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DISCRIMINATION AND HEALTH: A LONGITUDINAL STUDY

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DISCRIMINATION AND HEALTH: A LONGITUDINAL STUDY

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ABSTRACT

This study examines several questions about discrimination using a longitudinal survey from the 2006 and 2008 waves of the Health and Retirement Study (HRS). Results show that whites are least likely to experience discrimination as we expected. In addition, the data provides support for the hypothesis that people with higher total household assets and higher household total number of members are less likely to experience discrimination. However, contrary to my hypothesis, females have smaller odds of experiencing discrimination compared to males. People with higher education levels are more likely to report major discrimination events compared to those with lower education levels. There is a negative relationship between everyday discrimination and individuals' change in health, but the relationship between major discrimination events and individuals' change in health is not significant. Therefore, the hypothesis that perceived discrimination is linked to adverse change in health is partially supported. Moreover, the buffering effect of social support in the relationship between perceived discrimination and change in health is not supported, and the hypothesis that detrimental effect of discrimination is stronger to men than women is partially supported.

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INTRODUCTION

With the development of society, social stratification and social inequality have become popular research topics for decades. Feagin (2000) referred discrimination to actions initiated and maintained by social institutions and individuals that systematically harm members of socially marginalized groups and reinforce systems of power and privilege. Feagin (2000) stated that people or groups who have less access to resources are looked down upon by those who own more resources. Although discrimination is more prevalent among certain groups, previous research has shown that perceived discrimination is common in the whole population in the United States (Kessler, et. al, 1999). Using data from a national survey, Kessler found that 33.5% of respondents had reported exposure to major lifetime discrimination, and 60.9% of respondents had reported exposure to everyday discrimination. Therefore, discrimination is a prevalent phenomenon that cannot be neglected. There are many kinds of discrimination in the society; some common ones are discrimination based on race, age, gender, employment, sexual identity and orientation, language, and religion.

Discrimination has become a significant topic in sociological realm for several reasons. First, although almost everyone experiences discrimination in their lifetime (Gee, et al., 2007; Krieger, 1999), people with fewer resources are more likely to experience discrimination. In extreme cases, discrimination may take the form of a hate crime and cause immediate harm (Gee, et al., 2007). Second, stress theory and previous studies have provided the evidence that discriminatory events are linked to many health issues such as high blood pressure (Brondolo, et al., 2003; Krieger, 1996), respiratory

problems (Karlsen, 2002), somatic complaints (Bowen-Reid, & Harrell, 2002), self-rated health (Schulz et al., 2000; Stuber et al., 2003), mental health (Landrine, et al., 2006; Noh, & Kaspar, 2003), and chronic health conditions (Finch, et al., 2001; Gee et al., 2006). The reason that discrimination has a close relationship with these issues is because the experience of discrimination can be stressful and reduce a person's sense of control and meaning while evoking feelings of loss, ambiguity, strain, frustration, and injustice (Broser, 1981; Feagin, 1991; Gary, 1991; Landrine & Klonoff, 1996). Therefore, the study of discrimination is of great importance for individuals' health and well-being and for the harmony of society.

With more and more people experiencing discrimination, the need for understanding the causes of the phenomenon and its effect on health is pressing. The current study uses 2006 and 2008 waves of the Health and Retirement Study (HRS) to provide a comprehensive study of discrimination among the elderly in the United States. I ask four major research questions: (1) Do people with disadvantaged status experience higher degree of discrimination? (2) What is the relationship between perceived discrimination and individuals' change in health? (3) Does social support act as a buffer and moderate the effect of discrimination on change in health? and (4) Does discrimination have a different effect on the health of males and females?

Despite a large amount of research suggesting the noticeable influence of discrimination on individuals' health, there are some limitations in previous research. First, longitudinal studies on this topic are rare. Unlike cross-sectional studies, longitudinal studies track the same people, and therefore the differences observed in

those people are less likely to be the result of cultural differences across generations. For this reason, longitudinal data are useful in establishing time order, which is an important criterion for causality. Second, most of previous empirical studies used small datasets and/or convenience samples, while the current study uses a larger and more representative sample, so that the findings are more generalizable to the larger population. Third, most of the studies focused on specific groups of people, such as immigrants (Liebkind, & Jasinskaja-Lahti, 2000; Yoo, Gee, & Takeuchi, 2009), women (Pavalko, Mossakowski, & Hamilton, 2003; Schulz, et al, 2006), Asian Americans (Gee, Ro, Shariff-Marco, & Chae, 2009; Gee, Spencer, Chen, & Takeuchi, 2007; Yoo, Gee, & Takeuchi, 2009), Filipino Americans (Gee, et al, 2006), African American women in Detroit (Schulz, Israel, Gravlee, Mentz, Williams, & Rowe, 2006), blacks (Brown, et al, 1999), or on certain type of discrimination, such as work discrimination (Pavalko, Mossakowski, & Hamilton, 2003) and racial discrimination (Brown, et al, 1999; Gee, 2008; Gee, Ro, Shariff-Marco, & Chae, 2009; Hunte, & Williams, 2009; Murry, et al, 2001). These results might not apply to the general population. The current study makes use of the latest two waves (2006 & 2008) from the HRS, a longitudinal and national survey. The use of HRS data can fill the gap of the existing literature by doing research on different types of discrimination and on a more general group--the elderly. Fourth, little research has been done to investigate the potential effect of social support on discrimination. By studying the buffering effect of social support, the present research can contribute to the literature in this area and enrich the stress theory by providing evidence for the effect of moderators.

LITERATURE REVIEW

Concept of Discrimination

From the perspective of linguistics, the word "discrimination" means "a distinction (made with the mind or in action)" (Krieger, 1999). When people are involved, as both agents and objects of discrimination, the meaning of discrimination is to make an adverse distinction with regard to others. Krieger (1999) pointed out that, discrimination can be perpetrated by a diverse array of actors, such as the state and its institutions (ranging from law courts to public schools), non-state institutions like private sector employers and private schools, and individuals.

Discrimination as a sociological term takes on different meanings. Conceptualized in a broad way, discrimination refers to all means of expressing and institutionalizing social relationships of dominance and oppression (Krieger, 1999). Feagin (2000) referred to discrimination as actions initiated and maintained by social institutions and individuals that systematically harm members of socially marginalized groups and reinforce systems of power and privilege. These actions form a continuum, ranging from extreme violence to subtle disrespect, and may take place at both the institutional and individual level. Gee, Ro, Shariff-Marco and Chae (2009) referred to discrimination as the treatment taken toward or against a person of a certain group that is taken in consideration based on class or category. Discriminatory behaviors take many forms, but they all involve some form of exclusion or rejection. Dominant forms of discrimination include race discrimination, age discrimination, gender discrimination, employment discrimination, discrimination

against lesbian, gay, bisexual, transgender and gender variant people, language discrimination, and religious discrimination.

Socioeconomic Status and Discrimination

Social stratification is a sociological term which refers to the hierarchical arrangement of individuals into divisions of power and wealth within a society. Barker (2005) stated that the term of social stratification is most commonly used to refer to the socioeconomic concept of class, involving the classification of persons into groups based on shared socioeconomic conditions, a relational set of inequalities with economic, social, political and ideological dimensions. Structural-functionalisms believe that social stratification is the embodiment of social inequality. They have suggested that since social stratification is commonly believed to exist in almost all developed societies, hierarchy may be necessary in order to stabilize social structure. By contrast, conflict theories, such as Marxism, have scrutinized the inaccessibility of resources and lack of social mobility in stratified societies. Many sociological theorists have criticized the extent to which the working classes are unlikely to advance socioeconomically; the wealthy tend to hold political power which they use to exploit the proletariat generation after generation. Weber's three component theory of stratification (also known as three class system) is a multidimensional approach to examine social stratification, and it sees social stratification as the reflection of one's interplay of wealth, prestige and power. People who have more wealth, higher prestige and stronger power are those who stay in the upper level of the stratification with more resources in hand.

According to social stratification theory, people with lower social and economic status have greater exposure to all kinds of negative events. People with lower status, such as females, older people, minorities, people with lower education and lower income, are more often discriminated against because perpetrators of discrimination act unfairly toward members of socially defined subordinate groups in order to reinforce relations of dominance and subordination, thereby bolstering privileges conferred to them as members of a dominant group (Krieger, 1999). From this perspective, people with disadvantaged status are more likely to experience discrimination just because of "who they are" rather than "what they do." Other explanations focus on the stereotypes associated with people with lower social and economic status (Madden, 1987; Wootton, 1997). Females and older people are seen as making less contribution to the society because they are less able to undertake intensive labor and females especially need to spend more time on unpaid domestic work. People with less education and lower income are viewed as unsuccessful, less capable, and thus less valuable.

A growing body of research shows that although almost everyone experiences some kind of unfair treatment in the course of a lifetime, members of marginalized groups are more likely to experience and report discrimination than are members of groups with more power and privilege (Gee, Spencer, Chen, & Takeuchi, 2007; Krieger, 1999). The findings, however, are not always consistent across all social status indicators. A national telephone survey of adults aged 25 to 74 years in 1995-1996 found that adults who are *younger*, *male*, nonwhites, never married or previously married, and with low income are more likely to report everyday discrimination than those who are older,

female, white, currently married, and with higher income, and that adults who are *younger*, nonwhite, *more educated*, and never married are more likely to report any major lifetime discriminatory events than those who are older, white, less educated, and currently married (Krieger, 1999).   Barnes and de Leon (2008) examined a sample with 4,145 older adults from the Chicago Health and Aging Project who underwent up to 2 interviews over 4.5 years. They found that older blacks do experience higher levels of discrimination than older whites, although evidence that discrimination has more negative effects on older blacks is not proved.

Pavalko, Mossakowski and Hamilton (2003) investigated the relationship between perceived discrimination at workplace and women's physical and emotional health using longitudinal data of 1,778 employed women in the National Longitudinal Survey of Mature Women. They found that although similar percentages of blacks and whites report work discriminations, blacks and whites attribute that discrimination to different sources; larger proportions of black women report discrimination based on their race, but whites are more likely than blacks to report gender and age discrimination. This study also found that among middle aged women, the likelihood of reporting discrimination peaks when women are in their late 40s and early 50s and then declines after that point.

Studies by Brown et. al, (1999) and Murry et. al (2001) provided evidence that discriminatory experiences that occur to black Americans are to a large extent due to their race, which are considered as demeaning and degrading. Many African American families and communities are in crisis, confronting high unemployment, poverty, crime, drug abuse, HIV/AIDS, teenage pregnancy and parenthood, and single motherhood.

Relationship between Discrimination and Health

Stress theory and ecosocial theory have been used to explain the relationship between discrimination and health. Stress theory focuses on how the causes of stress, the resources for coping with stress, and the outcomes of stress vary across subgroups in the population (Pearlin, 1989; Pearlin, Menaghan, Morton, & Mullan, 1981; Turner, Wheaton, & Lloyd, 1995). Stressor is one of the core concepts of stress theory. Stressors can be external, environmental or social factors, or internal, biological or psychological factors that challenge an individual to adapt or change. They can be discrete events such as the destruction of one's house by a tornado or chronic problems and depression. In a simplified model of the stress process, people's position in the social structure exposes them to stressors, which in turn leads to stress outcomes. Holmes and Rache (1967) conducted a life events research study to look at major life events and people's ability to cope with them. Their study identified 43 major life events and discovered that the more life events individuals experienced in a given time, the more likely they were to experience injury, become ill, or die. The stress process has both physiological and psychological components. We respond to external events or even imagined events with a generalized set of responses, but our responses are to some degree tailored to the nature of the event. According to stress theory, when one's stress accumulates, it will have detrimental effects on one's health—both physically and mentally.

Ecosocial perspective is another way to understand how discrimination could influence health. Kreiger (1999) pointed out that, perceived discrimination—both privately and in public—will create and structure exposures to noxious, biological,

physical, chemical, and psychosocial insults, all of which can influence biological integrity at numerous integrated and interacting levels. This detrimental effect can happen under such conditions as: (1) economic and social deprivation at work, at home, in the neighborhood or at other relevant socioeconomic regions; (2) toxic substances and hazardous conditions at work, at home or in the neighborhood; (3) socially inflicted trauma, ranging from verbal to violent, mentally, physically or sexually; (4) targeted marketing of legal and illegal psyhchoactive substances (tobacco, alcohol, and drugs) and other commodities like junk food which is bad for health; and (5) less access to health care facilities and specific providers. More exposure to these conditions will lead directly to deterioration of health.

Several studies have shown that there is a negative relationship between discrimination and health. The negative health effects of perceived discrimination are shown to be associated with restricted access to socioeconomic resources, poor health behaviors, and detrimental psychological feelings among those who are discriminated against (Barnes et al., 2008; Kessler, Mickelson, & Williams, 1999; Williams, Neighbors, & Jackson, 2008). Chronic exposure to discrimination will generate socioeconomic and other disadvantages, bringing about the exposure to environmental hazards such as pollution and job stress. These result in the inadequate supply of life necessities, such as medicine and health care, which will give rise to accumulation of stressors over the life time. Therefore, the more discrimination a person receives, the higher the likelihood the person will have poor health, or will die. Based on a sample of 4,154 respondents from the Chicago Health and Aging Project, the study by Barnes and de Leon (2008) provided

evidence that the degree of perceived discrimination is associated with increased mortality risk in older adults. Based on a sample of 2,095 Asian Americans from the National Latino and Asian American Study conducted in 2002 and 2003, Gee, Spencer, Chen and Takeuchi (2006) examined whether self-reported everyday discrimination was associated with chronic health conditions and the results showed that reports of everyday discrimination were not only associated with many chronic conditions, but also highly related with indicators of heart disease, pain, and respiratory illnesses. Pavalko, Mossakowski and Hamilton (2003) investigated whether perceived discrimination at workplace affects women's physical and emotional health using data on 1,778 employed women in the National Longitudinal Survey of Mature Women. Their study provided strong support for the health impact of workplace discrimination for women. The perceptions of discrimination of the women they studied do have significant influence on subsequent health, both physically and emotionally.

Although the current literature has indicated that discrimination has detrimental effects on health, the causal relationship is still vague. The possibility that reverse causality and the potential that the correlation between discrimination and health is spurious is still open to debate. In addition, there is a lack of evidence showing that discrimination affects change in health over time.

Role of Social Support

The present research is also interested in the role of social support in the relationship between discrimination and health. Social support is of interest in the stress

process because its absence can endanger one's health and happiness, while its presence can help individuals to cope with stressors (Thoits, 1995; Cohen & Wills, 1985).

Moderator is another core concept of the stress theory. Moderator refers to the social or personal resources that attenuate the effects of stressors or change the situations that are producing the stressors. Three types of moderators are coping strategies, personal resources and social support. Social support has been defined and measured in two ways: the quantity and the quality of the relationships. The quantity of relationships refers to the number of ties in one's network, and the quality of relationships refers to the degree to which one feels close to and supported by their family or friends. Several studies examined the direct effect of social support on mental health and found that both the quantity (Cohen & Wills, 1985; Kawachi & Berkman, 2001) and the quality (Aneshensel & Sucoff, 1996; Granovetter, 1973) of relationships are positively associated with mental health.

The stress buffering hypothesis suggests that social support may also serve as a buffer, moderating the impact of stressors on mental health by augmenting the coping resources available for people to take advantage of. The strongest evidence that social support acts as a buffer is based on the quality of personal relationships rather than on the quantity of social relationships. It is found that high-quality relationships with others could buffer the fear of crime in disordered neighborhoods (Kaniasty & Norris, 1992). The buffering effect of social support is supported by a large number of studies. For example, Ross and Jang (2000) found that in disordered neighborhoods social support functions as a significant buffer on health because people will help each other and talk

with each other. The authors were actually addressing the quality of those ties and provided evidence that the quality of relationships buffered neighborhood effects. Another example of this theory is proposed by Ensel and Lin (1991). Using longitudinal data, Ensel and Lin has provided evidence that social support can function as a buffer to offset the impact of stressful events on individuals' depression levels.

On the basis of theoretical arguments and empirical studies, I conceptualize social support as the quality of relationships (whether it is a positive social support or negative social support) and examine whether social support moderates the effect of perceived discrimination on individuals' change in health. Since social support has been recognized as a buffer against stressful life events (Lin, Dean, & Ensel, 1986; Lin, Ye, & Ensel, 1999), it is expected that social support would have a similar buffering effect on the influence of discrimination on health. Since social support can be presented in either positive (e.g., having friends you can rely on) or negative ways (e.g., being criticized by friends), I make distinctions between positive and negative social support.

Gender Differences in the Relationship between Discrimination and Health

As we discussed in the previous section, one major form of discrimination is gender discrimination. Historically, females have experienced much more discriminatory treatment from individuals, institutions, and the society. One of the major unfair treatments women experience is in the work place. For example, women usually receive a lower salary than men and have less chance for promotion even though they have

equivalent education, work experience, and job tenure (Madden, 1987; Wootton, 1997). Madden (1987) provided two competing explanations for this phenomenon. The first one is the human capital explanation, which argues that gender differences in human capital investment arise from gender differences in expectations surrounding labor force participation. This accounts for gender differences in salary or promotion. Women are expected to devote less time and effort in their jobs, and they are seen as having invested less in pecific human capitals and less productive. Another view of gender discrimination argues that gender discrimination in the labor market result in gender differences in wages and chances of promotion. In other words, women earn less and are less likely to be promoted is because they are the victims of gender discrimination in the labor market. Another kind of discriminatory treatment women experience is in the types of occupations. In the labor market, job opportunities are offered separately and explicitly for men and women (Darity & Mason, 1998). Men are requested for positions that include managers, assistant manager, design engineers, and accountants while females are requested for positions that include household and domestic workers, typists, bookkeepers and waitresses. Although more and more women are receiving higher education and are being employed in positions like managers or assistant managers, gender discrimination in job market still remains.

Several previous studies have found that the detrimental effect of discriminatory treatment on physical and emotional health differs by social status. Some argued that groups historically exposed to discriminatory events, such as African Americans, may have developed adaptational strategies which to some extent mitigate or reduce their

physical and emotional response to unfair treatments (Kessler et al., 1999; Brown, et al., 1999). According to this theory, the adverse effect of discrimination on health is stronger for men than for women because women are the group that have historically been exposed to discriminatory events and thus they are more likely to have the adaptational strategies to recover from and mitigate the impact of unfair treatments. Turner and Avison (1989) found that men are more vulnerable to the stressful events that happened to them than women because of differences in roles. They argued that men take on more responsibilities and more important roles than women both in the family and in the society, thus negative events and emotions are more damaging to them.

HYPOTHESES

Based on previous theories and research, the following four hypotheses about older adults living in the United States are derived.

1. Racial minorities and older adults with lower socioeconomic status, such as women, people with lower income, and people with lower education, are more likely to experience discrimination than whites and older adults with higher socioeconomic status. As social stratification theory suggests, low status people are discriminated against as a way for people with more advantaged status to maintain power and control. Barnes and de Leon (2008) found that older blacks reported higher levels of discrimination than older whites. Older blacks experience higher levels of discrimination everyday and during their lifetime. The studies by Brown et al (1999) and Murry et al (2001) provided evidence that discriminatory experiences that occur to black Americans are to a large extent because

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their race is viewed as demeaning and degrading. Women experience more discrimination because they are seen as weak and contributing less to the society. People with lower education and income are seen as less capable, less productive and less valuable. Thus, previous theories and empirical studies suggest that racial minority groups, females, people with lower education and income are more likely to be discriminated against in their lives.

2. There is a negative relationship between perceived discrimination and individuals' health. A large number of studies have shown that discrimination is detrimental to health, both physically and mentally for the reason that discrimination experience is stressful and brings negative feelings such as the feelings of loss, frustration, injustice, and unsecure. According to stress theory, stress has both physiological and psychological components. We respond to external events or even imagined events with a generalized set of responses, but our responses are to some degree tailored to the nature of the event. When stress accumulates, it will cause deterioration in physical and emotional health.

3. Positive social support can mitigate the effect of discrimination on individuals' health; while negative social support will aggravate the effect of discrimination on individuals' health. Kaniasty & Norris (1992) found that high-quality relationships with others could buffer the fear of crime in disordered neighborhoods. Ross and Jang (2000) also found that in disordered neighborhoods social support functions as a significant buffer because people will help each other and talk with each other. Both studies were actually addressing the quality of those ties and provided evidence that quality

relationships buffered neighborhood effects. The buffering theory suggests that positive social support augments the coping resources available to individuals facing stressful events in life. Based on this theory, we predict that positive social support serve as a buffer, moderating the impact of negative emotions caused by discrimination on health.

4. The detrimental effect of discrimination on health is stronger for men than for women. Females are historically exposed to all kinds of discrimination. Kessler et al. (1999) and Brown et al. (1999) argue that groups historically exposed to discriminatory event have developed adaptational strategies that to some extent mitigate or reduce their vulnerability to the unfair treatment. According to this theory, the adverse effect of discrimination on health is stronger for men than for women in that women, who have historically been exposed to discriminatory events, are more likely to have the adaptational strategies to recover from and mitigate the impact of unfair treatments.

A diagram illustrating these hypotheses can be seen in Figure I.

Figure I. Conceptual Model of the Relationships among Social Status,

Discrimination, Social Support and Health.

DATA AND METHODS

Data

The data are from the 2006 and 2008 waves of the Health and Retirement Study (HRS), which were conducted by the University of Michigan's Survey Research Center. HRS is a longitudinal study of health, retirement, and aging. HRS began in 1992-1993 as two separate samples: the original HRS focusing on 1931-41 birth cohorts and the AHEAD focusing on 1890-1923 birth cohorts. In 1998, the two samples were merged and two new samples--CODA (1924-30 cohorts) and War Babies (1942-47 cohorts) were added. In 2004, another new sample--EBB (1948-53 cohorts) was added, making the total sample representative of those born in 1953 or before, approximately age 51 and older in 2004. Once having entered the study, the respondents are re-interviewed every two years. The spouses were also interviewed irrespective of their age. The sample for each cohort was derived from the same stratified, multistage area probability design in which blacks, Hispanics, and Floridians were oversampled. The HRS now includes over 30,000 respondents. The initial cohort response rates ranged from 70 percent to slightly over 80 percent; re-interview rates for all cohorts at each wave have been between 92 and 95 percent (Health and Retirement Study, 2007).

Supported by the National Institute on Aging and the Social Security Administration, HRS has made great contributions to the study of American's older adults. Its comprehensive survey data have been used to study many issues such as' physical and mental health, insurance coverage, financial situations, family support systems, work status, and retirement situation in the United States (Health and Retirement

Study homepage, http://hrsonline.isr.umich.edu/). In 2004, HRS added a new feature for data collection in the form of a self-administered questionnaire that is distributed to a random subsample of respondents upon the completion of an in-person core interview. In 2006, the Leave-Behind Questionnaire was expanded to include a rich set of questions on psychosocial issues (Clarke, Fisher, House, Smith, & Weir, 2007).

The data used in this study are taken from this self-administered questionnaire of HRS, 2006 & 2008. The original sample size is 7,062. After deleting missing values on key variables, there were 6,798 respondents born in 1953 or before who were included in the leave-behind subsample in 2006 and who completed all the questions concerning discrimination, demographics, and social support. Between 2006 and 2008, 312 died and 165 did not respond to the survey in 2008. Therefore, the sample size in this study for 2006 is 6,798, and 6,321 for 2008.

A panel design is used to test the validity of the causal links between discrimination and health. The panel is a nationally representative sample of respondents who were interviewed twice over a two-year period. While cross-sectional design cannot establish the time order of the variables because of the possible reverse causal order, panel design offers a more rigorous solution to the time dilemma posed by cross-sectional design by examining the same respondents at two (or more) points in time. Moreover, because the data relate to the same social units, individual change is measured more reliably than in regular cross-sectional studies. Since the respondents who were asked discrimination questions in 2006 were not asked discrimination questions in 2008 while health questions were asked to the same respondents in both waves, lagged dependent

variable regression method is used to examine the effects of discrimination on health. I use the independent variables and control variables from the 2006 data, and relate these variables to the health outcome in the 2008 data.

The major problem of using panel design for this study is that those who died or dropped out of the subsequent interviews and thus excluded from the final sample may have different effects than those included in the final sample, thus biasing the results. Berk (1983) introduced a method to adjust for the biases caused by the censored sample. One can construct a hazard rate variable to include in the regression equations to correct the sample selection bias. In this study, I use a multinomial regression to indentify the factors related to whether the respondents died or dropped out between 2006 and 2008 surveys. The hazard rates estimated from this multinomial regression will be included in the regression analysis of health in 2008 to adjust for selection bias.

Measures

Perceived Discrimination

Two kinds of discrimination are measured in this study: everyday discrimination and major experiences of lifetime discrimination. In order to measure everyday discriminations, respondents were asked how often any of the following things happened to them in their day-to-day life: (a) "You are treated with less courtesy or respect than other people;" (b) "You receive poorer service than other people at restaurants or stores;" (c) "People act as if they think you are not smart;" (d) "People act as if they are afraid of you;" and (e) "You are threatened or harassed." The six-point response scales are

"almost everyday," "at least once a week," "a few times a month," "a few times a year," "less than once a year", and "never". The everyday discrimination index is the average score of responses to these five items. The alpha reliability score for this scale is .81.

In order to understand people's major experiences of lifetime discrimination, respondents were asked whether the following six events occurred at any point in their lives: (a) "Have you ever been unfairly dismissed from a job?" (b) "For unfair reasons, have you ever not been hired for a job?" (c) "Have you ever been unfairly denied a promotion?" (d) "Have you ever been unfairly prevented from moving into a neighborhood because the landlord or a realtor refused to sell or rent you a house or apartment?" (e) "Have you ever been unfairly denied a bank loan?" and (f) "Have you ever been unfairly stopped, searched, questioned, physically threatened or abused by the police?" A measure of major discrimination is constructed by summing the number of affirmative responses.

Health

This study examines self-rated health that previous research found to be a valid indicator of one's health condition because that (1) self-rated health includes both physical and emotional dimensions of health; and (2) previous literature has suggested that self-rated health is actually related to objective physical health (Idler & Benyamini, 1997; Schulz et al. 2006). Self-rated health is a respondent's own assessment of his or her health status. Each respondent was asked to rate his or her physical health on a five-point scale of "poor," "fair," "good," "very good," and "excellent."

Social Support

Social support is measured by the quality of interaction an individual has with his/her spouse/partner, children, other family members, and friends. Two kinds of social support are measured: positive and negative social support. For each type of relationship, there are three positively worded items and four negatively worded items about social support. Respondents were asked to choose which one best describes their feelings with the four-point response scale of "a lot," "some," "a little," and "not at all." The three positively worded items about social support are: (a) How much do they really understand the way you feel about things?" (b) How much can you rely on them if you have a serious problem?" and (c) How much can you open up to them if you need to talk about your worries?" The four negatively worded items about social support are: (d) "How often do they make too many demands on you?" (e) "How much do they criticize you?" (f) "How much do they let you down when you are counting on them?" and (g) "How much do they get on your nerves?" The positive social support scale is the average of responses to the first three questions while the negative social support scale is the average of responses to the latter four questions. The alpha reliabilities across four relationship categories for positive social support are .80, .83, .84, and .82, respectively. The alpha reliabilities across four relationship categories for negative social support are .79, .80, .76, and .79, respectively.

There is the possibility that some items used to construct negative social support scale may be seen as everyday discrimination. In order to distinguish these two measures, I conducted factor analysis and the results show that the items used to construct the

negative social support scale and the items used to construct the everyday discrimination index are loaded on two different factors (refer to Appendix I for details). This suggests that discrimination and negative social support in this survey are distinct concepts.

Social Status

Social status variables examined in this study include race/ethnicity (white, black, Hispanic, and other race), gender, education (in years), log of household income and log of household total assets, the total number of household members. For race/ethnicity, respondents were asked what race they consider themselves to be and whether they are Hispanic. Answers to these questions are collapsed into white, black, Hispanic, and other race. For education, respondents were asked how many of years of schooling they have completed, the answers ranged from 0 to 17. Household income is the sum of different types of income from the respondent and his/her spouse and the missing income values have been imputed by HRS staff. In the analysis, log of household income is computed to adjust for skewness. The value ranges from 0 to 17. Total household assets value is the sum of different assets from the respondent and his/her spouse and the missing values have been imputed by HRS staff. In the analysis, log of household total assets is used. The value ranges from 0 to 19. The total number of household members is constructed from the household listing data.

Control Variables

Age, marital status, and whether the respondent is working full-time, part-time or not working are controlled for in multivariate analyses. Age is measured in years since birth. Marital status includes four categories: married/partnered, separated/divorced,

widowed, and never married. Respondents were asked whether they work for pay and for those who answered yes were asked how many hours they work per week. Based on responses to these questions, three work status categories were constructed: working fulltime (working 30 or more hours a week), working parttime (working less than 30 hours a week), and not working.

Statistical Procedures

The data were analyzed using SPSS and the results are weighted by 2006 sampling weights so that the findings can be generalized to the adults born in 1953 and earlier who lived in the United States in 2006.

First, descriptive statistics for each demographic characteristic, perceived discrimination, health, and positive and negative social support are calculated in order to acquire the basic knowledge about the data composition and distribution.

Second, a correlation matrix of all the variables used in the study is presented. This matrix allows us to examine all bivariate relationships, including the relationships between each demographic characteristic and perceived discrimination, discrimination and health, and social support and health.

Third, Ordinary Least Squares (OLS) regressions are conducted to examine the associations between measures of disadvantaged status and each type of perceived discrimination while controlling for other covariates.

Fourth, self-rated health in 2008 is regressed on perceived discrimination, sociodemographic variables, social support and the corresponding health measure in 2006

to examine how perceived discrimination affects change in health net of other variables. I use the independent variables and control variables from the 2006 HRS data, and relate these variables to health in the 2008 HRS data. I include self-rated health in 2006 in this model because people who have lower levels of perceived discrimination may already had higher self-rated health in 2006, and have maintained that level of self-rated health in 2008. The lagged effects of self-rated health in 2006 on self-rated health in 2008 can be partialled out by controlling for self-rated health in 2006. By doing so, the effects of other variables can be seen as the effects on changes in self-rated health from 2006 to 2008.

Five, interaction terms between measures of social support and measures of perceived discrimination are added to the regression models to test the buffering hypothesis of social support in the relationship between discrimination and health. Aiken and West (1991) recommended centering the predictor variables to and reduce multicollinearity and increase interpretability of interactions. Therefore, variables measuring discrimination and social support are centered at their respective means before the interaction terms were constructed.

Sixth, I rerun regressions in steps 4 and 5 separately for men and women to see whether the effects of discrimination on health and the buffering effects of social support on these relationships differ by gender.

RESULTS

Descriptive Statistics

Table I presents descriptive statistics for all the variables included in this study. For the 6,798 valid respondents in 2006 and the 6,321 respondents in 2008, on a scale of 1-5, the average score of self-rated health in 2006 is 3.26 and 3.18 in 2008 with weighting, which are both in the middle of the range. For all the other variables, there are 6,798 valid respondents. On a scale from 1 to 6, the average score for everyday discrimination is 1.72. The average number of major discriminatory events experienced over the life time is .49 with weighting, which is not a high account on the scale.

Among all the valid respondents, a large majority are white (83%), followed by blacks (8.7%) and Hispanics (6.6%). Females account for slightly more than half of the respondents (54%). On a scale of 0-17, the average number of years of education is about 13 years. On a scale of 0-17, the log of household income is around 11. On a scale of 0-19, the log of net worth is around 11. The total number of household members is 3.11. On a scale of 1 to 4, the average score for the positive social support scale is 3.1 and the average score for the negative social support scale is around 1.7, and thus on average, the elderly received high levels of positive support and low levels of negative support.

Age, marital status and work status are three control variables in this study. The average age in 2006 is 65.86. For marital status, the majority group is either married or partnered (68%), followed by the group of those who are widowed (16%) or separated/divorced (12.4%). Only 3% of respondents are never married. In terms of work status, most respondents are not working by 2006 (56%), 34% work fulltime, and 10%

Table I. Descriptive Statistics for All Variables

Variable	Without weighting		With weighting	
	Mean/Percent	Std	Mean/Percent	Std
Health				
Self-rated health in 2006 (1-5)	3.21	(1.09)	3.26	(1.11)
Self-rated health in 2008 (1-5)[a]	3.12	(1.07)	3.18	(1.08)
Perceived discrimination				
Everyday discrimination (1-6)	1.66	(.72)	1.72	(.76)
Discriminatory events (0-6)	.43	(.85)	.49	(.90)
Social Status variables				
Race				
White	79.2		83.2	
Black	12.4		8.7	
Hispanic	7.0		6.6	
Other race	1.4		1.5	
Female	57.6		54.2	
Education (0-17)	12.67	(3.01)	12.92	(2.96)
Household income (log) (0-17)	10.53	(1.18)	10.62	(1.25)
Household total assets (log) (0-19)	11.44	(3.39)	11.42	(3.47)
Household total members	2.10	(.95)	3.11	(.54)
Social support				
Positive social support	3.14	(.53)	3.11	(.54)
Negative social support	1.65	(.47)	1.68	(.47)
Control variables				
Age in 2006 (53-104)	68.65	(9.63)	65.86	(10.13)
Marital status				
Married/Partnered	68.2		68.3	
Separated/Divorced	10.5		12.4	
Widowed	19.0		16.0	
Never married	2.3		3.3	
Work status				
Working fulltime	23.9		34.0	
Working parttime	10.2		10.1	
Not working	65.9		55.8	

Note: N=6,798.

[a] Number of respondents varies for health in variables. N of self-rated health in 2008 is 6,321

work parttime.

Bivariate Correlations among All Variables

Table II presents the correlations among all the variables included in this study. The correlation matrix is used to identify the covariates, and more importantly for this research, to detect multicollinearity among variables. Multicollinearity is a problem which should be taken into consideration in this study because of the potential that two or more predictor variables in a multiple regression model are highly related, such as everyday discrimination and major discrimination events, everyday discrimination and negative social support, and household income and household total assets. As shown in Table 2, only four of the Pearson Correlation Coefficients are above .40, suggesting multicollinearity is not a serious concern among the variables studied. The four pairs of variables which have the highest Pearson Correlation Coefficient are self-rated health in 2006 and self-rated health in 2008 (r=.69), age and widowed (r=.44), household income and total household assets (r=.42), and everyday discrimination and negative social support (r=.42), indicating there might have potential problems concerning multicollinearity for these pairs of variables. The high correlation between self-rated health measured in the two years is not an issue since self-rated health is the ultimate dependent variable. Age and being widowed are control variables in this study and each variable's unique contribution is less of a concern. Because household income and assets are highly correlated, I will focus on their joint effects in my interpretation of the results. In order to distinguish everyday discrimination and negative social support, a factor

analysis is conducted and the results show that they are loaded on two different factors (refer to Appendices 1 for the details). Therefore we can say discrimination and negative social support in this survey are distinct concepts.

From Table 2, we can see: (1) Perceived discrimination. Everyday discrimination and major discrimination events is positively related, indicating that people who experience more everyday discrimination also experience more lifetime major discrimination events. Being black is positively related with perceived discrimination, while the relationships between Hispanic and perceived discrimination and between other race and perceived discrimination are not significant at p<.05 level. Surprisingly, being female is negatively related with perceived discrimination, and education is positively associated with major discrimination events. Total household assets are negatively related with perceived discrimination, while household income and perceived discrimination is not significant. Total number of household members is positively related with everyday discrimination. Perceived discrimination is negatively associated with positive social support, and is positively associated with negative social support as we expected. Surprisingly, age and perceived discrimination is negatively associated. Compared with the elderly who are married, those who are separated/divorced are more likely to be discriminated against, those widowed are less likely to be discriminated against, and those who are never married are more likely to experience major discrimination events. The elderly who work fulltime are most likely to experience everyday discrimination and lifetime major discrimination events than other older adults; (2) Health. People who report better health in 2006 also have higher score on self-rated health in 2008. Everyday

Table II. Correlations Matrix for All Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Self-rated health in 2006	1.00																				
2.Self-rated health in 2008[a]	.69**	1.00																			
3.Everyday discrimination	-.09**	-.11**	1.00																		
4.Discriminatory events	-.03**	-.05**	.31**	1.00																	
5.Black	-.13**	-.10**	.07**	.15**	1.00																
6.Hispanic	-.12**	-.12**	.00	.02	-.09**	1.00															
7.Other race	-.01	-.02	.04**	.00	-.04**	-.03**	1.00														
8. Female	-.02	-.02	-.12**	-.12**	.05**	-.00	.02	1.00													
9. Education	.32**	.28**	.01	.09**	-.12**	-.29**	.01	-.07**	1.00												
10. Household income (log)	.32**	.29**	.02	.01	-.16**	-.19**	-.01	-.14**	.39**	1.00											
11. Household total assets (log)	.27**	.26**	-.11**	-.11**	-.25**	-.18**	-.00	-.06**	.31**	.42**	1.00										
12. Household total members	.02	.02	.07**	.02	.05**	.16**	.04**	-.10**	-.03*	.11**	-.02	1.00									
13. Positive social support	.12**	.14**	-.28**	-.13**	-.00	.00	-.03*	.14**	.01	.02*	.09**	-.05**	1.00								
14. Negative social support	-.09**	-.10**	.40**	.22**	.09**	.05**	.06**	.00	-.02	.01	-.10**	.20**	-.33**	1.00							
15. Age	-.16**	-.14**	-.23**	-.20**	-.05**	-.07**	-.03*	.07**	-.19**	-.22**	.04**	-.28**	.11**	-.25**	1.00						
16.Married/Partnered	.14**	.14**	.01	-.03*	-.13**	-.01	.02	-.24**	.11**	.41**	.3-*	.41**	.01	.10**	-.23**	1.00					
17. Separated/Divorced	-.05**	-.07**	.07**	.13**	.11**	.05**	-.01	.05**	-.00	-.21**	-.24**	-.19**	-.05**	.01	-.12**	-.55**	1.00				
18. Widowed	-.11**	-.09**	-.09**	-.10**	.05**	-.03*	-.01	.27**	-.15**	-.27**	-.12**	-.29**	.05**	-.15**	.44**	-.64**	-.17**	1.00			
19. Never married	-.02	-.03*	.02	.04**	.05**	.01	-.01	-.03*	.02	-.11**	-.11**	-.13**	-.04**	.01	-.07**	-.27**	-.07**	-.08**	1.00		
20. Working fulltime	.26**	.21**	.14**	.10**	-.04**	.02	.03*	-.15**	.19**	.34**	.05**	.16**	-.06**	.08**	-.52**	.14**	.03**	-.22**	.02	1.00	
21. Working parttime	.09**	.07**	.00	.03**	.00	-.04**	-.00	.03*	.08**	.06**	.05**	-.01	.02	.02	-.05**	.02	.03*	-.05**	.00	-.24**	1.00

Note: N=6,798. All results are weighted.
[a] Number of respondents varies for health variables. N=6,321 for self-rated health in 2008.
*p<.05; **p<.01

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discrimination has a stronger relationship with health than major discrimination events. Blacks and Hispanics have lower levels of self-rated health both in 2006 and 2008. The relationship between gender and health is not significant. People with higher education, or higher household income and assets are healthier. People with higher levels of positive social support are healthier, while people with higher levels of negative social support are less healthy. Age and self-rated health is negatively related. Compared to the elderly who are married, all the other three groups—separated/divorced, widowed, never married people are less healthy. Work fulltime or work parttime are both positively associated with self-rated health.

Social Status and Discrimination

Results from the OLS regressions of measures of perceived discrimination on social status variables, social support and control variables are presented in Table III. In these two regression models, the maximum VIF value is 1.849, indicating there is no multicollinearity problem in the model. As expected, blacks are higher on the scale of major discriminatory events than whites (β=.39). Compared to whites, Hispanics are lower on the scale of everyday discrimination (β=.-.08), but higher on scale of major discriminatory events (β=.12). However, the relationship between other race and discrimination is not significant. Surprisingly, female is negatively associated with both everyday discrimination and major discrimination events. Compared to males, females are .17 points and .22 points lower on the scale of major discrimination events. Education is positively related with major discrimination events (β=.03), but not significantly related with everyday discrimination. Household total assets and household total number

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Table III. OLS Regressions of Perceived Discrimination on Social Status, Social Support and Control Variables

	Everyday discrimination	Discriminatory events
Social Status variables		
Race(ref=white)		
Black	.04	.39**
Hispanic	-.08*	.12*
Other race	.06	-.01
Female	-.17**	-.22**
Education	-.00	.03**
Household income (log)	.01	.00
Household total assets (log)	-.01**	-.02**
Household total members	-.03**	-.04**
Social support		
Positive social support	-.18**	-.05*
Negative social support	.57**	.34**
Control variables		
Age	-.01**	-.01**
Marital status(ref=married)		
Separated/Divorced	.08**	.22*
Widowed	.10**	.05
Never married	-.02	.06
Work status(ref=non working)		
Working fulltime	.06**	.02
Working parttime	.01	.07
Constant	2.14**	.67**
R^2	.236	.126

Note: N=6,798. All results are weighted.

Unstandardized coefficients are reported in the table.

*p<.05; **p<.01

of members are both negatively related with perceived discrimination, while the relationship between household income and discrimination is not significant. To summarize, whites have the lowest levels of perceived discrimination as we expected. In addition, the results provide support for the hypothesis that people with higher household total assets are lower on perceived discrimination. However, contrary to my hypothesis, females have higher levels of perceived discrimination compared to males, and the elderly with higher education levels perceive higher levels of major discriminatory events compared to those with lower education levels. In general, my first hypothesis is partially supported.

Discrimination, Social Support and Health

Results from the multinominal logistic regression predicting who died and dropped out from the survey between 2006 and 2008 are presented in Table IV. This analysis is conducted to indentify factors related to whether the respondents who died or dropped out between 2006 and 2008 differ from those remaining in the study. The probabilities of death and dropping out are included in the subsequent regression analysis of health in 2008 to adjust for selection bias. The results show that, model chi-square is 500.830 with the level of significance less than .05. Thus, we found a statistically significant overall relationship between the combination of independent variables and the dependent variable--whether respondents remained/died/dropped from the survey.

By examining the likelihood ratio tests, we found that whether the elderly died between 2006 and 2008 is significant associated with the following independent variables: self-rated health on 2006, black, Hispanic, female, total household assets, total

Table IV. Multinominal Logistic Regression Predicting Who Died and Dropped Out between 2006 and 2008

	Died	Dropped out
Self-rated health in 2006	-.72[**]	.09
Perceived discrimination		
Everyday discrimination	.04	.05
Discriminatory events	-.12	.00
Social Status variables		
Race(ref=white)		
Black	-.51[*]	-.10
Hispanic	-.82[*]	-.18
Other race	-.95	-.81
Female	-.56[**]	-.01
Education	.02	-.05
Household income (log)	.06	.02
Household total assets (log)	-.07[**]	-.08[**]
Household total members	.14[**]	-.00
Social support		
Positive social support	-.04	-.15
Negative social support	.05	-.21
Control variables		
Age	.06[**]	-.01
Marital status(ref=married)		
Separated/Divorced	.17	-1.05[**]
Widowed	.34	-.20
Never married	1.15[**]	.09
Work status(ref=non working)		
Working fulltime	-.94[**]	-.06
Working parttime	-.90[**]	-.32
Constant	-5.49[**]	-.71[*]

Model: X^2=500.830, df=38, p<. 01.

Note: N=6,798. All results are weighted.

Unstandardized coefficients are reported in the table.

Comparison group is who stayed in the sample in 2008.

*p<.05; **p<.01

number of household members, age, never married, work full time, work part time.

However, it is not significantly associated with the other independent variables—everyday discrimination, discriminatory events, other race, education, household income, positive social support, negative support, separated/divorced, and widowed. Whether the elderly dropped out from the survey between 2006 and 2008 is only significantly associated with household total assets and being separated/divorced.

By examining the parameter estimates, we found that, for blacks, Hispanics, females, people with more total household assets, people working full time or part time, the likelihood of death versus staying from 2006 and 2008 is less than it is for whites, males, people with less household assets, and people who are not working. For the elderly who are never married and those living with more household members, the likelihood of death versus staying from 2006 and 2008 is higher than it is for the elderly living with fewer household members and being married. Age is also significantly associated with death: with one year increase of age, the odds of dying from 2006 to 2008 increase by 6%. By comparing the likelihood of dropping out of the survey between 2006 and 2008 and remaining in the survey, we found that the elderly with one unit higher on the log of total household assets are 8% less likely to drop from the survey compared to those who remained in the survey. Older adults who are separated/divorced are less likely to drop out from the survey between 2006 and 2008 than those who are married. There are no statistically significant relationships between other independent variables and whether people dropped out or remained in the survey. Results from the regressions of self-rated health in 2008 on health in 2006, perceived discrimination, social status variables, social support, control variables, probabilities to die and drop out from survey

between 2006 and 2008, and four pairs of cross-product terms (i.e., positive social support and everyday discrimination, positive social support and major discrimination event, negative social support and everyday discrimination, and negative social support and major discrimination event) are presented in Table V. In model 1 which includes only the main effects, all the VIF values are below 10 except that of the probability to drop out variable which is 10.964. Additional analysis shows that it is only highly correlated with the probability of death which is used only as a control variable, and since the VIF value is in the borderline of 10, it causes little concern about multicollinearity problem in this model. In model 2 and model 3 which include interaction terms of perceived discrimination and social support, the VIF of the probability to drop out variable is 10.972 and 10.970 for the same reason, which suggests little concern about multicollinearity problem in the two models.

In Model 1, health is regressed on health in 2006, perceived discrimination, social status variables, social support, control variables, and probability to die and drop out from survey between 2006 and 2008. Results show that, people who report higher levels of health in 2006 are more likely to remain healthy in 2006. Everyday discrimination is negatively related with the change in self-rated health over a two-year period. However, the relationship between major discrimination events and change in health is not significant. People with higher education, higher household income or household total assets report higher levels of self-rated health in 2008. Higher levels of positive social support are associated with higher levels of self-rated health, while negative social support is not significantly related with self-rated health in 2008. To sum up, the data provide support that there is a negative relationship between everyday discrimination and

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Table V. Regression of Health in 2008 on Health in 2006, Perceived Discrimination, Social Status Variables, and Social Support

	Model 1	Model 2	Model 3
Self-rated health in 2006	.62**	.62**	.62**
Perceived discrimination			
Everyday discrimination	-.05**	-.06**	-.06**
Discriminatory events	-.01	-.01	-.02
Social Status variables			
Race(ref=white)			
Black	.02	.02	.02
Hispanic	-.06	-.06	-.06
Other race	-.08	-.08	-.08
Female	.01	.01	.01
Education	.02**	.02**	.02**
Household income (log)	.02*	.02*	.02*
Household total assets (log)	.02**	.02**	.02**
Household total members	.00	.00	.00
Social support			
Positive social support	.12**	.12**	.12**
Negative social support	-.01	-.01	-.02
Control variables			
Age	-.01*	-.01*	-.01*
Marital status(ref=married)			
Separated/Divorced	-.01	-.02	-.01
Widowed	.04	.03	.03
Never married	-.09	-.08	-.09
Work status(ref=non working)			
Working fulltime	.08**	.08**	.08**
Working parttime	.08	.08	.08
Probability to die/drop out/remain in the survey (ref=probability to remain in the survey)			
Probability to die	.36	.34	.38
Probability to drop out	2.81	2.65	2.68
Positive social support × Everyday discrimination		-.05+	
Positive social support × Discrimination events		.03	
Negative social support × Everyday discrimination			.05
Negative social support × Discrimination events			.01
Constant	.60*	.62	.61*
R^2	.487	.487	.487

Note: N=6,798. All results are weighted.

Unstandardized coefficients are reported in the table.

+p<.1*p<.05; **p<.01,

individuals' change in health, but the relationship between major discrimination events and individuals' change in health is not significant. Therefore, my second hypothesis that perceived discrimination is linked to adverse change in health is partially supported.

Two interaction terms between positive social support and perceived discrimination are added into Model 1 in order to test the buffer effect of positive social support on the relationship between discrimination and health. The results show that the interaction of positive social support and everyday discrimination is marginally significant. Surprisingly, the direction of this effect is contrary to what I expected in my third hypothesis. With the increase of everyday discrimination, positive social support has reverse effect on individuals' change in health, which means positive social support aggravates the effect of everyday discrimination on change in health. The interaction effect of positive social support and major discriminatory events on health is not statistically significant. The results of other variables are almost the same as those in Model 1.In Model 3, two interaction terms between negative social support and perceived discrimination are included in order to detect the effect of positive social support on the relationship between discrimination and change in health. Neither of the interaction terms is significant. The results of other variables are almost the same as those in Model 1. In general, my third hypothesis is not supported by the data.

Gender Differences in the Relationship between Discrimination and Health

In order to examine whether there are gender differences in the effects of perceived discrimination on health I also run OLS regressions of self-rated health

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Table VI. Gender Differences of Regression of Health in 2008 on Health in 2006, Perceived Discrimination, Social Status Variables, and Social Support

	Female			Male		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Self-rated health in 2006	$.63^{**}$	$.63^{**}$	$.63^{**}$	$.61^{**}$	$.61^{**}$	$.61^{**}$
Perceived discrimination						
Everyday discrimination	-.02	-.03	-.03	$-.09^{**}$	$-.09^{**}$	$-.10^{**}$
Discriminatory events	-.01	-.01	-.01	-.01	-.00	-.02
Social Status variables						
Race(ref=white)						
Black	-.01	-.00	-.00	.06	.06	.06
Hispanic	-.08	-.08	-.08	-.02	-.03	-.03
Other race	-.12	-.12	-.12	-.05	-.06	-.05
Education	$.01^{*}$	$.01^{*}$	$.01^{*}$	$.02^{**}$	$.02^{**}$	$.02^{**}$
Household income (log)	$.03^{*}$	$.03^{*}$	$.03^{*}$	.01	.01	.01
Household total assets (log)	.02	.02	.02	$.03^{*}$	$.03^{*}$	$.03^{*}$
Household total members	.00	.00	.00	-.00	-.01	-.00
Social support						
Positive social support	$.14^{**}$	$.14^{**}$	$.14^{**}$	$.10^{**}$	$.09^{**}$	$.10^{**}$
Negative social support	-.01	-.01	-.01	-.02	-.02	-.05
Control variables						
Age	-.00	-.00	-.00	$-.01^{*}$	$-.01^{*}$	$-.01^{*}$
Marital status(ref=married)						
Separated/Divorced	-.05	-.05	-.05	.00	-.01	-.00
Widowed	.00	.00	.00	.09	.08	.08
Never married	-.02	-.02	-.02	-.14	-.14	-.14
Work status(ref=non working)						
Working fulltime	$.09^{*}$	$.09^{*}$	$.09^{*}$	.05	.05	.06
Working parttime	.07	.07	.07	.08	.07	.08
Probability to die/drop out/remain in the survey (ref=probability to remain in the survey)						
Probability to die	$.72^{+}$	$.73^{+}$	$.74^{+}$	.12	.08	.13
Probability to drop out	-.77	-.67	-.84	6.50	6.09	6.13
Positive social support × Everyday discrimination		-.05+			-.04	
Positive social support × Discrimination events		.01			.06*	
Negative social support × Everyday discrimination			.03			.06
Negative social support × Discrimination events			-.00			.03
Constant	$.74^{*}$	.73*	.74*	.57	.63	.60
R^2	.49	.49	.49	.48	.49	.49

Note: N=6,798. All results are weighted.

Unstandardized coefficients are reported in the table.

$^{+}$p<.1, *p<.05; **p<.01

separately for older men and older women. The results are presented in Table VI. In each regression model, all the VIF values are below 10 except that of the probability to drop out variable which is around 10.3, indicating little concern about multicollinearity problem in these models.

In model 1, everyday discrimination is negatively related to self-rated health in 2008 for older men. Net of other variables and self-rated health in 2006, with one point increase in the everyday discrimination scale, men's self-rated health in 2008 decreases by .09. On the other hand, this relationship is not significant for older women. In model 2, we found that positive social support has a buffer effect on the relationship between major discriminatory events and health for men as we expected. However, for women positive social support has a marginal effect on the relationship between everyday discrimination and health with a different direction as we expected in my third hypothesis. Model 3 shows no significant interaction effects of negative social support and perceived discrimination on health. To sum up, the adverse effect of everyday discrimination on individuals' health is more evident for men than women. However, the gender differences in the impact of major discriminatory events on health and the buffer effect of social support do not receive consistent supported from the data. In general, my fourth hypothesis that the detrimental effect of discrimination on health is stronger for men than for women is partially supported.

DISCUSSION AND CONCLUSION

As one of several studies of discrimination, the current study aims to determinineeffects of discrimination on change in health, the buffering effect of social

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support, and the gender differences in the relationship between discrimination and health. The existing literature in this area has some limitations that need to be addressed. By using a longitudinal survey that has a large and representative sample and includes rich information on different types of discrimination and positive and negative social support, the current study overcomes some of the limitations and makes important contributions in this area.

The current study has found several interesting phenomena which are worth further discussion. Consistent with the previous literature, whites are least likely to experience discrimination as we expected. In addition, the data provide support for the hypothesis that people with higher household total assets are less likely to experience discrimination. However, contrary to my hypothesis but consistent with some studies, older women reported lower levels of discrimination compared to older men. This seemingly surprising finding may be explained by the different roles and expectations our society accords to men and women. For centuries, men are expected to be successful in their careers, to be the bread winner for the family, to be masculine, aggressive and active in society. Therefore, men are experiencing much higher pressure than women (Madden, 1987; Wootton, 1997). When men and women both experience discrimination, men may feel more embarrassed and sensitive, which results in more damage to them. On the other hand, older women might have already got used to many kinds of unfair treatments, and thus they may be less likely to consider them as discrimination. The relationship between education and discrimination is also contrary to my hypothesis as the results show that people with higher education levels are *more* likely to report major discrimination events compared to those with lower education levels. One possible explanation is that older

adults who have higher levels of education work longer, and thus they are exposed to some discriminatory environment, such as the workplace, for a longer time. It is also possible that better educated people are more conscious of discrimination issues and thus are more likely to see an event as discriminatory than those with less education. However, further research is needed to identify the true reasons for these unexpected relationships.

Results of the regression of health on specific variables and interaction terms showed a negative relationship between everyday discrimination and individuals' change in health, but the relationship between major discriminatory events and individuals' change in health is not significant. This finding is consistent with previous research which suggests that everyday discrimination can have long term impact on health, and need to be assessed along with major discriminatory events. Although the buffering effect of social support is not well supported with these data, we found that higher levels of positive social support are associated with higher levels of self-rated health, while negative social support is not significantly related with self-rated health in 2008. As an important resource, social support plays a significant role in relieving the pain and stress, and reducing the detrimental effect of all kinds of negative feelings resulted from discrimination. In addition, the hypothesis that the detrimental effect of discrimination is stronger to men than women is partially supported.

The current study has several limitations. Most importantly, the measures I used in this study are limited due to data limitations. Perceived discrimination as measured in this study only represents a small proportion of the actual instances of unfair treatments based on race, gender, age, or other statuses (Ridgeway, 1997; Rosen and Martin, 1998),

thus it might not be comprehensive enough. In addition, self-rated health which is used in this study does not necessarily represent all dimensions of health. There are many other measures that need to be taken into account, such as depressive symptoms, functional limitations, and chronic conditions. Second, the 312 respondents who died and the 165 respondents who dropped out between 2006 and 2008 interviews could have an effect on the results. I conducted the multinominal logistic regression to calculate the possibilities for a respondent to die or drop out and have included these possibilities into the multiple regression models in order to reduce the selection bias; however, the bias might still exist and influence the results to some extent. Third, it remains unclear how long it will take for one's health to be influenced by the negative feelings resulted from perceived discrimination. The two waves of data used in this study are from 2006 and 2008, which is a two-year interval. The detrimental effect of discrimination on health change might not be noticeable in such a short period. More waves of data would extend the time frame and provide more definite answers to the question on the effect of discrimination on health.

To summarize, the current study provides some evidence that people with disadvantaged social status are more likely to experience discrimination, and everyday discrimination is detrimental to individuals' health in older adults. This study adds to a growing literature documenting discrimination as a significant social determinant of health. In addition, this study also found a surprising result of the relationship between gender and perceived discrimination, and between education and perceived discrimination, both of which need further research. Discriminatory acts and events are a frequent source of stress linked to adverse health among people. To protect the well being

of those who are more discriminated against in their lives, it is imperative that we do more to eradicate discriminatory acts and unfair treatments on the basis of race/ethnicity, gender, education, income and other social statuses. Krieger (1999) argues that from a legal perspective, it is the state that possesses critical agency and establishes whether it is a permissive or prohibitive context for discriminatory acts: it can enforce, enable, or condone discrimination, or alternatively, it can outlaw discrimination and seek to redress its effects.

Appendix I. Factor Analysis on Negative Social Support and Everyday Discrimination

<div align="center">Rotated Component Matrix</div>

	Component		
	1	2	3
Friends understand the way you feel	-.067	.849	.041
Rely on friends if serious problem	-.076	.855	.044
Open up to friends about worries	-.044	.887	.020
Too many demands on you-friends	-.133	-.101	.736
Friends criticize you	-.196	-.031	.735
Friends let you down	-.151	.154	.730
Friends get on your nerves	-.106	.111	.765
Be treated with less respect	.779	-.054	-.174
Receive poorer service than others	.765	-.038	-.130
People act as if you are not smart	.764	-.075	-.153
People act as they are afraid of you	.639	-.045	-.096
You are threatened or harassed	.669	-.029	-.109

Note: Factor analysis is conducted for everyday discrimination, positive social support and negative social support. The table below is the condition for friends. The results for spouse, child, and other family members are all very similar to the results. Based on the results of factor analysis, these three are loaded on three different factors. Therefore we can say discrimination and negative social support in this survey are distinct.

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