI [0.62-0.82]) and Native American monoracial young adults (*OR* = 0.26, 95% CI [0.09-0.78]) are less likely to report an annual oral health exam compared with White monoracial young adults. I also found that Asian monoracial young adults are less likely than White monoracial young adults to report mental health service use (*OR* = 0.38, 95% CI [0.16-0.92]) after accounting for health insurance.

Table 3.3 shows the source of usual care reported in the sample. There were statistically significant differences based on where respondents obtained care: design-based *F*(13.70, 1753.74) = 7.4085, $p < .001$. Private doctor offices were the prime service location in these proportions for young adults of different races: Other Race (64%), Multiracial (48%), White (54%), Asian (43%), Black (34%), and Native American (16%). In contrast, 29% of Black, 13% of Multiracial, 10% of White, 6% of Native American, and 4% of Other Race young adults obtained their usual care in hospital emergency rooms (see Figure 3.1).

Discussion

To my knowledge, there is no published, comprehensive analysis of the disparities that young adult multiracial Americans experience in medical, oral health, and mental health service utilization and access-related barriers to care. In this study I analyzed nationally representative data to investigate health service utilization for young adults living in the United States. The results generally were consistent and add to past studies showing that there are racial differences in health insurance status for American young adults (Callahan & Cooper, 2004, 2005; Harris et al., 2005). Notably, I did not find significant differences when multiracial respondents were compared as a single group with White young adults. However, when I examined specific multiracial groups I did find differences between Black-White and Black-Native American young adults compared with White young adults. In the first model I found that Black monoracial and Asian monoracial reported less mental health service use than White monoracial young adults. I did not find differences for multiracial young adults compared with White monoracial respondents. These findings also align with current research suggesting low rates of mental health service use for African Americans and Asian Americans compared with White Americans (Harris et al., 2005). In the fully adjusted model I found significant differences in the frequency routine medical exams for some specific multiracial subgroups compared with White monoracial young adults. Therefore, this study complements the existing literature through direct comparisons of monoracial to specific multiracial groups of young adults, which has not been made in the past.

My second hypothesis posited that multiracial young adults would report less service use when access-related barriers were taken into account. Accordingly, I examined racial differences in access-related barriers to care and service utilization in a nationally representative sample of young adults in the United States. Access to preventive and treatment services including primary, mental, and oral health are of particular importance for the growing number of young adults in the United States. In my analyses I accounted for insurance coverage, sporadic insurance, and care seeking. I did not find that inclusion of these factors explained the differences in effect. After accounting for these factors, differences remained for specific multiracial subgroups compared with White monoracial young adults. Recent studies found that lack of insurance is a determinant of health care utilization for adults in the United States (Callahan & Cooper, 2006; Carson, Le Cook, & Alegria, 2010). Future studies could investigate the pathways in which insurance might affect health care service use for multiracial adults in the United States. This analysis also found that there are differences by race for young adults not seeking care when they need it (Callahan & Cooper, 2005). Future studies could include specific multiracial categories to see whether there are differences for specific groups in terms of not using care when needed. Last, this illustrates that research on health care utilization of young adults in the United States has not kept pace with the changing demographic transition and implications for multicultural practice settings.

Limitations

There are several limitations in this investigation that should be acknowledged. First, the data in this study are all self-reported. A recent study on Add found that nearly one in five of the respondents in the sample met the criteria for hypertension using measurement of systolic and diastolic blood pressure; whereas, the proportion of the sample that reported a past diagnosis of hypertension was only 11% overall. Second, I do not have medical records or clinical data to confirm health care service use or insurance status over the 12-month period. Third, data were drawn from a school-based, stratified probability sample. Therefore, this study only captures respondents who were once enrolled in school.

Conclusion

Differences in access to care and utilization of health services remain one of the most alarming health disparities. Despite this distinction, little evidence identifies the rates of service use and access to care for young adults in the United States. This study makes a contribution to existing literature by providing findings on the health of an age cohort of young adults. Data provided on the health of young adults are often grouped with those of older adults. A series of studies on health during young adulthood has concentrated on a cohort aged 18-52. Future studies are needed to examine the patterns of adult service use and insurance status across the age distribution. Furthermore, this study provides an in-depth analysis of the health service use of multiracial Americans with the introduction of specific multiracial subgroups. Given recent trends in American demography and increases in multiple race self-categorizations, multiracial young adults are a significant population of interest. Now more than ever we need to take multiracial patterns of health care utilization and barriers to service use into account. Future research on multiracial young adults should examine the role of self-categorization over time and implications for service use.

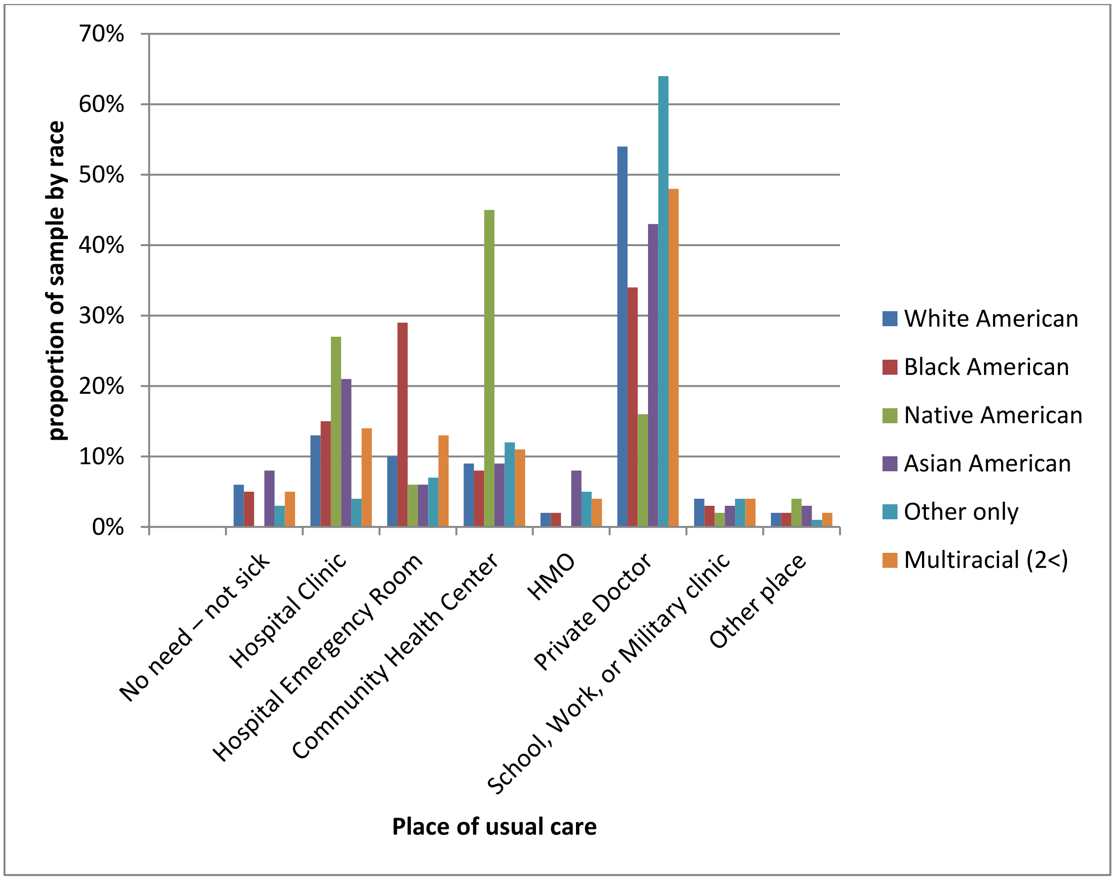

Figure 3.1: Weighted Sample Proportions of Place of Care for Young Adults in the Add Health Sample (n =7,861).

Table 3.1

Selected Characteristics of Add Health Sample According to Race (*N* = 7,296)

Characteristic	**Sample Mean or Weighted Proportion for Each Racial Group**						***p***
	White	Black	Native	Asian	Other	Multiracial	
Mean age, y	27.88	27.87	27.87	28.40	28.39	27.77	.42
Male gender	49%	49%	70%	55%	51%	53%	.14
Mother's Highest Education							<.001
Less than high school	13%	21%	30%	29%	31%	21%	
High school	58%	57%	56%	29%	45%	54%	
College	29%	22%	14%	42%	24%	25%	
Respondents Highest Education							<.001
Less than high school diploma	7%	13%	19%	2%	5%	13%	
High school	15%	22%	51%	10%	3%	18%	
Some college	9%	10%	9%	8%	8%	10%	
Vocational training	33%	32%	14%	28%	48%	32%	
College graduate	28%	17%	5%	40%	30%	22%	
Graduate or professional degree	7%	4%	1%	10%	7%	5%	
Partner Status Wave 4							<.001
Not married or cohabitating	69%	78%	64%	79%	86%	67%	
Married or cohabitating	31%	22%	37%	21%	13%	32%	
Nativity							<.001
U.S. born	99%	99%	98%	50%	84%	99%	
Not U.S. born	1%	1%	2%	50%	16%	1%	
Health & Health Behaviors							
Has limited abilitie	3%	3%	14%	2%	2%	5%	<.02
Gum disease/tooth loss (30 day)	3%	3%	9%	2%	2%	6%	<.01
Depression	19%	8%	8%	9%	12%	21%	<.0001
Substance use	28%	5%	12%	16%	10%	25%	<.0001
Heavy alcohol	16%	7%	43%	8%	6%	18%	<.0001
Insured for 12 months	80%	71%	71%	84%	76%	72%	<.0001
Sporadically insured in past year	70%	57%	57%	74%	64%	62%	<.0001
Did not seek care when needed	23%	29%	19%	24%	15%	32%	<.01

Table 3.2

Multivariate Logistic Regression, Health Service Use of Primary, Oral, and Mental Health Services Among Young Adults in the United States, Add Health Sample 1994-2008

	Model 1			**Model 2**			**Model 3**			**Model 4**		
	Medical *OR* 95% CI	**Oral** *OR* 95% CI	**Mental** *OR* 95% CI	**Medical** *OR* 95% CI	**Oral** *OR* 95% CI	**Mental** *OR* 95% CI	**Medical** *OR* 95% CI	**Oral** *OR* 95% CI	**Mental** *OR* 95% CI	**Medical** *OR* 95% CI	**Oral** *OR* 95% CI	**Mental** *OR* 95% CI
Variables												
Single Race												
White	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Black	0.51*** 0.42-0.63	0.69*** 0.59-0.81	0.51*** 0.36-0.73	0.56*** 0.46-.67	0.64*** 0.55-0.75	0.80 0.54-1.20	0.49*** 0.40-0.60	0.70*** 0.60-0.82	0.85 0.56-1.27	0.48*** 0.39-0.59	0.72*** 0.61-0.84	0.84 0.55-1.27
Native American	1.36 0.55-3.39	0.34** 0.15-0.79	0.78 0.32-1.87	1.38 0.53-3.59	0.29** 0.11-0.76	1.27 0.60-2.67	1.42 0.56-3.60	0.26* 0.09-0.78	1.27 0.57-2.80	1.46 0.54-3.91	0.26** 0.09-0.72	1.28 0.59-2.80
Asian	0.99 0.71-1.38	0.94 0.66-1.35	0.30*** 0.14-0.68	1.01 0.72-1.41	0.90 0.63-1.28	0.39* 0.16-0.94	1.05 0.73-1.52	0.86 0.59-1.24	0.38* 0.16-0.92	1.04 0.72-1.50	0.87 0.60-1.25	0.37* 0.15-0.90
Other	1.09 0.48-2.50	0.85 0.41-1.79	0.41 0.10-1.75	1.17 0.51-2.70	0.82 0.39-1.72	0.51 0.10-2.69	1.10 0.48-2.53	0.89 0.42-1.89	0.54 0.10-2.85	1.12 0.48-2.61	0.88 0.41-1.85	0.54 0.10-2.86
All multiracial	0.87 0.65-1.15	0.87 0.64-1.16	1.23 0.83-1.83	0.88 0.66-1.18	0.83 0.62-1.11	1.21 0.80-1.84	0.84 0.63-1.13	0.85 0.63-1.15	1.21 0.79-1.84	0.82 0.61-1.11	0.87 0.64-1.18	1.20 0.79-1.82
Specific Multiracial												
Black-White	0.46* 0.24-0.89	0.81 0.43-1.52	1.03 0.44-2.43	0.49* 0.29-0.91	0.81 0.43-1.53	1.19 0.49-2.92	0.41* 0.19-0.90	0.93 0.46-1.90	1.22 0.49-3.01	0.40* 0.17-0.90	0.95 0.46-1.97	1.20 0.49-2.95
Native American-White	1.02 0.72-1.45	0.88 0.61-1.27	1.42 0.90-2.24	1.04 0.73-1.48	0.83 0.58-1.19	1.38 0.81-2.34	1.04 0.73-1.48	0.82 0.56-1.19	1.40 0.83-2.36	1.01 0.70-1.44	0.84 0.57-1.24	1.37 0.81-2.32
Asian-White	1.32 0.58-3.00	0.72 0.37-1.39	1.00 .38-2.65	1.34 .61-2.93	.75 .38-1.47	.72 .25-2.09	1.23 .52-2.94	.85 .45-1.59	.36 .21-1.90	1.24 0.53-2.90	0.85 0.45-1.60	0.65 0.22-1.95
Other-White	0.24 0.02-2.96	0.86 0.13-5.74	1.49 0.18-12.68	0.21 0.02-2.60	0.90 0.13-6.40	1.04 0.14-7.55	0.21 0.02-2.05	0.85 0.10-7.56	1.05 0.18-6.22	0.22 0.02-2.25	0.80 0.09-6.95	1.08 0.18-6.48
Black-Native American	0.29* 0.11-0.80	1.07 0.51-2.26	0.50 0.13-1.92	0.29* 0.11-0.81	0.93 0.41-2.10	0.98 0.25-3.83	0.24** 0.09-0.63	1.06 0.47-2.39	1.00 0.26-3.92	0.23*** 0.09-0.63	1.05 0.47-2.37	1.01 0s.26-3.94

Table 3.2

Multivariate Logistic Regression, Health Service Use of Primary, Oral, and Mental Health Services Among Young Adults in the United States, Add Health Sample 1994-2008

Demographic Factors												
Gender	0.39*** 0.34-0.45	1.36 1.21-1.54	1.75*** 1.41-2.18	0.42*** 0.37-0.49	1.42*** 1.25-1.61	1.26* 1.01-1.56	0.43*** 0.37-0.50	1.36*** 1.19-1.56	1.23 0.99-1.52	0.43*** 0.37-0.49	1.37*** 1.19-1.56	1.23 0.99-1.53
Age	0.98 0.94-1.03	1.06 1.02-1.10	1.02 0.96-1.09	0.99 0.95-1.03	1.06*** 1.02-1.11	1.03 0.96-1.11	1.00 0.96-1.05	1.05* 1.01-1.10	1.03 0.96-1.11	1.00 0.96-1.05	1.05* 1.01-1.10	1.03 0.96-1.17
Mother's education	1.10 0.99-1.22	1.19 1.08-1.31	1.02 0.84-1.25	1.10 .99-1.22	1.20*** 1.09-1.32	1.01 0.82-1.25	1.14* 1.02-1.27	1.17*** 1.06-1.29	.99 0.80-1.23	1.14* 1.02-1.28	1.17*** 1.06-1.29	0.99 0.80-1.24
Education	0. 92*** 0.88-0.97	1.26 1.20-1.33	1.01 0.92-1.12	0.93 0.88-0.98	1.26*** 1.19-1.33	1.09 0.99-1.20	1.01 0.95-1.06	1.16*** 1.10-1.23	1.06 0.96-1.17	1.01 0.96-1.06	1.16*** 1.10-1.23	1.06 0.96-1.17
Nativity	0.88 0.59-1.32	0.94 0.58-1.53	1.01 0.39-2.59	0.87 0.57-1.31	0.94 0.57-1.53	1.13 0.40-3.19	0.94 0.63-1.42	0.84 0.50-1.40	1.06 0.37-3.02	0.94 0.63-1.41	0.84 0.51-1.40	1.06 0.37-3.01
Partner status	0.90 0.78-1.04	0.96 0.82-1.13	0.93 0.74-1.18	0.91 0.79-1.05	0.95 0.81-1.11	0.91 0.71-1.17	0.93 0.80-1.07	0.93 0.79-1.09	0.89 0.69-1.15	0.92 0.80-1.07	0.93 .80-1.09	0.89 0.69-1.14
Health & Health Behaviors												
Ability status				0.76 0.53-1.09	1.52* 1.09-2.13	1.20 .74-1.93	0.78 0.55-1.11	1.46* 1.02-2.09	1.21 0.75-1.95	0.77 0.54-1.10	1.48* 1.03-2.14	1.20 0.74-1.94
Gum disease				1.06 0.72-1.56	2.43*** 1.60-3.69	0.82 0.42-1.60	0.96 0.65-1.42	3.02*** 1.94-4.71	0.91 0.47-1.76	0.90 0.61-1.35	3.23*** 2.03-5.14	0.88 0.45-1.70
Depression				0.81* 0.66-0.99	0.74*** 0.64-0.87	8.15*** 6.37-10.42	0.78** 0.64-0.95	0.76*** 0.66-0.87	8.35*** 6.54-10.68	0.75** 0.61-0.92	0.78*** 0.68-0.90	8.23*** 6.41-10.5
Heavy alcohol use				1.36** 1.1-1.69	1.03 0.87-1.22	0.78 0.54-1.11	1.36** 1.08-1.70	1.06 0.89-1.25	0.79 0.55-1.12	1.34** 1.07-1.68	1.07 0.90-1.27	0.78 0.55-1.12
Drug use				1.33*** 1.13-1.56	0.82** 0.70-0.96	1.59*** 1.19-2.12	1.21* 1.03-1.42	0.91 0.78-1.07	1.68*** 1.27-2.23	1.19* 1.01-1.40	0.93 0.79-1.09	1.67*** 1.25-2.21

Table 3.2

Multivariate Logistic Regression, Health Service Use of Primary, Oral, and Mental Health Services Among Young Adults in the United States, Add Health Sample 1994-2008

Access-Related Barriers												
Insurance status							2.09*** 1.67-2.60	0.57*** 0.46-0.70	0.92 0.63-1.34	2.10*** 1.68-2.62	0.57*** 0.46-70	0.93 0.64-1.35
Insured <12 mo.							1.41*** 1.13-1.75	0.54*** 0.46-0.63	0.66* 0.47-0.92	1.32** 1.06-1.65	0.57*** 0.49-0.67	0.63** 0.45-0.90
Did not seek care										1.34*** 1.16-1.56	0.75*** 0.65-0.86	1.14 0.88-1.48

Note. $N = 7{,}296$; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 3.3
Health Care Service Use Add Health Sample (*N* = 7,296)

Use of Service in Past 12 Months	**Weighted Proportion for Each Racial Group**						***p***
	White	Black	Native	Asian	Other	Multiracial	
Usual Care							<.001
No need—not sick	6%	5%	0%	8%	3%	6%	
Hospital clinic	13%	15%	27%	21%	4%	14%	
Hospital emergency room	10%	29%	6%	6%	7%	12%	
Community health center	9%	8%	45%	9%	13%	11%	
HMO	2%	2%	0%	8%	5%	4%	
Private doctor	54%	34%	16%	43%	63%	47%	
School, work, or military clinic	4%	3%	2%	3%	4%	4%	
Other place	2%	2%	4%	3%	1%	2%	
Routine physical (12 month)	43%	30%	57%	45%	46%	58%	<.001
Mental health care (12 month)	11%	6%	8%	4%	5%	13%	<.001
Dental visit (12 month)	58%	46%	24%	59%	55%	51%	<.001

References

Abe-Kim, J., Takeuchi, D. T., Hong, S., Zane, N., Sue, S., Spencer, M. S., . . . Alegria, M. (2007). Use of mental health-related services among immigrant and US-born Asian Americans: Results from the National Latino and Asian American study. *American Journal of Public Health, 97*(1), 91-98.

Almgren, G. R. (2007). *Health care politics, policy, and services a social justice analysis*. New York, NY: Springer.

Callahan, S. T., & Cooper, W. O. (2004). Gender and uninsurance among young adults in the United States. *Pediatrics, 113*(2), 291-297.

Callahan, S. T., & Cooper, W. O. (2005). Uninsurance and health care access among young adults in the United States. *Pediatrics, 116*(1), 88-95.

Callahan, S. T., & Cooper, W. O. (2006). Access to health care for young adults with disabling chronic conditions. *Archives of Pediatric Adolescent Medicine, 160*(2), 178-182.

Carson, N., Le Cook, B., & Alegria, M. (2010). Social determinants of mental health treatment among Haitian, African American, and White youth in community health centers. *Journal of Health Care for the Poor and Underserved, 21*(2 Suppl.), 32-48.

CDC/NHS. (2012). *Health, United States, 2011: With special feature on socioeconomic status and health.* Hyattsville, MD: Author; 2012.

Chow, J. C., Jaffee, K., & Snowden, L. (2003). Racial/ethnic disparities in the use of mental health services in poverty areas. *American Journal of Public Health, 93*(5), 792-797.

Collins, S. R., & Nicholson, J. L. (2010). *Rite of passage: Young adults and the Affordable Care Act of 2010* (Issue Brief No. 1404). New York, NY: Commonwealth Fund.

Flores, G., & Tomany-Korman, S. C. (2008). Racial and ethnic disparities in medical and dental health, access to care, and use of services in US children. *Pediatrics, 121*(2), e286-e298.

Fogarty, C. T., Sharma, S., Chetty, V. K., & Culpepper, L. (2008). Mental health conditions are associated with increased health care utilization among urban family medicine patients. *Journal of the American Board of Family Medicine, 21*(5), 398-407.

Fortuna, R. J., Robbins, B. W., & Halterman, J. S. (2009). Ambulatory care among young adults in the United States. *Annals of Internal Medicine, 151*(6), 379-W119.

Harris, K. (2011, September). *Design features of Add Health*. Chapel Hill: University of North Carolina, Carolina Population Center. Retrieved from http://www.cpc.unc.edu/projects/addhealth/data/guides/design%20paper%20WI-IV.pdf

Harris, K. M., Edlund, M. J., & Larson, S. (2005). Racial and ethnic differences in the mental health problems and use of mental health care. *Medical Care, 43*(8), 775-784.

Harris, K. M., Gordon-Larsen, P., Chantala, K., & Udry, J. R. (2006). Longitudinal trends in race/ethnic disparities in leading health indicators from adolescence to young adulthood. *Archives of Pediatric Adolescent Medicine, 160*(1), 74-81.

Heslin, K. C., Casey, R., Shaheen, M. A., Cardenas, F., & Baker, R. S. (2006). Racial and ethnic differences in unmet need for vision care among children with special health care needs. *Archives of Ophthalmology, 124*(6), 895-902.

Hu, T. W., Snowden, L. R., Jerrell, J. M., & Nguyen, T. D. (1991). Ethnic populations in public mental health: Services choice and level of use. *American Journal of Public Health, 81*(11), 1429-1434.

Kirzinger, W. K., Cohen, R. A., & Gindi, R. M. (2012, May). *Health care access and utilization among young adults aged 19–25: Early release of estimates from the National Health Interview Survey, January–September 2011.* Hyattsville, MD: National Center for Health Statistics. Available from http://www.cdc.gov/nchs/data/nhis/earlyrelease.htm

Lewis, C., Mouradian, W., Slayton, R., & Williams, A. (2007). Dental insurance and its impact on preventive dental care visits for US children. *Journal of the American Dental Association, 138*(3), 369-380.

Nelson, A. (2002). Unequal treatment: Confronting racial and ethnic disparities in health care. *Journal of the National Medical Association, 94*(8), 666-668.

Nishina, A., Bellmore, A., Witkow, M.R., Nylund-Gibson, K. (2010). Longitudinal consistency of adolescent ethnic identification across varying school ethnic contexts. *Developmental Psychology*, 46(6), 1389-1401.

O'Sullivan, M. J., Peterson, P. D., Cox, G. B., & Kirkeby, J. (1989). Ethnic populations: Community mental health services ten years later. *American Journal of Community Psychology, 17*(1), 17-30.

Park, M. J., Mulye, T. P., Adams, S. H., Brindis, C. D., & Irwin, C. E. (2006). The health status of young adults in the United States. *Journal of Adolescent Health, 39*(3), 305-317.

Pleis, J. R., & Barnes, P. M. (2008). A comparison of respiratory conditions between multiple race adults and their single race counterparts: An analysis based on American Indian/Alaska Native and White adults. *Ethnicity & Health, 13*(5), 399-415.

Shi, L. Y., Lebrun, L. A., & Tsai, J. (2010). Access to medical care, dental care, and prescription drugs: The roles of race/ethnicity, health insurance, and income. *Southern Medical Journal, 103*(6), 509-516.

Smedley, A., & Smedley, B. D. (2012). *Race in North America: Origin and evolution of a worldview* (4th ed.). Boulder, CO: Westview Press.

Sue, S., McKinney, H. L., & Allen, D. B. (1976). Predictors of the duration of therapy for clients in the community mental health system. *Community Mental Health Journal, 12*(4), 365-375.

Sue, S., McKinney, H., Allen, D., & Hall, J. (1974). Delivery of community mental-health services to Black and White Clients. *Journal of Consulting and Clinical Psychology, 42*(6), 794-801.

Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 629-640.

Weinick, R. M., Zuvekas, S. H., & Cohen, J. W. (2000). Racial and ethnic differences in access to and use of health care services, 1977 to 1996. *Medical Care Research and Review, 57*, 36-54.

Zuvekas, S. H., & Taliaferro, G. S. (2003). Pathways to access: Health insurance, the health care delivery system, and racial/ethnic disparities, 1996-1999. *Health Affairs (Millwood), 22*(2), 139-153.

CHAPTER 4: RACIAL CATEGORIZATION AND IMPLICATIONS FOR MULTIRACIAL HEALTH RESEARCH

Introduction

In health research, race is often treated as a static characteristic much like gender. Gender in health research, assumed as stable, is associated with health beliefs and health practices. Theoretically gender can change over the life course and affect health outcomes and health behaviors (Courtenay, 2000). Despite the tendency to treat race as stable, several studies show that self-reports of race can differ by context or over time (Harris & Sim, 2002; Hitlin, Brown, & Elder, 2006). In particular, reports of race vary tremendously for multiracial (two or more races) persons in the United States. There is some evidence that the multiracial population is the most likely to change racial categories over the life course. When self-reports about race were examined in longitudinal studies, some researchers found that multiracial persons are more likely than monoracial persons to switch their categorization of race (Doyle & Kao, 2007; Hitlin, et al., 2006). This change in self-reported race, however, is not often captured in cross-sectional studies or in population health research. The purpose of this paper is to link the differences in racial categorization over time to health in a nationally representative sample of American young adults, investigating whether changes in self-reports of race are associated with differences in self-rated health. Although several studies have examined the correlates of switching race from one time point to another, this is one of the few to examine changes in race over time and health for multiracial young adults in the United States.

Literature Review

Race and Health

For well over 100 years social scientists have documented racial inequalities in health. Racial disparities continue to be documented at the population and include reports on difference in hypertension (Ong, Cheung, Man, Lau, & Lam, 2007) diabetes (Heisler, Smith, Hayward, Krein, & Kerr, 2003) and breast cancer (Carey et al., 2006) to name a few. Past studies have found that race is a significant mechanism in understanding mental health and health disparities, but research is now at a crossroads. One understudied phenomenon is the measurement of changes in racial categorization over time and related health outcomes, though some investigators have found significant health differences when comparing changes in survey interview reports of race over time and mismatch between respondent self-report and interviewer report of observed race (Saperstein, 2012).

Many studies, especially those that rely on surveys, collect self-reported reported data on race. Self-reports on race are usually based on people's perception of their racial identity. For the overwhelming majority of Americans the act of self-identification is a consistent process; for these individuals, stable racial categorization corresponds to self-reports of race and is fixed by late adolescence (Doyle and Kao, 2007; Nishina, Bellmore, Witkow, & Nylund-Gibson, 2010) However, a small subset of the population does not report consistent race on surveys. Researchers have examined some of the factors related to differences in self-report of race and life experiences such as changes in self-reported race after incarceration (Saperstein & Penner, 2010). Still, connections to health outcomes are yet to be fully established. Scholars of multiracial identity and categorization find multiracials may self-report different races depending on the region or social and political context (Good, Chavez, & Sanchez, 2010; Harris & Sim, 2002; Rockquemore, 2002; Root, 1992). Because race is a social construct and a marker of self-categorization that can change by context and political definition, an individual's race might change over time. Policy changes regarding the use of multiple categories to report race allow individuals to claim membership in more than one racial group. This change in racial categorization presents a complex challenge to health disparities research. In this chapter, I explore whether self-reported race compared with changes in racial self-categorization over time may explain patterns in the racial differences in self-reported health for a birth cohort of young adults.

Racial Categorization Over Time

Most surveys that examine race and health use cross-sectional designs. Although these studies have produced useful insights, their underlying assumption is that race is a stable, static characteristic. This may not be correct. Some studies have found that people do change their reports of race, especially those who define themselves as multiracial during the life course. Longitudinal data provide insight about possible changes in self-categorization in race. Several studies use the National Longitudinal Study of Adolescent Health (Add Health) racial categories over time to learn more about the racial formation process, the discordance between parent- and self-reported race (Harris & Sim, 2002; Ruebeck, Averett, & Bodenhorn, 2008), and the stability of race over multiple time points (Doyle & Kao, 2007; Hitlin et al., 2006). These seminal studies found that two of the salient correlates to switching from or remaining in a racial category over time are mothers' education and nativity. Those whose self-reported race remains stable over time are more likely to come from homes where the mothers have more than a high school education, which is used as a proxy for socioeconomic status. Other correlates include the psychosocial well-being of respondents. These factors are all related to health and health outcomes over time, which led me to question the relationship between racial categorization and health outcomes. Using longitudinal data can provide unique insight into the switch in race over time.

Does this switch in self-reports of race matter? Two hypotheses that address this question are evident from the literature. First, people who have a stable racial identity, regardless of race, will have better health outcomes. Along this line, the change or shift in racial categories is uniquely related to health and health outcomes. Past literature identified issues with multiracial identity formation, mental health treatment, and mental health service use (Dalmage, 2004; Rockquemore & Brunsma, 2004). Hitlin et al. (2006) suggested that multiracial adolescents who do not switch racial categories exhibit more positive psychological antecedents than those who switch or report inconsistent racial identities. The switch in racial categories is associated with childhood socioeconomic status. Hitlin et al. found that with every increase in mothers' educational attainment, multiracial individuals were less likely to switch racial categories over time. The study also found stable multiracial individuals come from higher socioeconomic status and from census tract areas that are predominately White. Similarly, Sanchez, Shih, and Garcia (2009) investigated the change in race referred to as *malleable racial identities* and psychosocial well-being for multiracial Americans. Malleable racial identification (i.e., changes in racial categorization) is associated with adverse health outcomes for some multiracials. One of the findings is an increase in depressive symptoms reported by multiracial respondents who switch racial categories compared with multiracial respondents with a stable racial identity (Sanchez et al., 2009). In sum, past findings suggest that stable racial categorization is associated with stronger psychosocial antecedents.

Second, multiracial individuals who change their racial category to monoracial have poor health outcomes. There exists a body of literature on biracial and multiracial identity formation and related mental health outcomes. Throughout the 1980s and 1990s social work researchers sought to identify clinical approaches that were relevant to multiracial individuals (Bowles, 1993; McRoy & Freeman, 1986). The view of this body of cross-sectional research was that failure to achieve a healthy/stable multiracial identity would lead to interpersonal conflict and shame or depression. Contemporary studies found that self-report of race is a source of tension for multiracial respondents, and individuals who consolidate race from a multiracial to a single category have lower self-esteem and perform worse on some academic measures (Herman, 2004; Townsend, Markus, & Bergsieker, 2009). Bonam and Shih (2009) found that people who self-report two or more races perceive more discrimination andare viewed as competitive by monoracial peers in higher education settings. Accordingly, the act of self-reporting a single racial category is a way to increase group cohesion and align with a single group. Townsend and colleagues (2009) stressed that when multiracial individuals are forced to choose a single race they feel worse about themselves. Study participants who consolidated to a single race category rated lower on measures of self-esteem and possible self-efficacy (Townsend et al., 2009). Thus, I expect that multiracial young adults who consolidate from many races to a single race will report worse health than young adults who consistently identify as monoracial. The relationship between changing racial categories and health has been described in several qualitative studies. Participants in these studies stated that the need to change from multiple races to a single race was often based upon experiences with how they were perceived or health behaviors that aligned with group stereotypes (Korgen, 2010; Rockquemore & Brunsma, 2004). In this same vein, longitudinal research found that multiracial individuals who switch racial categories report lower self-esteem than their nonswitching counterparts (Hitlin et al., 2006). Unfortunately, there are a limited number of studies that provide quantitative evidence to support the change in race over time and implications for mental health. Given the potential health/mental health implications regarding changes in racial categorization, additional research is warranted.

Research Question and Hypotheses

Based on previous research, racial categorization is not stable over time. The research question for this study is "How is consistency in racial categories over time related to self-rated health for multiracial young adults in the United States?" To address this research question I will test two related hypotheses:

> H1: Respondents with a stable racial identity, regardless of race, will report better self-rated health as young adults.
>
> H2: Multiracial respondents who change their racial category will be more likely to report fair/poor self-rated health compared with consistent self-categorized monoracial majority and consistent self-categorized minority counterparts.

Methods

Sample

This study makes use of a standard set of questions of young adult respondents from the United States and includes comprehensive demographic measures in addition to health behaviors, biological measures, and social factors. 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; researchers began collecting data in 1994 on social and behavioral factors. The details of the sample design have been described elsewhere (Harris, 2011). The original stratified probability sample included 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. A total of 20,774 respondents were included in the in-home interview. The response rate was 79%. Data for the present study were drawn from Waves 1 (1994-1995), 3 (2001-2002), and 4 (2008) of the Add Health in-home administrative survey. 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 were also taken from the Wave 1 (1994-1995) in-home parent questionnaire. Adult caregivers provided responses to a battery of survey questions. I used responses from female caregivers (mothers, stepmothers, grandmothers, female legal guardians) coded as mother. For this study, I used a subset of Wave 4 non-Hispanic respondents who participated in all three waves. I excluded respondents whose Wave 4 sampling weights were unavailable, as well as those with missing data for any of the independent and control variables; this left a remaining sample of 7,957 when weights were applied.

Dependent Variable Measure

The dependent variable in this study 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 used self-rated health from Wave 4 when the majority of respondents entered early adulthood. The survey item reads “*In general, how is your health*?” with possible response categories of excellent, very good, good, fair, and poor. I recoded this 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 poor self-rated health is an evident predictor of mortality and morbidity (Idler & Benyamini, 1997).

Independent Variable Measures

The main independent variable is a composite variable of race taken from Waves 1 and 3. Since 1994, respondents have had the option of selecting one or more racial groups (*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 race category (*Which one category best describes your racial background?*). Respondents who self-categorized more than one race were considered multiracial. The races used to prepare the categories over time include White (reference), Black, American Indian, Asian, Other Race, and Multiracial. After the six race categories were established I captured the changes in categorization over time. The categories used in this analysis were consistent monoracial, switching monoracial, consistent multiracial, and switching multiracial including diversifiers (from one to many races) and consolidators (from many to one race).

Consistent monoracial is used to describe respondents who reported the same monoracial (single race) categories in both Waves 1 and 3. *Switching monoracial* is used to capture respondents who selected a different monoracial (single race) category in either Wave 1 or in Wave 3. In past studies, researchers have argued that the individuals who switch monoracial categories over time are possibly multiracial. For the purpose of this paper I left switching monoracial as a stand-alone group. *Consistent multiracial* is used to describe respondents that selected the same race categories (two or more) in both Waves 1 and 3. Multiracial individuals were labeled distinctly as switching multiracial if they changed racial categories in either Wave 1 or 3. *Diversifying switching multiracial* is used to describe respondents who selected a single race category in Wave 1 and selected more than one race categories in Wave 3. *Consolidating switching multiracial* is used to describe respondents who selected two or more race categories in

Wave 1 and selected only one race category in Wave 3. In sum there are five groups used in the analysis: consistent monoracial, switching monoracial, consistent multiracial, diversifying switching multiracial, and consolidating switching multiracial.

Covariates

Early Life Socioeconomic Status

Mother's education is the proxy that I used for early life socioeconomic status. The question was originally ordered into seven categories: none, less than 8th grade, 8th-12th grades, high school or general equivalency diploma (GED), some post-high school, college graduate, professional/graduate training. I collapsed this measure to three distinct categories: (a) less than high school, (b) high school, which includes GED and post-high school, and (c) college degree, which includes 4-year degree and beyond. This measure is a valid proxy for socioeconomic status in early life. Past studies found differences in switching racial categories by mother's education (Doyle Kao& Koa, 2007; Hitlin et al.& Elder, 2006).

Nativity

Nativity is included in this analysis and captured in the first wave of data. Past studies showed foreign-born respondents were less likely to self-categorize as multiracial (Campbell, 2010).

Gender

Gender was captured in the first wave of data. Gender is included in the model due to possible differences in self-report of health by gender. Past studies showed that adolescent women were more likely to report fair to poor self-rated health (Goodman, 1999).

Age

Age was captured in the third wave of data. Age is included in the analysis in accordance with past research. Past studies found that age is associated with a lower likelihood to self-report fair/poor self-rated health and that individuals who change from many to one race are younger (Hitlin et al.& , 2006)). Additionally, theories from social psychology state that the self-categorization process is complete near the end of adolescence; thus, age is included as a factor (Doyle & Kao, 2007).

Ethics Approval

Add Health study procedures were approved by the Human Subjects Review Committee at the University of North Carolina, Chapel Hill. The present study was approved by the Center for Studies in Demography and Ecology at the University of Washington under contractual agreement from the Carolina Population Center at the University of North Carolina, Chapel Hill.

Analysis

All analyses were conducted using STATA software version SE 12 (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 non-Hispanic general population in 2008. This weighting technique accounts for the sampling technique (oversampling) and inconsistencies in response across four waves of data. Univariate analyses were used to describe the sample characteristics and differences across time points. Differences in self-rated health were tested using multivariate logistic regression analysis.

Results

Descriptive Statistics

Table 4.1 presents the sample proportions by race. In both Wave 1 and Wave 3, White Americans make up the majority of the weighted samples. Nearly 17% of respondents self-categorized as Black. Less than 1% self-categorized as American Indian, although I noticed there is a slight increase in the proportion in Wave 3. Nearly 4% categorized as Asian American in both Wave 1 and Wave 3. Less than 1% self-categorized as non-Hispanic monoracial Other in Wave 1. This distinction is important because in the full Add Health sample the majority of respondents who categorized themselves as Other also selected Hispanic ethnicity. In Wave 3 the Other category was not presented as an option. In each wave multiracial respondents constitute nearly 4% of the sample. Unfortunately, Table 4.1 is unable to provide the information on the changes in categorization over time. If I were to use either Wave 1 or Wave 3 in a cross-sectional design the proportions would be similar across the two; thus, I might not observe the change across categories. In fact, not all respondents answered the same in all waves. There are changes across Waves 1 and 3, and these changes in racial category are presented in a cross-tabulation of race by wave in Table 4.2.

Table 4.2 presents an unweighted cross-tabulation of self-categorized race. The table presents the inconsistencies between the two waves of data. Among the study respondents 4,987 self-categorized as White in Wave 1 and Wave 3. Among those who self-categorized as Black, 1,751 self-categorized consistently in those two waves. Among those who self-categorized as American Indian, 32 self-categorized the same in Waves 1 and 3. Among those who categorized themselves as Asian, 499 selected the same category across Wave 1 and Wave 3. Last, among Multiracial individuals, 135 self-categorized into the same Multiracial group in Waves 1 and 3.

Table 4.3 shows the unweighted sample sizes and the weighted proportions for inconsistencies in categorization over time in an effort to display these changes. Between the two collection points, the overwhelming majority (92%) of the sample reported a consistent single racial category referred to as *consistent monoracial*. A much smaller proportion (2%) of respondents switched from one category to an entirely different category. This group is referred to as *switching monoracial*. In total 6% of the sample identified as multiracial at some point in the study. One percent of the sample categorized into the same two or more racial categories between Wave 1 and Wave 3. In contrast, 5% of the sample switched into or out of the multiracial category. In this group of switching multiracial there are diversifiers, individuals who switched from one race in Wave 1 to many races in Wave 3. There are also consolidators who switched from many races in Wave 1 to a single racial category in Wave 3.

Multivariate Statistics

Table 4.4 presents results from the multivariate logistic regression analysis of the association between self-rated health and self-reported race controlling for a number of covariates. Model 1 reports the results of the bivariate association between fair/poor self-rated health and racial categorization over time. The effects are not significant for any particular group. Model 2 adds the socioeconomic status measure and the odds ratio (*OR*) for switching multiracial adults is significant. In Model 2, diversifying multiracial young adults are significantly less likely (*OR* = 0.29; 95% CI [.10-.85]) to report fair/poor self-rated health compared with consistent monoracial young adults. Model 3 adds nativity to the analysis; the odds ratios are no different from those of Model 2. The last model, Model 4, adds two social characteristics, gender and age. Model 4 presents the same findings: There are no statistically significant differences in fair/poor self-rated health, neither between switching monoracial and consistent monoracial young adults nor between consistent multiracial and consistent monoracial young adults. There are statistically significant differences between diversifying multiracial young adults and consistent monoracial young adults (*OR* = .30; 95% CI [.10-.85]). In all adjusted models, mother's level of education is associated with fair/poor self-rated health.

Table 4.5 presents results of a multivariate logistic regression of four models to predict self-rated health for young adults who self-categorize race at two time points. Model 1 reports the odds ratios and confidence intervals for four groups of respondents with both monoracial majority and monoracial minority respondents who self-categorized consistent race data. In Model 1 there were no significant differences in fair/poor self-rated health between consistent monoracial majority respondents and switching monoracial, consistent multiracial, or consolidating multiracial respondents. In Model 1 I found that multiracial respondents who diversify from one racial category in Wave 1 to many racial categories in Wave 3 are less likely to report fair or poor self-rated health compared with monoracial consistent minority respondents (OR = 0.31; 95% CI [0.12-0.77]). The trend in association between diversifying multiracial self-categorization and less likelihood to report fair/poor self-rated health compared with monoracial respondents remained in all adjusted models. In Model 4 the significant difference in self-rated health between consistent monoracial minority respondents and diversifying multiracial respondents remain. Diversifying multiracial respondents are less likely to report fair/poor self-rated health in the fully adjusted model (OR = 0.20; 95% CI [0.06-0.60]).

Discussion

The central aim of this study was to learn whether changes in racial categorization over time were associated with a measure of self-reported health. This study sought to test two hypotheses related to racial categorization and adverse implications for health. My first hypothesis was that people with a stable racial identity would have better health outcomes. I found that the self-categorization process over time did explain some of the effect of the differences in self-rated health among young adults. Contrary to my hypothesis I found switching multiracial respondents were less likely to report fair/poor self-rated health compared with consistent monoracial respondents. This finding is surprising given the past literature which found that those who switch racial categories over time are more likely to report lower self-esteem than those who did not switch. This finding is curious and future studies are needed that examine other self-report measures such as self-rated mental health to learn the potential patterns by group. Within this hypothesis I also expected to find that multiracial Americans who switch race to a single race category would have worse health outcomes. Contrary to my hypothesis, I did not find significant differences for multiracial Americans who consolidate to a single race category. Although the percentage of individuals who switch racial categories is relatively small, the use of cross-sectional racial categories could produce different results. Future research is needed to learn whether there are distinct differences in racial categorization for specific monoracial and multiracial groups.

My second hypothesis was that multiracial respondents who change their racial category would report greater fair/poor self-rated health compared with both consistent monoracial majority and consistent monoracial minority young adults. Counter to what I expected, I did not observe differences in self-rated health for consistent multiracial and consolidating multiracial respondents compared with both monoracial majority and monoracial minority counterparts. I did not find significant differences in self-rated health when switching monoracial were compared with both consistent monoracial groups. Instead, I found that multiracial Americans who diversify from a single race category to several categories are less likely to report fair/poor self-rated health. One possible explanation for this association between better health and switching racial categories is racial fluidity as a protective factor to health risks. This finding aligns with past qualitative research with individuals who change racial categories over time. The ability to move in and out of racial categories is often associated with a protean identity (i.e., the process by which multiracial respondents assign themselves to whatever category they deem appropriate based upon the context) (Rockquemore & Brunsma, 2004). Protean identity is theoretically a protective factor from stressors for multiracial individuals. To adapt to context and place individuals with a protean identity switch categories to attempt to avoid discriminatory situations. The process of protean identity aligns with ecological models of identity expression over time and place (Rockquemore & Brunsma, 2004; Rockquemore, Brunsma, & Delgado, 2009) and racial formation related to social and political context (Omi & Winant, 1994). To date, this perspective is not widely used in health research. Scholars acknowledge that the approach of protean expression of race is usually based upon biological assumptions of race within a health context (Drevdahl, Philips, & Taylor, 2006; Tashiro, 2005). Whether individuals with a protean identity have better or worse health outcomes has yet to be established.

Racial categorization is a parallel process to racial identification. For the overwhelming majority of Americans, selecting a racial category is a single uncontested choice. Multiracial Americans are individuals who select more than one race when given the option. For some multiracials, the ability to change racial categories might be an important facet of identity (Samuels, 2009). There are several competing hypotheses as to why people switch in and out of racial categories. For some the change in categories could be associated with adverse experiences and, accordingly, are a proxy for racial discrimination or change in self-concept as a result of an adverse experience (e.g., incarceration). For others the change in categorization could be a function of social mobility and change in social class (Korgen, 2010). Or even possibly for others, the change in race over time could reflect responses to policy implementation in a post-civil rights era. Good et al. (2010) examined the use of affirmative action policies and reported that there are several profiles of people who switch into and out of racial categories. Brunmsa (2005) connected the ability to choose different races to “push” factors, certain life experiences that act as a catalyst for people to self-identify differently. Future research is needed to understand the push factors of changes in self-identification and how health is related. Furthermore, the ability to label oneself with different racial groups/categories might be a part of an individual’s identity, as qualitative studies have discovered (Rockequemore & Brunsma 2004). In health settings the ability to select and/or change in and out of racial categories might be restricted for a variety of reasons, such as third-party racial assignment (Herman, 2010). Thus, health settings can be contextually discriminatory for multiracial individuals (Tashiro, 2005), and the perception of discrimination can be further distressing if multiracial individuals feel forced to choose (Herman, 2004). Future studies are needed to learn how multiracial individuals interact with the health care system and which differences exist among those who report a consistent race over time and those who switch in and out of races.

Last, these results have implications for research and social work practice in terms of how practitioners think about racial inequality in America. It is important for social workers to know that reports of race are fluid and may change over time. Individuals who switch racial categories are more likely to identify as multiracial at some point over the life course. As this study found, racial categorization over time is related to health outcomes for some multiracial persons. Future research is needed to examine changes in racial categorization as it relates to all aspects of social work practice.

Limitations

There are some limitations in this present study. First, past studies have compared interviewers' responses with the respondents to see whether there is concordance in racial categorization. Bratter and Gorman (2011) examined the Behavioral Risks Factor Surveillance System cross-sectional data and found that there was an association between self-rated health and discordance in interviewers' perception of race and the self-categorization of race. Second, past examinations of the Add Health sample revealed no difference by skin color (Doyle & Kao, 2007). This finding suggests that although no differences were found in a sample of American young adults, there might be more to investigate with the skin color and phenotypes associated with switching race over time in other samples. Third, ethnicity and ethnic identity are cited as critical factors related to consistent self-categorization over time. For foreign-born respondents, being asked to categorize both race and ethnicity on surveys may lead to confusion for the respondent (Campbell, 2010). In this study I did not include the ethnicity measure in this study, so all Hispanic respondents were excluded.

Conclusion

Now more than ever before, race is an unstable construct for the majority of multiracial young adults in the United States. At the same time, race is used in the majority of health research often as a proxy for unmeasured factors (LaVeist, 1994). In quantitative studies race is assumed to be stable. Cross-sectional studies mask the fluidity of this characteristic. Several recent longitudinal studies found that there are inconsistencies in race over time for a small subset of respondents in a number of samples. Future studies are needed to further investigate the changes in race across the life course and related health disparities.

Table 4.1

Weighted Sample Proportions Add Health Sample Wave 1 (1994) and Wave 3 (2003)

	Wave 1 (%)	Wave 3 (%)
White	74.84	74.85
Black	16.64	16.95
Native	0.57	0.71
Asian	3.50	3.61
Other	0.82	---
Multiracial	3.62	3.89

Note. N = 7,957.

Table 4.2
Cross-Tabulations of Racial Categorization Self-Report in Wave 1 and Wave 3

	Wave 3					
Wave 1	White	Black	Native	Asian	Multiracial	Total
White	4,987	5	2	3	131	5,128
Black	10	1,751	5	0	46	1,812
Native	7	1	32	2	8	50
Asian	8	1	12	499	19	539
Other	28	12	2	14	6	62
Multiracial	110	87	10	24	135	366
Total	5,150	1,857	63	542	345	7,957

Table 4.3

Sample Characteristics of Racial Categorization Add Health (1994-2003)

	Unweighted Sample Size	Weighted Sample Proportion (%)
Non-switching monoracial	7,269	0.92
Monoracial Majority	*4,987*	
Monoracial Minority	*2,282*	
Switching monoracial	137	0.02
Non-switching multiracial	109	0.01
Switching multiracial	442	0.05
Diversifier	*236*	
Consolidator	*206*	
Total	7,957	

Note. N = 7,957.

Table 4.4

Mutlivariate Logistic Regression to Predict Fair/Poor Self-Rated Health by Independent Variables of Sample Present in Multivariate Analysis

	Model 1 OR 95% CI	Model 2 OR 95% CI	Model 3 OR 95% CI	Model 4 OR 95% CI
Variable	*N* = 7,957	*N* = 7,551	*N* = 7,551	*N* = 7,551
Consistent monoracial	1.0	1.0	1.0	1.0
Switching monoracial	0.98 0.47-2.03	0.94 0.44-2.01	0.94 0.44-2.00	0.94 0.44-2.10
Consistent multiracial	1.35 0.43-4.25	0.84 0.23-3.02	0.84 0.23-3.02	0.83 0.22-3.03
Switching multiracial: consolidator	1.17 0.65-2.10	1.01 0.51-1.98	1.01 0.51-1.98	1.01 0.51-1.99
Switching multiracial: diversifier	0.45 0.19-1.06	0.29* 0.10-.85	0.29* 0.10-0.85	0.30* 0.10-0.85
Childhood SES				
Mother's education				
Less than high school		1.0	1.0	1.0
High school diploma		0.56*** 0.44-0.71	0.56*** 0.43-0.71	0.56*** 0.44-0.72
College graduate		0.47*** 0.36-0.61	0.47*** 0.36-0.61	0.48*** 0.36-0.62
Nativity				
Foreign born			1.00 0.52-1.92	0.98 0.51-1.88
Gender				
Female				0.94 0.78-1.14
Age				1.03 0.96-1.11

Note. SES = socioeconomic status. *N* = 7,957; **p* < .05, ***p* < .01, ****p* < .001.

Table 4.5

Multivariate Logistic Regression Models to Predict Fair/Poor Self-Rated Health, Multiracial Compared With Consistent Monoracial Majority and Monoracial Minority: Add Health Sample 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				
Switching Monoracial				
Consistent Majority	1.13 (0.54-2.36)	1.12 (0.52-2.41)	1.15 (.54-2.48)	1.16 (0.54-2.49)
Consistent Minority	0.64 (0.30-1.36)	0.61 (0.27-1.35)	0.62 (0.28-1.36)	0.62 (0.28-1.37)
Consistant Multiracial				
Consistent Majority	1.56 (0.49-4.92)	1.03 (0.28-3.73)	1.04 (0.29-3.77)	1.04 (0.28-3.77)
Consistent Minority	0.88 (0.27-2.84)	0.56 (0.15-2.07)	0.56 (0.15-2.06)	0.56 (0.15-2.07)
Consolidating Multiracial				
Consistent Majority	1.24 (0.69-2.23)	1.10 (0.56-2.15)	1.10 (0.56-2.15)	1.10 (0.56-2.16)
Consistent Minority	0.70 (0.37-1.31)	0.60 (0.29-1.21)	0.59 (0.29-1.19)	0.59 (0.29-1.19)
Diversifying Multiracial				
Consistent Majority	0.55 (0.23-1.30)	0.37 (0.13-1.06)	0.37 (0.13-1.06)	0.37 (0.13-1.07)
Consistent Minority	0.31* (0.12-0.77)	0.20** (0.06-0.60)	0.20**(0.06-0.59)	0.20**(0.06-0.6)

Note. *p < .05, **p < .01, ***p < .001.

[a] N = 7,957, bivariate associations.

[b] N = 7,551, controlling for socioeconomic status (mother's education).

[c] N = 7,551, controlling for socioeconomic status (mother's education) and nativity.

[d] N = 7,551, controlling for socioeconomic status (mother's education), nativity, age, and gender.

References

Bonam, C. M., & Shih, M. (2009). Exploring multiracial individuals' comfort with intimate interracial relationships. *Journal of Social Issues, 65*(1), 87-103.

Bowles, D. (1993). Bi-racial identity: Children born to African-American and White couples. *Clinical Social Work Journal, 21*(4) 417-428.

Bratter, J. L., & Gorman, B. K. (2011). Does multiracial matter? A study of racial disparities in self-rated health. *Demography, 48*(1), 127-152.

Carey, L. A., Perou, C. M., Livasy, C. A., Dressler, L. G., Cowan, D., Conway, K., . . . Millikan, R. C. (2006). Race, breast cancer subtypes, and survival in the Carolina Breast Cancer Study. *Journal of the American Medical Association*, *295*(21), 2492-2502.

Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Social Science & Medicine, 50*(10), 1385-1401.

Dalmage, H. M. (2004). *The politics of multiracialism: Challenging racial thinking*. Albany: State University of New York Press.

Doyle, J. M., & Kao, G. (2007). Are racial identities of multiracials stable? Changing self-identification among single and multiple race individuals. *Social Psychology Quarterly, 70*(4), 405-423.

Drevdahl, D. J., Philips, D. A., & Taylor, J. Y. (2006). Uncontested categories: The use of race and ethnicity variables in nursing research. *Nursing Inquiry, 13*(1), 52-63.

Good, J. J., Chavez, G. F., & Sanchez, D. T. (2010). Sources of self-categorization as minority for mixed-race individuals: Implications for affirmative action entitlement. *Cultural Diversity and Ethnic Minority Psychology, 16*(4), 453-460.

Goodman, E. (1999). The role of socioeconomic status gradients in explaining differences in US adolescents' health. *American Journal of Public Health, 89*(10), 1522-1528.

Harris, D. R., & Sim, J. J. (2002). Who is multiracial? Assessing the complexity of lived race. *American Sociological Review, 67*(4), 614-627.

Heisler, M., Smith, D. M., Hayward, R. A., Krein, S. L., & Kerr, E. A. (2003). Racial disparities in diabetes care processes, outcomes, and treatment intensity. *Medical Care, 41*(11), 1221-1232.

Herman, M. (2004). Forced to choose: Some determinants of racial identification in multiracial adolescents. *Child Development, 75*(3), 730-748.

Herman, M. (2010). Do you see what I am? How observers' backgrounds affect their perceptions of multiracial faces. *Social Psychology Quarterly, 73*(1), 58-78.

Hitlin, S., Brown, J. S., & Elder, G. H. (2006). Racial self-categorization in adolescence: Multiracial development and social pathways. *Child Development, 77*(5), 1298-1308.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38*(1), 21-37.

Korgen, K. O. (2010). *Multiracial Americans and social class: The influence of social class on racial identity*. New York, NY: Routledge.

LaVeist, T. A. (1994). Beyond dummy variables and sample selection—What health-services researchers ought to know about race as a variable. *Health Services Research, 29*(1), 1-16.

McRoy, R., & Freeman, E. (1986). Racial-identity issues among mixed-race children. *Social Work in Education, 8*(3) 164-174.

Nishina, A., Bellmore, A., Witkow, M.R., Nylund-Gibson, K. (2010). Longitudinal consistency of adolescent ethnic identification across varying school ethnic contexts. *Developmental Psychology*, 46(6), 1389-1401.

Omi, M., Winant, H. (1994). *Racial formation in the United States: from the 1960s to the 1990s*. New York: Routledge.

Ong, K. L., Cheung, B. M. Y., Man, Y. B., Lau, C. P., & Lam, K. S. L. (2007). Prevalence, awareness, treatment, and control of hypertension among United States adults 1999-2004. *Hypertension, 49*(1), 69-75.

Rockquemore, K. A. (2002). Negotiating the color line—The gendered process of racial identity construction among Black/White biracial women. *Gender & Society, 16*(4), 485-503.

Rockquemore, K. A., & Brunsma, D. L. (2004). Negotiating racial identity: Biracial women and interactional validation. *Women & Therapy, 27*(1-2), 85-102.

Rockquemore, K. A., Brunsma, D. L., & Delgado, D. J. (2009). Racing to theory or retheorizing race? Understanding the struggle to build a multiracial identity theory. *Journal of Social Issues, 65*(1), 13-34.

Root, M. P. P. (1992). *Racially mixed people in America*. Newbury Park, CA: Sage Publications.

Ruebeck, C., Averett, S., & Bodenhorn, H. (2008). Acting White or acting Black: Mixed-race adolescents' identity and behavior. *The B.E. Journal of Economic Analysis & Policy, Berkeley Electronic Press, 9*(1). Retrieved from http://www.nber.org/papers/w13793

Samuels, G. (2009). Using the extended case method to explore identity in a multiracial context. *Ethnic and Racial Studies,* 32(9), 1599-1618.

Sanchez, D. T., Shih, M., & Garcia, J. A. (2009). Juggling multiple racial identities: Malleable racial identification and psychological well-being. *Cultural Diversity and Ethnic Minority Psychology, 15*(3), 243-254.

Saperstein, A. (2012). Capturing complexity in the United States: Which aspects of race matter and when? *Ethnic and Racial Studies, 35*(8), 1484-1502.

Saperstein, A., & Penner, A. M. (2010). The race of a criminal record: How incarceration colors racial perceptions. *Social Problems, 57*(1), 92-113.

Tashiro, C. J. (2005). Health disparities in the context of mixed race—Challenging the ideology of race. *Advances in Nursing Science, 28*(3), 203-211.

Townsend, S. S. M., Markus, H. R., & Bergsieker, H. B. (2009). My choice, your categories: The denial of multiracial identities. *Journal of Social Issues, 65*(1), 185-204.

CHAPTER 5: IMPLICATIONS FOR SOCIAL WORK AND FINAL REMARKS

This dissertation is placed within a context of health disparities research in a time where substantial emphasis is placed upon identifying the social determinants of health. Racial and ethnic health disparities are observed using racial categories in health research. At the same time, perceptions of race and racial categorization are changing. This change is evident throughout several studies that report on the health and mental health of the two-or-more race population. In this dissertation I examined the health and health service use of several racial subgroups using self-categorized race. This dissertation was designed to provide better insight to the health of multiracial Americans using a self-categorization approach. It is quite possible that multiracial status or self-categorization into two or more categories will only last one generation. The majority of multiracial individuals report biracial identity and this is different from both their parents and their children (Gullickson & Morning, 2011). It is also possible that individuals from interracial parentage are the most likely to identify as multiracial. Despite these caveats there is an ethical obligation to document the health and health disparities of the multiracial population. By including this growing population in health research we can better understand the health and health disparities of individuals that identify as belonging to two or more race categories. Furthermore, inclusion of a multiracial group provides a more holistic perspective of the health status of Americans.

Some of the explanation for the lack of multiracials in health research is related to methodological issues and some is simply attributed to the manner in which data were collected prior to the 2000 Census. The common methodological problems when including multiracials in health research include small sample sizes, issues with missing data, and increasing self-report of race and ethnicity (Bilheimer & Sisk, 2008; Jackson, 2010; Root, 1992). Accordingly, there are several approaches used to classify multiracial individuals in health research. Past studies define multiracial in terms of mixed ancestry, racial assignment, and self-identification (Woo, Austin, Williams, & Bennet, 2011). First, in studies where mixed ancestry is considered, the race of the parents or even grandparents is often used to determine whether offspring are multiracial. Ancestry can thus be taken from reports of either the parents’ or grandparents’ race. Studies that examine child outcomes often use the race of the parents to assign both interracial and multiracial groups. Second, racial assignment by third-party observers is another approach used to identify multiracials. Assignment is often used in studies where the subjects are youth; in that case, parental assignment is typical. However, in clinical research on multiracials, the racial assignment often comes from third parties such as physicians or front desk clerks (Herman, 2010). Assignment may depend upon descriptions of phenotypes and upon perceptions of the assigner. Several studies have examined the mismatch between multiracial self-categorization and observer assignment. Third, self-categorization or self-identification uses reports from respondents themselves to determine race. A pronounced example of the self-categorization approach is the current system for recording race on the current U.S. Census form. Whereas past censuses used enumerators to assign race, the current system allows respondents to self-select race (Hirschman et al., 2000; Snipp, 2003). With the 2000 Census, the Office of Management and Budget changed the categories to allow selection of two or more categories: Respondents could select from one to six racial categories when self-reporting race. Nearly 3% of Americans self-categorized as multiracial on the 2010 census. Despite this small fraction of Americans who categorize as multiracial, the examination of the census categories is key because they set the course for the collection of racial and ethnic data until the next decennial census. Accordingly, the responses to self-categorization on the census yield implications for the collection of race data in health research and the upwards of 3% of multiracial respondents.

This dissertation carried out three aims to contribute to our understanding of the social determinants of health and specific mechanisms of multiracial health disparities. Currently in social work, there is not a unified theory that captures health and health outcomes and self-identified multiracial young adults. Accordingly, I drew from several theoretical frameworks to test hypotheses for each aim. The theories that informed this research are self-categorization theory (Paulus, 1989), multiracial identity formation (Jackson, 2009; Rockquemore et al., 2009), and life-course perspectives (Colen, 2011; Krieger, 2001; Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003). In the second chapter, I found that examining health outcomes by self-categorized race for specific multiracial groups revealed significant differences. This finding supports the multiracial identity perspective that multiracial Americans are a variant group and experience unique patterns of health and health disparities. In the third chapter, I found that some specific multiracial subgroups use health services less frequently than their monoracial counterparts during young adulthood. This finding not only contributes to the body of research on multiracial American young adult health service use, but also contributes to the study of health across the life course. In the fourth chapter, I found that health outcomes vary when examining changes in racial self-categorization over time. In fact, I found better health among a set of individuals that select a single race in adolescence and later select many race categories in early adulthood. Combined these findings add to our understanding of self-categorized race in health research. More importantly, these findings assist in the building of a foundation to study the social determinants of health within social work. In all three studies I accounted for intergenerational factors, namely mother’s level of education as a proxy for socioeconomic status. In each analysis there were significant differences by mother's level of education. This use of this indicator alone can assist in future studies on early life risk and later life health outcomes.

This dissertation was designed to examine topics pertinent to mezzo and macro practice areas. Substantively, the findings revealed in these three studies are relevant across the micro, mezzo, and macro levels of health practice. Across all three levels of social work practice and systems of health care individuals that self-categorize in two or more race categories exist. Furthermore, social work and health practice is not constrained to a limited set of ages. As found in this dissertation the complex social determinants of health span across the life course. More than ever before research is needed to disentangle the social factors such as racial self-categorization and identify the causal mechanisms for disease and illness. This dissertation found that some racial and ethnic minority groups report better health when examined by specific racial subgroup. More research is needed to investigate the association of self-categorized race and additional health outcomes for young adults in the United States. Therefore, the natural progression of subsequent research will be identification of points of intervention and prevention policy related to health disparities and racial categorization across the life course.

References

Bilheimer, L. T., & Sisk, J. E. (2008). Collecting adequate data on racial and ethnic disparities in health: The challenges continue. *Health Affairs, 27*(2), 383-391.

Colen, C. (2011). Addressing racial disparities in health using life course perspectives. *Du Bois Review, 8*(1), 79-94.

Gullickson A., and Morning A. (2011). Choosing race: multiracial ancestry and identification. *Social Science Research. 40*(2): 498-512.

Herman, M. (2010). Do you see what I am? How observers' backgrounds affect their perceptions of multiracial faces. *Social Psychology Quarterly, 73*(1), 58-78.

Hirschman, C., Alba, R., & Farley, R. (2000). The meaning and measurement of race in the US census: Glimpses into the future. *Demography, 37*(3), 381-393.

Jackson, K. (2010a). Ethical considerations in social work research with multiracial individuals. *Journal of Social Work Values and Ethics, 7*(1).

Jackson, K. (2010b). Living the multiracial experience: Shifting racial expressions, resisting race, and seeking community. *Qualitative Social Work, 11*(1), 42-60.

Krieger, N. (2001). A glossary for social epidemiology. *Journal of Epidemiology and Community Health, 55*(10), 693-700.

Kuh, D., Ben-Shlomo, Y., Lynch, J., Hallqvist, J., & Power, C. (2003). Life course epidemiology. *Journal of Epidemiology and Community Health, 57*(10), 778-783.

Paulus, P. B. (1989). *Psychology of group influence*. Hillsdale, NJ: Erlbaum.

Rockquemore, K. A., Brunsma, D. L., & Delgado, D. J. (2009). Racing to theory or retheorizing race? Understanding the struggle to build a multiracial identity theory. *Journal of Social Issues, 65*(1), 13-34.

Root, M. P. P. (1992). *Racially mixed people in America*. Newbury Park, CA: Sage Publications.

Snipp, C. M. (2003). Racial measurement in the American census: Past practices and implications for the future. *Annual Review of Sociology, 29*, 563-588.

Woo, M., Austin, S., Williams, D. R., & Bennett, G. G. (2011). Reconceptualizing the measurement of multiracial status for health research in the United States. *DuBois Review, 8*(1), 25-36.

BIBLIOGRAPHY

Abe-Kim, J., Takeuchi, D. T., Hong, S., Zane, N., Sue, S., Spencer, M. S., . . . Alegria, M. (2007). Use of mental health-related services among immigrant and US-born Asian Americans: Results from the National Latino and Asian American study. *American Journal of Public Health, 97*(1), 91-98.

Alexander, G., Mor, J., Krgan, M., Leland, N., & Kieffer, E. (1996). Pregnancy outcomes of US-born and foreign-born Japanese Americans. *American Journal of Public Health, 86*(6), 820-824.

Almgren, G. R. (2007). *Health care politics, policy, and services a social justice analysis*. New York, NY: Springer.

Baker, D. W., Cameron, K. A., Feinglass, J., Georgas, P., Foster, S., Pierce, D., . . . Hasnain-Wynia, R. (2005). Patients' attitudes toward health care providers collecting information about their race and ethnicity. *Journal of General Internal Medicine, 20*(10), 895-900.

Baker, D. W., Cameron, K. A., Feinglass, J., Thompson, J. A., Georgas, P., Foster, S., . . . Hasnain-Wynia, R. (2006). A system for rapidly and accurately collecting patients' race and ethnicity. *American Journal of Public Health, 96*(3), 532-537.

Bilheimer, L. T., & Sisk, J. E. (2008). Collecting adequate data on racial and ethnic disparities in health: The challenges continue. *Health Affairs, 27*(2), 383-391.

Birndorf, C. A., Madden, A., Portera, L., & Leon, A. C. (2001). Psychiatric symptoms, functional impairment, and receptivity toward mental health treatment among obstetrical patients. *International Journal of Psychiatry in Medicine, 31*(4), 355-365.

Blendon, R. J., Buhr, T., Cassidy, E. F., Perez, D. J., Hunt, K. A., Fleischfresser, C., . . . Herrmann, M. J. (2007). Disparities in health: Perspectives of a multi-ethnic, multi-racial America. *Health Affairs (Millwood), 26*(5), 1437-1447.

Blendon, R. J., Buhr, T., Cassidy, E. F., Perez, D. J., Sussman, T., Benson, J. M., & Herrmann, M. J. (2008). Disparities in physician care: Experiences and perceptions of a multi-ethnic America. *Health Affairs (Millwood), 27*(2), 507-517. Boardman, J. D. (2006). Self-rated health among U.S. adolescents. *Journal of Adolescent Health, 38*(4), 401-408.

Bonam, C. M., & Shih, M. (2009). Exploring multiracial individuals' comfort with intimate interracial relationships. *Journal of Social Issues, 65*(1), 87-103.

Bowen, A., Stewart, N., Baetz, M., & Muhajarine, N. (2009). Antenatal depression in socially high-risk women in Canada. *Journal of Epidemiology and Community Health, 63*, 414-416.

Bowles, D. (1993). Bi-racial identity: Children born to African-American and White couples. *Clinical Social Work Journal, 21*(4), 417-428.

Boyd, R. C., Le, H. N., & Somberg, R. (2005). Review of screening instruments for postpartum depression. *Archives of Womens Mental Health, 8*(3), 141-153.

Brackett, K. P., Marcus, A., McKenzie, N. J., Mullins, L. C., Tang, Z. L., & Allen, A. M. (2006). The effects of multiracial identification on students' perceptions of racism. *Social Science Journal, 43*(3), 437-444.

Bratter, J. L., & Gorman, B. K. (2011). Does multiracial matter? A study of racial disparities in self-rated health. *Demography, 48*(1), 127-152.

Browning, C. R., Cagney, K. A., & Wen, M. (2003). Explaining variation in health status across space and time: Implications for racial and ethnic disparities in self-rated health. *Social Science & Medicine, 57*(7), 1221-1235.

Brunsma, D. L. (2005). Interracial families and the racial identification of mixed-race children: Evidence from the early childhood longitudinal study. *Social Forces, 84*(2), 1131-1157.

Brunsma, D. L. (2006). Public categories, private identities: Exploring regional differences in the biracial experience. *Social Science Research, 35*(3), 555-576.

Buescher, P. A., Gizlice, Z., & Jones-Vessey, K. A. (2005). Discrepancies between published data on racial classification and self-reported race: Evidence from the 2002 North Carolina live birth records. *Public Health Reports, 120*(4), 393-398.

Bui, K. V. T., & Takeuchi, D. T. (1992). Ethnic-minority adolescents and the use of community mental-health-care services. *American Journal of Community Psychology, 20*(4), 403-417.

Bullock, J. (2010). *Multiracial politics or the politics of being multiracial?: Racial theory, civic engagement, and socio-political participation in a contemporary society* (Unpublished doctoral dissertation). University of Southern California, Los Angeles.

Callahan, S. T., & Cooper, W. O. (2004). Gender and uninsurance among young adults in the United States. *Pediatrics, 113*(2), 291-297.

Callahan, S. T., & Cooper, W. O. (2005). Uninsurance and health care access among young adults in the United States. *Pediatrics, 116*(1), 88-95.

Callahan, S. T., & Cooper, W. O. (2006). Access to health care for young adults with disabling chronic conditions. *Archives of Pediatric Adolescent Medicine, 160*(2), 178-182.

Campbell, M. E. (2007). Thinking outside the (black) box: Measuring Black and multiracial identification on surveys. *Social Science Research, 36*(3), 921-944.

Carson, N., Le Cook, B., & Alegria, M. (2010). Social determinants of mental health treatment among Haitian, African American, and White youth in community health centers. *Journal of Health Care for the Poor and Underserved, 21*(2) Suppl:, 32-48.

CDC/NHS. (2012). *Health, United States, 2011: With special feature on socioeconomic status and health.* Hyattsville, MD: Author; 2012.

Chavez, G. F., & Sanchez, D. T. (2010). A clearer picture of multiracial sustance use: Rates and correlates of alcohol and tobacco use in multiracial adolescents and adults. *Race and Social Problems, 2*, 1-18.

Cheng, S., & Lively, K. J. (2009). Multiracial self-identification and adolescent outcomes: A social psychological approach to the marginal man theory. *Social Forces, 88*(1), 61-98.

Choi, Y. (2007). Academic achievement and problem behaviors among Asian Pacific Islander American adolescents. *Journal of Youth and Adolescence, 36*(4), 403-415.

Choi, Y., Harachi, T. W., Gillmore, M. R., & Catalano, R. F. (2006). Are multiracial adolescents at greater risk? Comparisons of rates, patterns, and correlates of substance use and violence between monoracial and multiracial adolescents. *American Journal of Orthopsychiatry, 76*(1), 86-97.

Chow, J. C., Jaffee, K., & Snowden, L. (2003). Racial/ethnic disparities in the use of mental health services in poverty areas. *American Journal of Public Health, 93*(5), 792-797.

Cohen, R. A., Makuc, D. M., Bernstein, A. B., Bilheimer, L. T., & Powell-Griner, E. (2009). Health insurance coverage trends, 1959-2007: Estimates from the National Health Interview Survey. *National Health Statistics Reports, 17*(July), 1-25.

Colen, C. (2011). Addressing racial disparities in health using life course perspectives. *Du Bois Review, 8*(1), 79-94.

Collins, J. W., & David, R. J. (1993). Race and birthweight in biracial infants. *American Journal of Public Health, 83*(8), 1125-1129.

Collins, S. R., & Nicholson, J. L. (2010). Rite of passage: Young adults and the Affordable Care Act of 2010. (Issue Brief No. 1404). New York, NY: Commonwealth Fund.

Comstock, R. D., Castillo, E. M., & Lindsay, S. P. (2004). Four-year review of the use of race and ethnicity in epidemiologic and public health research. *American Journal of Epidemiology, 159*(6), 611-619.

Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Social Science & Medicine, 50*(10), 1385-1401.

Dalmage, H. M. (2004). *The Politics of multiracialism: Challenging racial thinking*. Albany: State University of New York Press.

Dehlendorf, C., Bryant, A. S., Huddleston, H. G., Jacoby, V. L., & Fujimoto, V. Y. (2010). Health disparities: Definitions and measurements. *American Journal of Obstetrics and Gynecology, 202*(3), 212-213.

DeSalvo, K. B., Bloser, N., Reynolds, K., He, J., & Muntner, P. (2006). Mortality prediction with a single general self-rated health question. *Journal of General Internal Medicine, 21*(3), 267-275.

Dhooper, S. S., & Moore, S. E. (2001). *Social work practice with culturally diverse people*. Thousand Oaks, CA: Sage Publications.

Doyle, J. M., & Kao, G. (2007). Are racial identities of multiracials stable? Changing self-identification among single and multiple race individuals. *Social Psychology Quarterly, 70*(4), 405-423.

Dressler, W. W., Oths, K. S., & Gravlee, C. C. (2005). Race and ethnicity in public health research: Models to explain health disparities. *Annual Review of Anthropology, 34*, 231-252.

Drevdahl, D. J., Philips, D. A., & Taylor, J. Y. (2006). Uncontested categories: The use of race and ethnicity variables in nursing research. *Nursing Inquiry, 13*(1), 52-63.

Edelstein, B. L. (2002). Disparities in oral health and access to care: Findings of national surveys. *Ambulatory Pediatrics, 2*(2), 141-147.

Edelstein, B. L., & Chinn, C. H. (2009). Update on disparities in oral health and access to dental care for America's Children. *Academic Pediatrics, 9*(6), 415-419.

Eggleston, A. M., Calhoun, P. S., Svikis, D. S., Tuten, M., Chisolm, M. S., & Jones, H. E. (2009). Suicidality, aggression, and other treatment considerations among pregnant, substance-dependent women with posttraumatic stress disorder. *Comprehensive Psychiatry, 50*, 415-423.

El-Sayed, A., & Galea, S. (2009). The health of Arab-Americans living in the United States: A systematic review of the literature. *BMC Public Health, 9*(272-281).

Erosheva, E., Walton, E. C., & Takeuchi, D. T. (2007). Self-rated health among foreign- and U.S.-born Asian Americans: A test of comparability. *Medical Care, 45*(1), 80-87.

Finlayson, T. L., Williams, D. R., Siefert, K., Jackson, J. S., & Nowjack-Raymer, R. (2010). Oral health disparities and psychosocial correlates of self-rated oral health in the National Survey of American Life. *American Journal of Public Health, 100,* S246-S255.

Flores, G., & Tomany-Korman, S. C. (2008). Racial and ethnic disparities in medical and dental health, access to care, and use of services in US children. *Pediatrics, 121*(2), e286-e298.

Flynn, H. A., Sexton, M., Ratliff, S., Porter, K., & Zivin, K. (2011). Comparative performance of the Edinburgh Postnatal Depression Scale and the Patient Health Questionnaire-9 in pregnant and postpartum women seeking psychiatric services. *Psychiatry Research, 187*(1-2), 130-134.

Fogarty, C. T., Sharma, S., Chetty, V. K., & Culpepper, L. (2008). Mental health conditions are associated with increased health care utilization among urban family medicine patients. *Journal of the American Board of Family Medicine*, *21*(5), 398-407.

Fortuna, R. J., Robbins, B. W., & Halterman, J. S. (2009). Ambulatory care among young adults in the United States. *Annals of Internal Medicine, 151*(6), 379-385.

Franks, P., Gold, M. R., & Fiscella, K. (2003). Sociodemographics, self-rated health, and mortality in the US. *Social Science & Medicine, 56*(12), 2505-2514.

Garland, A. F., Lau, A. S., Yeh, M., McCabe, K. M., Hough, R. L., & Landsverk, J. A. (2005). Racial and ethnic differences in utilization of mental health services among high-risk youths. *American Journal of Psychiatry, 162*(7), 1336-1343.

Gavin, A. R., Tabb, K. M., Melville, J. L., Guo, Y. Q., & Katon, W. (2011). Prevalence and correlates of suicidal ideation during pregnancy. *Archives of Women's Mental Health, 14*(3), 239-246.

Gavin, A. R., Thompson, E., Rue, T., & Guo, Y. (2012). Maternal early life risk factors for offspring birth weight: Findings from the add health study. *Prevention Science, 13*(2), 162-172.

Geronimus, A. T. (1992). The weathering hypothesis and the health of African-American women and infants: Evidence and speculations. *Ethnicity & Disease, 2*(3), 207-221.

Geronimus, A. T., Hicken, M., Keene, D., & Bound, J. (2006). "Weathering" and age patterns of allostatic load scores among Blacks and Whites in the United States. *American Journal of Public Health, 96*(5), 826-833.

Gold, K. J., DeMonner, S. M., Lantz, P. M., & Hayward, R. A. (2010). Prematurity and low birth weight as potential mediators of higher stillbirth risk in mixed Black/White race couples. *Journal of Women's Health, 19*(4), 767-773.

Good, J. J., Chavez, G. F., & Sanchez, D. T. (2010). Sources of self-categorization as minority for mixed-race individuals: Implications for affirmative action entitlement. *Cultural Diversity & Ethnic Minority Psychology, 16*(4), 453-460.

Goodman, E. (1999). The role of socioeconomic status gradients in explaining differences in US adolescents' health. *American Journal of Public Health, 89*(10), 1522-1528.

Goodman, E., Huang, B., Schafer-Kalkhoff, T., & Adler, N. E. (2007). Perceived socioeconomic status: A new type of identity that influences adolescents' self-rated health. *Journal of Adolescent Health, 41*(5), 479-487.

Gullickson A., and Morning A. (2011). Choosing race: multiracial ancestry and identification. *Social Science Research. 40*(2): 498-512.

Guzzo, K. B., & Furstenberg, F. F., Jr. (2007). Multipartnered fertility among American men. *Demography, 44*(3), 583-601.

Hamilton, B. E., & Ventura, S. J. (2007). Characteristics of births to single- and multiple-race women: California, Hawaii, Pennsylvania, Utah, and Washington, 2003. *National Vital Statistics Report, 55*(15), 1-20.

Harris, K. (2011, September). *Design features of Add Health*. Chapel Hill: University of North Carolina, Carolina Population Center. Retrieved from http://www.cpc.unc.edu/projects/addhealth/data/guides/design%20paper%20WI-IV.pdf

Harris, K. M., Edlund, M. J., & Larson, S. (2005). Racial and ethnic differences in the mental health problems and use of mental health care. *Medical Care, 43*(8), 775-784.

Harris, K. M., Gordon-Larsen, P., Chantala, K., & Udry, J. R. (2006). Longitudinal trends in race/ethnic disparities in leading health indicators from adolescence to young adulthood. *Archives of Pediatriatric Adolescent Medicine, 160*(1), 74-81.

Harris, D. R., & Sim, J. J. (2002). Who is multiracial? Assessing the complexity of lived race. *American Sociological Review, 67*(4), 614-627.

Harris, D. R., & Thomas, J. L. (2002). *The educational costs of being multiracial: Evidence from a national survey of adolescents* (PSC Report No. 02-521). Ann Arbor: University of Michigan, Institute for Social Research, Population Studies Center.

Hasin, D. S., Goodwin, R. D., Stinson, F. S., & Grant, B. F. (2005). Epidemiology of major depressive disorder: Results from the National Epidemiologic Survey on Alcoholism and Related Conditions. *Archives of General Psychiatry, 62*(10), 1097-1106.

Heaman, M. I. (2005). Relationships between physical abuse during pregnancy and risk factors for preterm birth among women in Manitoba. *Journal of Obstetric Gynecologic and Neonatal Nursing, 34*(6), 721-731.

Heard, H. E., Gorman, B. K., & Kapinus, C. A. (2008). Family structure and self-rated health in adolescence and young adulthood. *Population Research and Policy Review, 27*(6), 773-797.

Heck, K. E., Parker, J. D., & McKendry, C. J. (2004). Multiple-race mortality data for California, 2000-2001. *Public Health Reports, 119*(2), 187-191.

Heck, K. E., Parker, J. D., McKendry, C. J., & Chavez, G. F. (2003). Mind the gap: Bridge methods to allocate multiple-race mothers in trend analyses of birth certificate data. *Maternal and Child Health Journal, 7*(1), 65-70.

Heck, K. E., Parker, J. D., McKendry, C. J., & Schoendorf, K. C. (2001). Multiple-race mothers on the California birth certificate, 2000. *Ethnicity and Disease, 11*(4), 626-632.

Herman, M. (2004). Forced to choose: Some determinants of racial identification in multiracial adolescents. *Child Development, 75*(3), 730-748.

Herman, M. (2010). Do you see what I am? How observers' backgrounds affect their perceptions of multiracial faces. *Social Psychology Quarterly, 73*(1), 58-78.

Heslin, K. C., Casey, R., Shaheen, M. A., Cardenas, F., & Baker, R. S. (2006). Racial and ethnic differences in unmet need for vision care among children with special health care needs. *Archives of Ophthalmology, 124*(6), 895-902.

Hirschman, C., Alba, R., & Farley, R. (2000). The meaning and measurement of race in the US census: Glimpses into the future. *Demography, 37*(3), 381-393.

Hitlin, S., Brown, J. S., & Elder, G. H. (2006). Racial self-categorization in adolescence: Multiracial development and social pathways. *Child Development, 77*(5), 1298-1308.

Hodgkinson, S. C., Colantuoni, E., Roberts, D., Berg-Corss, L., & Belcher, H. M. E. (2009). Depressive symptoms and birth outcomes among pregnant teenagers. *Journal of Pediatric and Adolescent Gynecology*.

Hohmann-Marriott, B. (2009). The couple context of pregnancy and its effects on prenatal care and birth outcomes. *Maternal and Child Health Journal, 13*(6), 745-754.

Hu, T. W., Snowden, L. R., Jerrell, J. M., & Nguyen, T. D. (1991). Ethnic Populations in Public Mental-Health - Services Choice and Level of Use. *American Journal of Public Health, 81*(11), 1429-1434.

Huang, C. Y., & Stormshak, E. A. (2011). A Longitudinal Examination of Early Adolescence Ethnic Identity Trajectories. *Cultural Diversity & Ethnic Minority Psychology, 17*(3), 261-270.

Idler, E. L., & Angel, R. J. (January 01, 1990). Self-rated health and mortality in the NHANES-I Epidemiologic Follow-up Study. *American Journal of Public Health, 80,* 4, 446-52.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38*(1), 21-37.

Jackson, K. (2009). Beyond race: Examining the facets of multiracial identity through a life-span developmental lens. *Journal of Ethnic & Cultural Diversity in Social Work, 18*(4), 293-310.

Jackson, K. (2010a). Ethical considerations in social work research with multiracial individuals. *Journal of Social Work Values and Ethics, 7*(1).

Jackson, K. (2010b). Living the multiracial experience: Shifting racial expressions, resisting race, and seeking community. *Qualitative Social Work, 11*(1), 42-60.

Jackson, K. F., & Lecroy, C. W. (2009). The influence of race and ethnicity on substance use and negative activity involvement among monoracial and multiracial adolescents of the Southwest. *Journal of Drug Education, 39*(2), 195-210.

Jayakody, A., Sinha, S., Tyler, K., Khadr, S. N., Clark, C., Klineberg, E., . . . Viner, R. M. (2011). Early sexual risk among black and minority ethnicity teenagers: A mixed methods study. *Journal of Adolescent Health, 48*(5), 499-506.

Jesse, D. E., & Reed, P. G. (2004). Effects of spirituality and psychosocial well-being on health risk behaviors in Appalachian pregnant women. *Journal of Obstetric Gynecologic and Neonatal Nursing, 33*(6), 739-747.

Jesse, D. E., & Swanson, M. S. (2007). Risks and resources associated with antepartum risk for depression among rural southern women. *Nursing Research, 56*(6), 378-386.

Kessler, R. C., Demler, O., Frank, R. G., Olfson, M., Pincus, H. A., Walters, E. E., . . . Zaslavsky, A. M. (2005). Prevalence and treatment of mental disorders, 1990 to 2003. *New England Journal of Medicine, 352*(24), 2515-2523.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., . . . Kendler, K. S. (1994). Lifetime and 12-month prevalence of *DSM-III-R* psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Archives of General Psychiatry, 51*(1), 8-19.

Kirzinger, W. K., Cohen, R. A., & Gindi, R. M. (2012, May). *Health care access and utilization among young adults aged 19–25: Early release of estimates From the National Health Interview Survey, January–September 2011*. Hyattsville, MD: National Center for Health Statistics. Available from http://www.cdc.gov/nchs/data/nhis/earlyrelease.htm

Korgen, K. O. (2010). *Multiracial Americans and social class: the influence of social class on racial identity*. New York, NY: Routledge.

Krieger, N. (2001). A glossary for social epidemiology. *Journal of Epidemiology and Community Health, 55*(10), 693-700.

Kuh, D., & Ben-Shlomo, Y. (2004). *A life course approach to chronic disease epidemiology* (2nd ed.). New York: Oxford University Press.

Kuh, D., Ben-Shlomo, Y., Lynch, J., Hallqvist, J., & Power, C. (2003). Life course epidemiology. *Journal of Epidemiology and Community Health, 57*(10), 778-783.

Lantz, P., House, J., & Mero, R. (2005). How much does smoking contribute to socioeconomic disparities in health in the United States? *Nicotine & Tobacco Research, 7*(4), 699-700.

Lantz, P. M., House, J. S., Mero, R. P., & Williams, D. R. (2005). Stress, life events, and socioeconomic disparities in health: Results from the Americans' changing lives study. *Journal of Health and Social Behavior, 46*(3), 274-288.

Lantz, P. M., Lynch, J. W., House, J. S., Lepkowski, J. M., Mero, R. P., Musick, M. A., & Williams, D. R. (2001). Socioeconomic disparities in health change in a longitudinal study of US adults: the role of health-risk behaviors. *Social Science & Medicine*, *53*(1), 29-40.

LaVeist, T. A. (1994). Beyond dummy variables and sample selection—What health-services researchers ought to know about race as a variable. *Health Services Research, 29*(1), 1-16.

LaVeist, T. A. (2005). *Minority populations and health: An introduction to health disparities in the United States* (1st ed.). San Francisco, CA: Jossey-Bass.

Lee, J., & Bean, F. D. (2004). America's changing color lines: Immigration, race/ethnicity, and multiracial identification. *Annual Review of Sociology, 30*, 221-242.

Lesane-Brown, C. L., Brown, T. N., Tanner-Smith, E. E., & Bruce, M. A. (2010). Negotiating boundaries and bonds: Frequency of young children's socialization to their ethnic/racial heritage. *Journal of Cross-Cultural Psychology, 41*(3), 457-464.

Lewis, C., Mouradian, W., Slayton, R., & Williams, A. (2007). Dental insurance and its impact on preventive dental care visits for US children. *Journal of the American Dental Association*, *138*(3), 369-380.

Li, Q., Keith, L. G., & Kirby, R. S. (2010). Perinatal outcomes among foreign-born and US-born Chinese Americans, 1995-2000. *Journal of Immigrant and Minority Health, 12*(3), 282-289.

Liebler, C. A., & Halpern-Manners, A. (2008). A practical approach to using multiple-race response data: A bridging method for public-use microdata. *Demography, 45*(1), 143-155.

Lorant, V., Deliège, D., Eaton, W., Robert, A., Philippot, P., & Ansseau, M. (2003). Socioeconomic inequalities in depression: A meta-analysis. *American Journal of Epidemiology, 157*(2), 98-112.

Lowe, B., Unutzer, J., Callahan, C. M., Perkins, A. J., & Kroenke, K. (2004). Monitoring depression treatment outcomes with the Patient Health Questionnaire-9. *Medical Care, 42*(12), 1194-1201.

Manderbacka, K., Lundberg, O., & Martikainen, P. (1999). Do risk factors and health behaviours contribute to self-ratings of health? *Social Science & Medicine, 48*(12), 1713-1720.

Masuoka, N. (2008). Political attitudes and ideologies of multiracial Americans—The implications of mixed race in the United States. *Political Research Quarterly, 61*(2), 253-267.

McKelvey, R., & Webb, J. (1996). A comparative study of Vietnamese Amerasians, their non-Amerasian siblings, and unrelated like-aged Vietnamese immigrants. *American Journal of Psychiatry, 153*, 561-563.

McManus, M. A., Greaney, A. M., & Newacheck, P. W. (1989). Health insurance status of young adults in the United-States. *Pediatrics, 84*(4), 709-716.

McRoy, R., & Freeman, E. (1986). Racial-identity issues among mixed-race children. *Social Work in Education, 8*(3), 164-174.

Midanik, L. T., Zahnd, E. G., & Klein, D. (1998). Alcohol and drug CAGE screeners for pregnant, low-income women: The California perinatal needs assessment. *Alcoholism: Clinical and Experimental Research, 22*(1), 121-125.

Milan, S., & Keiley, M. (2000). Biracial youth and families in therapy: Issues and interventions. *Journal of Marriage and Family Therapy, 26*, 305-315.

Molarius, A., Berglund, K., Eriksson, C., Lambe, M., Nordstrom, E., Eriksson, H. G., & Feldman, I. (2007). Socioeconomic conditions, lifestyle factors, and self-rated health among men and women in Sweden. *European Journal of Public Health, 17*(2), 125-133.

Mortimer, J. T., & Shanahan, M. J. (2003). *Handbook of the life course*. New York: Kluwer Academic/Plenum Publishers.

Mossey, J. M., & Shapiro, E. (1982). Self-rated health—A predictor of mortality among the elderly. *American Journal of Public Health, 72*(8), 800-808.

Mouradian, W. E., Wehr, E., & Crall, J. J. (2000). Disparities in children's oral health and access to dental care. *Journal of the American Medical Association, 284*(20), 2625-2631.

Nelson, A. (2002). Unequal treatment: Confronting racial and ethnic disparities in health care. *Journal of the National Medical Association, 94*(8), 666-668.

Nishina, A., Bellmore, A., Witkow, M. R., & Nylund-Gibson, K. (2010). Longitudinal consistency of adolescent ethnic identification across varying school ethnic contexts. *Developmental Psychology, 46*(6), 1389-1401.

Noymer, A., Penner, A. M., & Saperstein, A. (2011). Cause of death affects racial classification on death certificates. *PLOS One, 6*(1), e15812 Nystrom, M. J., Caughey, A. B., Lyell, D. J., Druzin, M. L., & El-Sayed, Y. Y. (2008). Perinatal outcomes among Asian-White interracial couples. *American Journal of Obstetrics and Gynecology, 199*(4), 385 e381-385.

Oakes, P. J., Haslam, S. A., & Turner, J. C. (1994). *Stereotyping and social reality*. Oxford, UK: Blackwell.

O'Sullivan, M. J., Peterson, P. D., Cox, G. B., & Kirkeby, J. (1989). Ethnic populations: Community mental health services ten years later. *American Journal of Community Psychology, 17*(1), 17-30.

Oakes, P. J., Haslam, S. A., & Turner, J. C. (1994). *Stereotyping and social reality*. Oxford, UK ; Cambridge, Mass., USA: Blackwell.

Omi, M., Winant, H. (1994). *Racial formation in the United States: from the 1960s to the 1990s*. New York: Routledge.

Paniagua, F. A. (2005). Implications of the United States census 2000 in analyzing and reporting new findings of disparities in health. *Psychology Reports, 97*(1), 29-32.

Park, M. J., Mulye, T. P., Adams, S. H., Brindis, C. D., & Irwin, C. E. (2006). The health status of young adults in the United States. *Journal of Adolescent Health, 39*(3), 305-317.

Parker, J. D. (2006). The role of reported primary race on health measures for multiple race respondents in the National Health Interview Survey. *Public Health Reports, 121*(2), 160-168.

Parker, J. D., & Makuc, D. M. (2002). Methodologic implications of allocating multiple-race data to single-race categories. *Health Services Research, 37*(1), 203-215.

Pauker, K., & Ambady, N. (2009). Multiracial faces: How categorization affects memory at the boundaries of race. *Journal of Social Issues, 65*(1), 69-86.

Paulus, P. B. (1989). *Psychology of group influence*. Hillsdale, NJ: Erlbaum.

Penner, A. M., & Saperstein, A. (2008). How social status shapes race. *Proceedings of the National Academy of Sciences of the United States of America, 105*(50), 19628-19630.

Pickles, A., Maughan, B., & Wadsworth, M. E. J. (2007). *Epidemiological methods in life course research*. Oxford, UK : Oxford University Press.

Pleis, J. R., & Barnes, P. M. (2008). A comparison of respiratory conditions between multiple race adults and their single race counterparts: an analysis based on American Indian/Alaska Native and white adults. *Ethnicity & Health, 13*(5), 399-415.

Poston, D. L., & Micklin, M. (2006). *Handbook of population*. New York: Springer.

Quillian, L., & Campbell, M. E. (2003). Beyond black and white: The present and future of multiracial friendship segregation. *American Sociological Review, 68*(4), 540-566.

Robert, K. Q., Chandler, R., Baratta, R. V., Thomas, K. A., & Harris, M. B. (2003). The effect of divergent screw placement on the initial strength of plate-to-bone fixation. *Journal of Trauma Injury, Infection and Critical Care, 55*(6), 1139-1144.

Rockquemore, K. A. (2002). Negotiating the color line—The gendered process of racial identity construction among Black/White biracial women. *Gender & Society, 16*(4), 485-503.

Rockquemore, K. A., & Brunsma, D. L. (2004). Negotiating racial identity: Biracial women and interactional validation. *Women & Therapy, 27*(1-2), 85-102.

Rockquemore, K. A., Brunsma, D. L., & Delgado, D. J. (2009). Racing to theory or retheorizing race? Understanding the struggle to build a multiracial identity theory. *Journal of Social Issues, 65*(1), 13-34.

Root, M. P. P. (1992). *Racially mixed people in America*. Newbury Park, CA: Sage Publications.

Root, M. P. P., & Kelley, M. (2003). *Multiracial child resource book: Living complex identites*. Seattle, WA: Mavin Foundation.

Rowe, D. C. (2002). IQ, birth weight, and number of sexual partners in White, African American, and mixed race adolescents. *Population and Environment, 23*(6), 513-524.

Ruebeck, C., Averett, S., & Bodenhorn, H. (2008). Acting White or acting Black: Mixed-race adolescents' identity and behavior. *The B.E. Journal of Economic Analysis & Policy, Berkeley Electronic Press, 9*(1). Retrieved from http://www.nber.org/papers/w13793

Saenz, R., & Morales, C. (2005). Demography of race and ethnicity. In D. L. Poston & M Micklin (Eds.), *Handbook of population* (pp. 169-208). New York, NY: Kluwer Academic/Plenum.

Sakai, J. T., Wang, C., & Price, R. K. (2010). Substance use and dependence among Native Hawaiians, Other Pacific Islanders, and Asian ethnic groups in the United States: Contrasting multiple-race and single-race prevalence rates from a national survey. *Journal of Ethnicity and Substance Abuse, 9*(3), 173-185.

Samuels, G. (2009). Using the extended case method to explore identity in a multiracial context. *Ethnic and Racial Studies,* 32(9), 1599-1618.

Sanchez, D. T., Good, J. J., & Chavez, G. (2011). Blood quantum and perceptions of Black-White biracial targets: the black ancestry prototype model of affirmative action. *Personality and Social Psychology Bulletin, 37*(1), 3-14.

Sanchez, D. T., Shih, M., & Garcia, J. A. (2009). Juggling multiple racial identities: Malleable racial identification and psychological well-being. *Cultural Diversity & Ethnic Minority Psychology, 15*(3), 243-254.

Saperstein, A. (2006). Double-checking the race box: Examining inconsistency between survey measures of observed and self-reported race. *Social Forces, 85*(1), 57-74.

Saperstein, A. (2009), Different measures, different mechanisms: A new perspective on racial disparities in health care, in Jennie Jacobsk Ronenfeld (ed.) *Social Sources of Disparities in Health and Health Care and Linkages to Policy, Population Concerns and Providers* *of Care (Research in the Sociology of Health Care, Volume 27),* Emerald Group Publishing Limited, 21-45.

Saperstein, A. (2012). Capturing complexity in the United States: Which aspects of race matter and when? *Ethnic and Racial Studies, 35*(8), 1484-1502.

Saperstein, A., & Penner, A. M. (2010). The race of a criminal record: How incarceration colors racial perceptions. *Social Problems, 57*(1), 92-113.

Schempf, A. H., Mendola, P., Hamilton, B. E., Hayes, D. K., & Makuc, D. M. (2010). Perinatal outcomes for Asian, Native Hawaiian, and Other Pacific Islander mothers of single and multiple race/ethnicity: California and Hawaii, 2003-2005. *American Journal of Public Health, 100*(5), 877-887.

Setia, S., Villaveces, A., Dhillon, P., & Mueller, B. A. (2002). Neonatal jaundice in Asian, White, and mixed-race infants. *Archives of Pediatrics & Adolescent Medicine*, *156*(3), 276-279.

Shaw, J., Harris, P., Keogh, G., Graudins, L., Perks, E., & Thomas, P. S. (2003). Error reduction: Academic detailing as a method to reduce incorrect prescriptions. *European Journal of Clinical Pharmacology, 59*(8-9), 697-699.

Shelley, D., Russell, S., Parikh, N. S., & Fahs, M. (2011). Ethnic disparities in self-reported oral health status and access to care among older adults in NYC. *Journal of Urban Health–Bulletin of the New York Academy of Medicine, 88*(4), 651-662.

Shi, L., Starfield, B., Politzer, R., & Regan, J. (2002). Primary care, self-rated health, and reductions in social disparities in health. *Health Services Research, 37*(3), 529-550.

Shi, L. Y., Lebrun, L. A., & Tsai, J. (2010). Access to medical care, dental care, and prescription drugs: The roles of race/ethnicity, health insurance, and income. *Southern Medical Journal, 103*(6), 509-516.

Shih, M., & Sanchez, D. T. (2005). Perspectives and research on the positive and negative implications of having multiple racial identities. *Psychological Bulletin, 131*(4), 569-591.

Shih, M., & Sanchez, D. T. (2009). When race becomes even more complex: Toward understanding the landscape of multiracial identity and experiences. *Journal of Social Issues, 65*(1), 1-11.

Smedley, A., & Smedley, B. D. (2012). *Race in North America: Origin and evolution of a worldview* (4th ed.). Boulder, CO: Westview Press.

Snipp, C. M. (2003). Racial measurement in the American census: Past practices and implications for the future. *Annual Review of Sociology, 29,* 563-588.

Spencer, M. S., Chen, J. A., Gee, G. C., Fabian, C. G., & Takeuchi, D. T. (2010). Discrimination and mental health-related service use in a national study of Asian Americans. *American Journal of Public Health*, *100*(12), 2410-2417.

Spencer, R. (2011). *Reproducing race: The paradox of generation mix*. Boulder, Colo: Lynne Rienner Publishers.

Sue, S., Fujino, D. C., Hu, L. T., Takeuchi, D. T., & Zane, N. W. S. (1991). Community mental health services for ethnic minority groups—A test of the cultural responsiveness hypothesis. *Journal of Consulting and Clinical Psychology, 59*(4), 533-540.

Sue, S., McKinney, H. L., & Allen, D. B. (1976). Predictors of the duration of therapy for clients in the community mental health system. *Community Mental Health Journal, 12*(4), 365-375.

Sue, S., McKinney, H., Allen, D., & Hall, J. (1974). Delivery of community mental-health services to Black and White clients. *Journal of Consulting and Clinical Psychology, 42*(6), 794-801.

Sullivan, P. (1998). What are you? Multiracial families in America. *Our Children, 23*(5), 34.

Takeuchi, D. T., Alegria, M., Jackson, J. S., & Williams, D. R. (2007). Immigration and mental health: Diverse findings in Asian, Black, and Latino populations. *American Journal of Public Health, 97*(1), 11-12.

Takeuchi, D. T., Bui, K. V. T., & Kim, L. (1993). The referral of minority adolescents to community mental health centers. *Journal of Health and Social Behavior, 34*(2), 153-164.

Takeuchi, D. T., & Gage, S. J. L. (2003). What to do with race? Changing notions of race in the social sciences. *Culture Medicine and Psychiatry*, *27*(4), 435-445.

Takeuchi, D. T., & Kim, K. F. (2000). Enhancing mental health services delivery for diverse populations. *Contemporary Sociology Journal of Reviews*, *29*(1), 74-83.

Takeuchi, D. T., & Kramer, E. J. (2002). Mental health services research in Asian Americans. *Western Journal of Medicine*, *176*(4), 225-226.

Takeuchi, D. T., Sue, S., & Yeh, M. (1995). Return rates and outcomes from ethnicity-specific mental health programs in Los Angeles. *American Journal of Public Health, 85*(5), 638-643.

Takeuchi, D. T., & Williams, D. R. (2003). Race, ethnicity and mental health: Introduction to the special issue. *Journal of Health and Social Behavior, 44*(3), 233-236.

Tan, H. Z., Wen, S. W., Walker, M., & Demissie, K. (2004). Parental race, birth weight, gestational age, and fetal growth among twin infants in the United States. *Early Human Development, 80*(2), 153-160.

Tashiro, C. J. (2002). Considering the significance of ancestry through the prism of mixed-race identity. *Advances in Nursing Science*, 25(2), 1-21.

Tashiro, C. J. (2005a). Health disparities in the context of mixed race—Challenging the ideology of race. *Advances in Nursing Science, 28*(3), 203-211.

Tashiro, C. J. (2005b). The meaning of race in health care and research—Part 1: The impact of history [Historical article]. *Pediatric Nursing, 31*(3), 208-210.

Telles, E. E., & Sue, C. A. (2009). Race mixture: Boundary crossing in comparative perspective. *Annual Review of Sociology, 35*, 129-146.

Todd, W., & Peabody, J. (2004). Maternal predictors of infant health outcomes among Hawaiians. *Hawaii Medical Journal, 63*(2), 40-44.

Townsend, S. S. M., Markus, H. R., & Bergsieker, H. B. (2009). My choice, your categories: The denial of multiracial identities. *Journal of Social Issues, 65*(1), 185-204.

Turner, J. C. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford, UK: Blackwell.

Udry, J. R., Li, R. M., & Hendrickson-Smith, J. (2003). Health and behavior risks of adolescents with mixed-race identity. *American Journal of Public Health, 93*(11), 1865-1870.

van Ryn, M., & Burke, J. (2000). The effect of patient race and socio-economic status on physicians' perceptions of patients. *Social Science & Medicine, 50*(6), 813-828.

Vandervoort, D. J., Divers, P. P., & Acojido, C. (2000). Psychosocial correlates of health status among Asians, Caucasians, and multiracial subjects. *Current Psychology, 19*(2), 120-128.

Vingilis, E., Wade, T. J., & Seeley, J. (2001). Predictors of adolescent self-rated health and medical care utilization. *American Journal of Epidemiology, 153*(11), S173-S173.

Vingilis, E. R., Wade, T. J., & Seeley, J. S. (2002). Predictors of adolescent self-rated health—Analysis of the National Population Health Survey. *Canadian Journal of Public Health–Revue Canadienne De Sante Publique, 93*(3), 193-197.

Wade, T. J., Pevalin, D. J., & Vingilis, E. (2000). Revisiting student self-rated physical health. *Journal of Adolescence, 23*(6), 785-791.

Walton, E., Takeuchi, D. T., Herting, J. R., & Alegria, M. (2009). Does place of education matter? Contextualizing the education and health status association among Asian Americans. *Biodemography and Social Biology, 55*(1), 30-51.

Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 629-640.

Weinick, R. M., & Krauss, N. A. (2000). Racial/ethnic differences in children's access to care. *American Journal of Public Health, 90*(11), 1771-1774.

Weinick, R. M., Zuvekas, S. H., & Cohen, J. W. (2000). Racial and ethnic differences in access to and use of health care services, 1977 to 1996. *Medical Care Research and Review, 57,* 36-54.

Woo, M., Austin, S., Williams, D. R., & Bennett, G. G. (2011). Reconceptualizing the measurement of multiracial status for health research in the United States. *Du Bois Review, 8*(1), 25-36.

World Health Organization. (2001a). *Mental health: New understanding, new hope*. Geneva, Switzerland: Author.

World Health Organization. (2001b). The world health report 2001 mental health: New understanding, new hope. Retrieved from http://site.ebrary.com/lib/albertaac/Doc?id=10015759

Zhang, W., & Ta, V. M. (2009). Social connections, immigration-related factors, and self-rated physical and mental health among Asian Americans. *Social Science & Medicine, 68*(12), 2104-2112.

Zuvekas, S. H., & Taliaferro, G. S. (2003). Pathways to access: Health insurance, the health care delivery system, and racial/ethnic disparities, 1996-1999. *Health Affairs (Millwood), 22*(2), 139-153.

Curriculum Vitae
Karen Margaret Tabb Dina, MSW, PhD

EDUCATION

2012	PhD, Social Welfare, University of Washington, Seattle, Washington *Dissertation Title:* A life course perspective on the Social Determinants of Multiracial Health *Committee:* David Takeuchi (chair), Gunnar Almgren, Amelia Gavin, Stew Tolnay (GSR)
2007	Masters of Social Work (Social Policy & Evaluation), University of Michigan, Ann Arbor, Michigan
2004	Bachelor of Arts (Sociology & Women's Studies), Eastern Michigan University, Ypsilanti, Michigan

SELECTED FELLOWSHIPS AND AWARDS

2012	Fogarty Fellow, Fogarty Leadership Fellows Program, University of Washington and Universidad Peruano Cayetano Heredia in Lima, Peru.
2011-2012	Magnuson Scholar, Sen. Warren G. Magnuson Health Science Scholar Award. Awarded one of six competitive fellowships for graduate students in the health sciences at the University of Washington.
2009-2012	Training Fellow, Center for Studies of Demography and Ecology, University of Washington.
2009-2011	TL1 Multidisciplinary Pre-doctoral Clinical Research Trainee, Institute for Translational Health Science, Clinical Translational Science Award, (former NIH Roadmap program), National Institutes of Health, NCRR (source TL1 RR 025016).
2008-2012	Bank of America Diversity Fellow, Graduate Opportunities Minority Achievement Program, University of Washington Graduate School.

PUBLICATIONS

Gavin, A.R., Tabb, K.M., Melville, J., Guo, Y., & Katon, W. (2011). Prevalence and correlates of suicide ideation during pregnancy. *Archives of Women's Mental Health 14*(3), 239-246.

Gavin, A.R., Melville, J., Guo, Y., Tabb Dina, K., Katon, W. (2011). Racial differences in birth outcomes. *Archives of General Hospital Psychiatry 33*(2), 87-93.

Huang, H., Chan, Y., Katon, W, Tabb, K.M., Sieu, N., Bauer, A.M., Knaster Wasse, J., & Unützer, J. (2011). Variations in depression care and outcomes among high risk mothers from different racial/ethnic groups. *Family Practice*, *29*(4),394-400.

Huang, H., Chan, Y., Menezes, P., Tabb, K., & Faisal-Cury, A. (2012). Suicidal ideation during pregnancy: Prevalence and associated factors among low-income women in São Paulo, Brazil. *Archives of Women's Mental Health*, *2*, 135-138.

MANUSCRIPTS UNDER REVIEW

Tabb, K.M., Gavin, A.R., Guo, Y., Huang, H., Debiec, K., & Katon, W. (2012). Views and experiences of suicide ideation during pregnancy and the postpartum: Findings from interviews with maternal care clinic patients.

SELECTED PRESENTATIONS

Tabb, K.M., Gavin, A.R., Guo, Y., Huang, H., & Debiec, K. (2012, January). Views and experiencesExperiences of suicide ideation during pregnancy and the postpartum: Findings from interviews with maternal care clinic patients. Paper presented at the 17th Annual Conference of the Society for Social Work & Research, Washington, DC.

Tabb, K.M., Gavin, A.R., Guo, Y., Huang, H., & Debiec, K. (2011, March). Perinatal suicidality and implications for global health: Related findings from a mixed methods studyMixed Methods Study with maternal health clinic patients in the U.S. Paper presented at the Fourth Conference of International Social Work University of Southern California, Los Angeles, CA.

Spencer, M., Tabb, K.M., Palmisano, G., Kieffer, E., Anderson, M., & Heisler, M. (2010, January). Evaluating the process of a randomized diabetes community health worker intervention among African American and Latino adults in Detroit. Poster presented at the Society for Social Work and Research meeting in San Francisco, CA.

Mosavel, M., Jones, M., Tabb, KM., Oakar, C., & Sanders, K. (2009, November). Cancer research by cancers survivors: A needs assessment by African American low-income cancer survivors and their caregivers to reduce health disparities. Paper presented at the 137th Annual Meeting & Exposition of the American Public Health Association in Philadelphia, PA.

SELECTED RESEARCH EXPERIENCE

2009-2011	Principal Investigator, Views and Experiences of Suicidal Ideation During the Perinatal Period.
2009-2011	Research Assistant, Depression and Anxiety in Pregnancy Study. Assisted in data collection, data entry, data management, recruitment, analysis, and training. Principal Investigators: Amelia Gavin, PhD, and Jennifer Melville, MD, MPH
2010-2012	Research Assistant, A Life-Course Multiple Determinant Model for Health Disparities in Pregnancy Outcomes. Assisted in data collection, recruitment, conducted interviews and assisted in analysis for a case-control study on social determinants of preterm birth. Principal Investigators: Amelia Gavin, PhD, and (co-PI) Paula Nurius, PhD

SELECTED TEACHING EXPERIENCE

2012	Pre-doctoral Sole Instructor, Macro Practice 512, University of Washington, Winter Quarter 2012
2010-2011	Facilitator, Field Learning Center Integrative Seminar, cofacilitated biweekly seminars with 14 foundation-level Master’s Students, University of Washington, Winter and Spring Quarters
2009-2010	Facilitator, Field Learning Center Integrative Seminar, cofacilitated biweekly seminars with 18 foundation-level Master’s Students, University of Washington, Winter and Spring Quarters
2009	Teaching Assistant, Advanced Social Policy Practice SW560, as fulfillment of Social WL 584, the Teaching Practicum requirement of the PhD program in Social Welfare
2004-2005	English Teacher, Wonderland Language Institute, Osan City, Gyeongi-do Province, South Korea, Summer 2004–Fall 2005

SELECTED POST-MASTER’S PROFESSIONAL EXPERIENCE

2010-2011	Clinical Counselor, Multicultural Youth Coping Skills Project. Provided clinical counseling services to adolescents residing in King County. Developed treatment plan and administered a 20-week long cognitive behavioral therapy treatment to adolescents and their families. Supervisor: Janine Jones, PhD
2007-2008	Community Research Coordinator, Case Western Reserve University Center for Reducing Health Disparities at MetroHealth Medical Center. Project: NIH Clinical Translation of Science Award, Community Engagement, Research Engagement and Education for Community Health (Project REECH). Cleveland, Ohio.

SELECTED COMPETENCIES

Proficient in Korean and Spanish languages.
Proficient in SPSS, STATA, ATLAS ti 6.0, JMP, Mini-tab, and ARC GIS mapping.
Proficient in EPIC, ORCA, Endnote, RefWorks, Microsoft Excel, Word, ACCESS.
Trained in Census Enumeration, 2000 United States Census.
Trained in Medical Biometry, Epidemiological Survey Design and Methods.
Trained in Hierarchical Linear Modeling.
Certified in the Protection and Use of Human Subjects in Research.