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# Racial Differences in Depressive Symptoms among Older Adults

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RACIAL DIFFERENCES IN DEPRESSIVE SYMPTOMS AMONG OLDER ADULTS

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A Thesis  
Presented to  
the Graduate School of  
Clemson University

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science  
Applied Sociology

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by  
Emily Riester Green  
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Accepted by:  
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## ABSTRACT

The costs are very high, both emotionally and economically, to those who suffer from depression and those close to them. Depressive symptoms vary among individuals, by gender, between racial and ethnic groups, and by socioeconomic status (SES). Group differences in rates of depression have been noted for decades, especially between African Americans and non-Hispanic whites. The role of race in mental health is still relevant today, and many issues regarding risk factors and differences between racial and ethnic groups remain unanswered. This study examines the differences in rates of depressive symptoms between African Americans and non-Hispanic Whites. Particularly, socioeconomic status (SES), physical health and social support are used to explain the differences between race and amount of depressive symptoms. Results indicate that SES, physical health and quality of social support are significant in predicting depressive symptoms. African Americans experience significantly higher levels of depressive symptoms, lower SES, poorer health and lower quantities of informal social support. Differences in SES and physical health largely explain racial group differences in depressive symptoms, and the influence of these factors remains stable over time.

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# CHAPTER ONE

## REVIEW OF THE LITERATURE

### *Introduction*

In a given year, as many as 18.1 million American adults may suffer from a depressive illness (R. C. Kessler, Chiu, Demler, & Walters, 2005). The economic costs of depression are very high, including increased healthcare usage and poor work performance. The emotional cost of suffering is also great, not only to those afflicted by depression but also to those who are close to people with depression, such as family and friends (Health, 2007). Some of the symptoms of depression outlined by the Diagnostic and Statistical Manual of Mental Disorders include insomnia, feelings of sadness or emptiness, marked diminished pleasure in activities, significant weight loss or gain, fatigue or loss of energy, and inability to concentrate (Association, 1994). Some symptoms may be experienced more by females than males. These depressive symptoms vary among individuals, by gender, between racial and ethnic groups, and by socioeconomic status (SES). Group differences in rates of depression have been noted for decades; in particular, African Americans have been noted for experiencing elevated rates of depressive symptoms compared to non-Hispanic whites (Vega & Rumbaut, 1991). The role of race in mental health is still relevant today, and many issues regarding prevalence and risk factors remain unanswered.

The differences in depressive symptoms by race are usually explained by SES, social support, and health. People with a lower SES are more vulnerable to negative life events, such as economic problems, obtaining adequate health care, and acquiring sufficient employment. Typically people who have a lower SES have higher levels of

depression (Ulbrich, Warheit, & Zimmerman, 1989). In addition, African Americans typically occupy low SES statuses, thus making African Americans more vulnerable to experiencing depressive symptoms (R. C. Kessler, Mickelson, & Williams, 1999).

Physical health can be another important predictor of depression. Depression can cause physical health to decline, and people in poor physical health tend to develop depression more often (Gitlin, Hauck, Dennis, & Schulz, 2007). Finally, social support can be an important moderator in depression. People with higher levels of depression tend to have lower levels of social support. African Americans tend to have higher levels of certain types of social support, but less access to others. For instance, African Americans typically experience lower quality of social support but higher quantity as measured by some forms of social interaction (Kim & McKenry, 1998).

Many studies have examined racial differences in depressive symptoms by only focusing on one contributor, such as SES or physical health, but few have examined the main three factors together (Biafora, 1995; George & Lynch, 2003; Sarkisian, Shunkwiler, Aguilar, & Moore, 2006). This study will extend the existing literature in two ways: by evaluating all three of these contributors to racial group differences in depression and by assessing how the effect of these coefficients may have changed over time. In this study, I will examine the three major variables thought to contribute to racial group differences in rates of depressive symptoms: SES, physical health and social support. Then I will hypothesize the ways in which the variables work together to produce the difference between racial groups, as well as identify patterns and changes over time.

### *SES and Depressive Symptoms*

SES is an important correlate of mental health. Link et al. (1993) states that generally there is a strong inverse relationship between depression and SES. An inverse relationship occurs when SES goes down and depression levels rise; therefore, the lower a person's SES, the more likely he or she is to experience depressive symptoms. Other studies also highlight the inverse relationship of SES and depression indicating that the higher SES a person occupies, the less likely he or she is to be depressed, while in contrast those with lower SES statuses are more likely to be depressed (Ulbrich et al., 1989; Williams, Takeuchi, & Adair, 1992).

Education is an important aspect of SES and is also associated with levels of depression. One study found that low educational attainment was one of the indicators for severe depression (Myers et al., 2002). Another study found that the inverse relationship between education and depression also grows larger with age (Miech & Shanahan, 2000). These findings suggest that those with more privileged positions in society are less vulnerable to experiencing mental health problems while those with less privileged positions in society (including those with low educational attainment) are more vulnerable to mental health problems.

SES is important for this analysis because economic inequality is a major contributor to racial group differences in depressive symptoms (Ulbrich et al., 1989). Several factors contribute to differences in depressive symptoms related to SES. Typically, people occupying lower SES groups are more likely to encounter stressors such as economic problems, bad neighborhoods and crime which can contribute to depression (R. C. Kessler et al., 1999; Latkin & Curry, 2003). African Americans

typically occupy lower SES groups than non-Hispanic whites placing them at higher risk for these stressors, which can, in turn, lead to higher rates of depressive symptoms (R. C. Kessler et al., 1999; Latkin & Curry, 2003). Currently there are two views in the literature regarding the extent to which differences in SES explain racial differences in depressive symptoms. One school of thought argues that there are no racial differences in depressive symptoms once SES factors are controlled (Biafora, 1995; Neff, 1984). The other contends that differences in SES may explain some of the gap between African Americans and non-Hispanic whites, but argues that other factors also contribute (A. C. Brown, Brody, & Stoneman, 2000; R. Kessler, Harold W. Neighbors, 1986).

Researchers who argue racial group differences in depression are a function of economic inequality typically cite studies in which the effects of race on depression are eliminated when the effects of social class (or SES) are controlled (Biafora 1995; Neff 1984; (Cockerham, 1990). Biafora (1995), for example, found that African Americans experienced more depressive symptoms than non-Hispanic whites, but once SES variables were added, the difference was eliminated. Cockerham (1990) also found that there was no difference in depressive symptoms between races once SES was added. His findings indicated that as income increased, distress levels among both races went down and that there were no differences in distress levels among people of both races occupying the lowest SES group.

While some researchers argue that all racial group differences in depressive symptoms can be explained by SES, other studies suggest more factors are involved. For example, there is evidence that race and class interact to produce differential vulnerability to depressive symptoms. Some research has found that African Americans who occupy

low SES groups experience depressive symptoms at higher rates than non-Hispanic whites of the same class status (A. C. Brown et al., 2000; Drentea & Goldner, 2006). Similarly, Kessler and Neighbors (1986) found that the effects of both race and socioeconomic status on psychological distress were significant and that the differences between races were particularly pronounced among people of low income. As a result, they argued that race was a very important determinant of mental health especially in the lower classes. Additionally, some research indicates that African American women are more depressed than non-Hispanic white women after socioeconomic factors are controlled (Myers et al., 2002). Finally, one study found that African Americans in rural communities had more persistent depressive symptoms and significantly higher rates of depressive symptoms compared to non-Hispanic rural whites (Neff, 1984).

Although the results of this research are mixed, on balance there is a growing agreement that while differences in SES do contribute to depression found in African Americans, it is not the sole explanation. Other factors must also be taken into consideration regarding racial differences in SES and depression. The next section explains the differences in depressive symptoms and race due to physical health.

### *Physical Health and Depressive Symptoms*

Physical health is also an important predictor of depressive symptoms because like SES, poor health is related to an increase of depressive symptoms (Cummings, Neff, & Husaini, 2003; Husaini & Moore, 1990). This is important for an understanding of racial group differences in depression because African Americans generally have much poorer health quality than do non-Hispanic whites. For this reason, it is important to

consider the degree of which differences in physical health may partially explain elevated rates of depressive symptoms among African Americans when compared with non-Hispanic whites.

Economic disadvantage, limited access to health care and lifelong exposure to health hazards put African Americans at an increased risk of developing health problems. In fact, African Americans experience twice as many chronic diseases as non-Hispanic whites (Cummings et al., 2003). Medical comorbidities, such as blindness and diabetes, are also commonly reported by African Americans (Sarkisian et al., 2006).

This increased prevalence of health problems places African Americans at an even greater risk for developing depressive symptoms than non-Hispanic whites (Cummings et al., 2003). High levels of depression are associated with common diseases and health problems. For instance, high levels of depression occur in patients with coronary heart disease (16-19%), stroke (26%), and cancer (25-38%) (Berman & Brodaty, 2006; Lebowitz & Pearson, 1997). These statistics are especially important to African Americans because there are already high rates of heart disease and cancer in the African American population as well as rising cancer rates. Additionally mortality rates are declining for many races and ethnicities due to heart disease and stroke, but the rates are not declining among African Americans (Cooper et al., 2000; Isaac, Rowland, & Blackwell, 2007).

Physical health can lead to depression for a number of reasons including pain, financial problems, and functional impairment. Functional impairment occurs when an individual can not perform regular tasks that they were able to perform previously, such as walking or bathing. Functional impairment can lead to higher levels of depression

because those experiencing functional impairment may feel a loss of control and adequacy due to the inability to care for themselves (Cummings et al., 2003). For the purposes of this research, functional impairment will be evaluated as a measure of overall health. It is especially important for this research because African Americans tend to experience higher levels of functional impairment than do non-Hispanic whites, which can subsequently lead to higher levels of depression (Cummings et al., 2003; Gitlin et al., 2007).

Another issue that African Americans face concerning physical health is access to medical care. There is a large inconsistency when it comes to a person's race and the amount of medical care they can receive. African Americans are significantly less likely to seek and obtain medical care than non-Hispanic whites (Harman, Edlund, & Fortney, 2004). These differences could be attributed to a lack of resources (such as a lack of income, adequate transportation or health insurance) or differences in preferences. Patient's preference for a doctor of the same race could also contribute to the explanation due to the fact that in 2001, only 2.3% of psychiatrists were African American and 1.6% of psychologists were African American (Poussaint, 2001). Many African Americans feel that they are treated rudely by non-Hispanic white practitioners and also feel unwelcome in hospitals and clinics. Additionally, African Americans may feel that non-Hispanic white psychologists cannot understand the hardships experienced from living in a racist country, which could contribute to the racial disparities in medical-seeking behaviors (Poussaint, 2001). This inability to receive proper care for physical and mental health problems could elevate depressive symptoms, even when people experience common illnesses, because of the lack of treatment.

African Americans tend to have more physical health problems compared to non-Hispanic whites and seem to be more affected by these problems than non-Hispanic whites. The explanations for this discrepancy are important to consider when evaluating racial differences in physical health and depressive symptoms. The explanations highlight the many different contributing factors of poor physical health and depressive symptoms, adding to the idea that many factors contribute to racial differences in depressive symptoms.

The racial differences in depressive symptoms concerning physical health can also be linked to SES. People who have higher levels of educational attainment have fewer health problems, and higher levels of health problems are associated with low SES. For instance, an African American with high educational attainment is far less likely to have health problems and less likely to experience depressive symptoms than African Americans with low educational attainment. Therefore, the influences of SES and physical health are particularly important factors in this study of racial differences in depression (Miech & Shanahan, 2000). For these reason, comparison over time is especially important because evaluating patterns and changes over time will provide more insight about this issue and the effects of better access to education on racial differences in depression.

Although the theoretical arguments presented in this paper suggest a causal direction that moves from ill health to depression, it should be noted that there is also evidence that these instances can move in the other direction (Gitlin et al., 2007). People who have depression tend to experience and develop more health problems, while people who experience more health problems tend to develop or experience more symptoms of



depression (Diem et al., 2007). Therefore, it is possible that the causal direction could occur in the opposite direction of that which is hypothesized in this study. Though this is possible, there seems to be more evidence that people with poor health then develop depressive symptoms. It is also possible that both causal directions are true depending on individual circumstances.

Another factor, which is also related to physical health and significantly influences levels of depression is social support. In some studies, social support seems to reverse the racial group differences in depression among people who experience functional impairment; therefore it is a very important topic to consider (Cummings et al., 2003; Gitlin et al., 2007). The next section will evaluate depressive symptoms and the effects of social support.

### *Social Support and Depressive Symptoms*

While low SES and poor health can elevate depressive symptoms, social support can help protect people against developing depression or elevated depressive symptoms (Carrington, 2006; Hays, Saunders, Flint, Kaplan, & Blazer, 1997; Holt & Espelage, 2005). Social support is typically defined in one of two ways: as quality of social relations and as quantity of social relations. Quality of social support pertains to the degree to which an individual feels supported by family and friends. Quality support also pertains to the closeness felt in these relationships. Quantity of support differs from quality of support, because it pertains to the number of supportive ties and interactions within an individual's network (Cohen & Wills, 1985; Kim & McKenry, 1998; Peek & O'Neill, 2001). Both forms of social support are important in many aspects of life and

can help improve mental health. First I will discuss current literature on the relationship between depression and quality of social support, followed by aspects regarding the quantity of social support.

Typically, when social support is measured as the quality of support, it has a negative effect on depression, meaning people with better quality of social support exhibit fewer depressive symptoms. Hayes et al. (1997) found that quality social support given by friends to individuals was beneficial to individual's mental health. People who were helped by friends were also more motivated and reported feeling more in control. Holt and Espelage (2005) also found that perceived quality of social support lowered levels of depression and anxiety. Quality of social support can also buffer against developing depressive symptoms when facing other difficulties. People that face stressful events or problems but have good quality support may not be as susceptible to developing depressive symptoms compared to those who have poor quality support (Cohen & Wills, 1985). Social support has these effects, in part, by reducing social isolation, a well known source of depression (Latkin & Curry, 2003). Good quality support can help guard against depressive symptoms by providing informational help, coping strategies and a source of comfort to those experiencing troublesome events. Support can also help those experiencing problems by providing a distraction or elevating one's mood. Instrumental support, or material support, provided by close relatives or friends can also help alleviate problems that cause large amounts of stress and depression such as economic difficulties (Cohen & Wills, 1985).

Quantity of social support is also important to mental health but its association with depressive symptoms is not as robust as that found for the quality of social support.

Although access to a high quantity of support may seem beneficial, these support groups may actually be a source of even more psychological distress because people may be experiencing more of other people's negative life events in large social networks (R. C. Kessler & Neighbors, 1986; Ulbrich et al., 1989). Also, large numbers of ties may not help psychological health when those in one's social network experience high levels of social disorder, suggesting that while quantity of social support may help some psychological problems there are other ways in which its effects can be negative (Latkin & Curry, 2003). In addition, there is little evidence that quantity of social support has the buffering effect found with quality of support. Cohen and Wills (1985), for example, investigated the different types of social support and found that quality of support, not network size, was important for reducing mental health problems.

The relative influence of these two forms of social support is important because of evidence that African Americans and non-Hispanic whites differ in the degree to which they report quality and quantity of social support. The research in this area is mixed, but on balance suggests that African Americans generally report lower *quality* but higher *quantity* of social support when compared to non-Hispanic whites (Kim & McKenry, 1998; Peek & O'Neill, 2001). African Americans are more likely to go to church-related, organizational, and neighborhood activities, while non-Hispanic whites are more likely to visit with friends and relatives. Additionally, non-Hispanic whites are more likely to reach out of their family circles for help if needed. These findings indicate that African Americans are more involved in formal types of social interaction, while non-Hispanic whites utilize informal social support. Fischer (1982) also found that African Americans had fewer friends and less involvement with friends than non-Hispanic whites. This is

especially important because quality of support has more potential to buffer against mental illnesses compared to quantity of support (Cohen & Wills, 1985).

While few studies have found that quality of support is higher among African Americans relative to whites, some studies focused on network size suggest racial group differences may not be as large as previously thought (Silverstein & Waite, 1993). Several studies compared network size across racial groups and found no differences (Baiyewu et al., 2007; Peek & O'Neill, 2001; Small, 2007). Small (2007) suggested that significant differences in network size were related to poverty, not race. Others have found that non-Hispanic whites actually have higher counts of social support resources (Fischer, 1982; Marsden, 1987).

These patterns in social support may especially be important for explaining rates of depressive symptoms among African Americans. Social support is especially important to African Americans because of the potential to help people solve problems and experience fewer depressive symptoms (Gitlin et al., 2007; Mitchell & Weatherly, 2000). In this research, I expect to find that African Americans will experience lower levels of quality social support compared to non-Hispanic whites which will also be associated with an increase in depressive symptoms. Additionally, I expect that African Americans will participate in more organizational activities but will visit friends and family less frequently compared to non-Hispanic whites. This difference may become more pronounced as participants age because they may begin to lack mobility as they age.

The influences of social support, especially quality social support, should also help to buffer against depressive symptoms for both racial groups, and those with higher

levels of social support should experience fewer depressive symptoms. Social support may also lessen the depressing effect of low SES or poor physical health. There is evidence that social support can moderate the association between depressive symptoms and health problems when individuals are experiencing stressful events. Although these studies mainly investigate the buffering effects of social support on stressors and negative life events, low SES and poor physical health can be considered stressors, therefore social support may also moderate depressive symptoms in participants with low SES and poor health statuses (Chou & Chi, 2001; Cropley & Steptoe, 2005; Hyers, 1995).

#### *Longitudinal Analysis in Panel Studies*

Brown (2007) states “There is little existing research on race–ethnic depression trajectories over time. Longitudinal data enable us to disentangle racial differences on initial symptom levels as well as trajectory divergence or convergence over time” (1297). Meaning that there is research on depression levels, but there is little research that outlines the course of depression over many years. Longitudinal data would make it possible to predict variables that influence depression changes that may occur as people age. This could also help in understanding racial differences in depression and the changes that may occur over time. Others also agree that longitudinal studies are needed in order to explain racial differences in depression more completely (J. S. Brown, Meadows, & Elder, 2007; Latkin & Curry, 2003; Ulbrich et al., 1989; Vega & Rumbaut, 1991). Though this research is needed, there is a reason that there is a lack of longitudinal studies concerning racial differences and depression.

There are several issues that can become problematic when studying depression and race in longitudinal studies. This includes measuring intraindividual change, timing

of the study, and influences of other events. The timing and implementation of the survey can be a concern, as well as history effects and maturation. These are major concerns for this particular study because many other life events can occur in between data collections which may or may not be assessed. History effects pertain to changes that an individual experiences, such as divorce, death of a spouse or loved one, or moving to a different neighborhood. History effects can also pertain to outside influences such as major events and community changes which can affect an individual's mental health. Some examples of history effects could be a community employer shutting down which could result in many people losing their jobs, or a natural disaster. Factors like these may lead to people becoming depressed for certain reasons which may not be measured. Maturation pertains to the expected changes that a person will experience as he or she ages. In this context, the changes observed in a study may be completely due to the natural changes as a person ages, not the changes in SES, physical health or social support. Naturally, as people age they may become less mobile, have fewer social interactions, and experience normal declines in health due to old age.

Inferring change in the longitudinal analysis and making conclusions from these changes can become very difficult because of secondary stressors. Secondary stressors involve other events or memories that surface after an initial stressor but can be equally as damaging (Lynch & George, 2002). In order to control for change that individuals experience and other present stressors, complex methods called latent growth curves and model trajectories are used. These methods have only been utilized in three studies of depression and race, all of which used stress to predict depressive symptoms, not SES, physical health or social support. (J. S. Brown et al., 2007; Ge, Lorenz, Conger, Elder, &

Simons, 1994; Lynch & George, 2002). These methods are used to account for numerous empirical concerns such as measurement errors, autocorrelated error and causal ordering. Measurement errors in both the independent and dependent variables can produce invalid results. These errors can result in autocorrelated error (meaning that the measurement errors are interrelated with the results), which can cause invalid regression model estimates (Johnson, 1988). Causal ordering is also a problem with regression-based models, especially when variables work in both directions. An example of this problem could be the health issue discussed earlier in this study. People may be depressed because they have developed an illness. Additionally, people may become depressed which can lead to health problems. If reciprocal variables are present such as the issue with health and depression, a regression model is no longer appropriate for the longitudinal analysis. Methods to prevent these errors are very complex (Johnson, 1988). These methods include using structural equation models, change scores and methods to control for history effects. Although a longitudinal analysis would be useful, the difficulties and possibilities for error are substantial.

Therefore in this analysis, rather than attempting a longitudinal analysis, I will simply compare two different waves of data. Although a longitudinal study would be beneficial, this study will instead compare two different time periods which will provide insight into any changes that may have occurred over the 18 year period regarding racial differences in depressive symptoms. This type of analysis will evaluate any changes over the time period with respect to social processes such as the importance of SES or health. An example of a change in social processes that could be observed in this study could occur in the regression models if the race variable is no longer significantly associated

with depressive symptoms in one wave or the other. This change could occur when other explanatory variables are added to the model, such as SES or physical health, which would mean that SES is more valuable in predicting differences in depressive symptoms than racial differences. If the variables remain stable over the time period in their influence on racial differences in depressive symptoms, social processes probably have remained the same. Additionally, if the race coefficient remains significant in the first wave, and does not remain the same in the fourth wave, this could indicate a change in social processes. This type of analysis will provide useful insight into patterns and changes without unnecessarily complicating the analysis.

### *Research Questions and Hypotheses*

Differential depression rates and race are very important issues to understand and research further. Previous research suggests the personal costs of depression can be enormous; economic and health care costs are also very high. Depression varies among races, especially among African Americans and non-Hispanic Whites. African Americans tend to identify more depressive symptoms while non-Hispanic whites tend to be diagnosed with depression more often (Cochran, Brown, & McGregor, 1999). Explanations for these differences generally use SES, physical health and social support as moderators.

Socioeconomic status can be an important contributing factor of depression. Typically people who have a lower socioeconomic status have higher levels of depression (Ulbrich et al., 1989). Physical health is another important explanation for the differences in race and depression. People in poor physical health tend to develop more symptoms of depression and are diagnosed with depression more often (Gitlin et al.,



2007). Finally, Social support can be an important moderator in depression (Cropley & Steptoe, 2005). People with lower levels of depression tend to have higher levels of quality social support. African Americans tend to have lower levels of quality of social support and tend to exhibit more depressive symptoms (Jang & Lyons, 2006; Vogt Yuan, 2002). Additional research is needed on older Americans in order to investigate the connection between the quality of support and depressive symptoms (Vogt Yuan, 2002).

This research will evaluate these issues, specifically the racial differences in depressive symptoms and the contributing factors of the differences. The influence of each factor individually is of interest, in addition to the combination of the factors in relation to their relative influence on depression. This study will also compare two waves of data. Each hypothesis will be tested for each wave of data. The comparison will allow a better understanding of the influence of the contributing factors of racial group differences in depression. There is nothing in the literature to suggest a significant change over time regarding the variables influence on racial differences in depressive symptoms; therefore I expect that the influences will remain the same over time.

Therefore, this study addresses the following research questions: 1) Is there a significant difference in depressive symptoms among African Americans and non-Hispanic Whites? 2) Do SES, physical health and social support work together explain this difference? 3) Will the abilities of SES, physical health and social support to explain racial group differences in depressive symptoms remain constant over time?

Hypotheses one through six aim to address these issues:

H1: African Americans will experience higher levels of depressive symptoms compared to non-Hispanic Whites.

H2: African Americans will have significantly lower SES, poorer physical health and higher quantities of formal social support and poorer quality social support than non-Hispanic whites.

H3: Differences in SES, physical health, and social support will each explain a portion of racial group differences in depressive symptoms; when all three variables are included in the model, they will account for all racial group differences in depressive symptoms.

H4: Social support will moderate the association between SES and depressive symptoms.

H5: Social support will moderate the association between health status and depressive symptoms.

H6: The abilities of SES, physical health and social support to explain racial group differences in depressive symptoms will remain the same over time.

## CHAPTER TWO

### METHODS

#### **Description of the Data**

Americans' Changing Lives (ACL) is a survey that was given in four waves. Wave one was collected in 1986, Wave Two in 1989, Wave 3 in 1994 and finally Wave 4 in 2004. This study only uses Waves 1 and 4. The survey primarily focuses on the differences in non-Hispanic Whites and African Americans in middle and late life. The longitudinal study covers a wide variety of topics from different disciplines including sociological, psychological, mental health, and physical health information. The study focuses on investigating three issues:

1. "The ways in which a wide range of activities and social relationships that people engage in are broadly "productive."
2. How individuals adapt to acute life events and chronic stresses that threaten the maintenance of health, effective functioning, and productive activity.
3. Sociocultural variations in the nature, meaning, determinants, and consequences of productive activity and relationships. Among the topics covered are interpersonal relationships (spouse/partner, children, parents, friends), sources and levels of satisfaction, social interactions and leisure activities, traumatic life events (physical assault, serious illness, divorce, death of a loved one, financial or legal problems), perceptions of retirement, health behaviors (smoking, alcohol consumption, overweight, rest), and utilization of health care services (doctor visits, hospitalization, nursing home institutionalization, bed days)" (Research, 2007).

There are also measures of physical health, psychological well-being, and information on cognitive functioning. Background and demographic information include household composition, number of children and grandchildren, occupation and work history, employment status, income, race, education, sex, region of residence, family financial situation, religious beliefs and practices, and ethnicity. Geographic coverage of the study includes the United States.

The sample varied slightly for the different waves. The waves consisted of a multistage stratified area probability sample. African Americans were oversampled as were older people (over age 60). Attempts were made during each wave to contact participants from the prior waves.

The full sample for Wave II differs from Wave I, because Wave I full sample consisted of 3,617 participants and only 2,867 responded of those responded in Wave II. This also occurred in Wave III, all participants from the previous two waves were contacted, and 2,562 participants responded. 164 respondents from Wave III were proxy respondents, which were respondents that answered questions on behalf of an original participant, and 1,787 cases participated in Wave IV.

The sample used in this study is different than the full sample discussed above because of the age differences and racial and ethnic groups in the study. Many participants are younger adults starting at age 24 in Wave I. In Wave IV, these people had all aged 18 years, meaning that when the two waves are compared, one wave would have a much more diverse age range. If the age groups are left this way, the comparison would be between ages 24 and older and then ages 42 and older. In order to account for the age differences in the sample, the youngest people were eliminated from the sample

in Wave I therefore the sample for this study includes people age 42 and older. The age 42 was chosen because the youngest person in Wave IV was 42, and the youngest person in Wave I was 24. This reduced the sample size for Wave I to 2,379 and 1,767 for Wave IV including just African Americans and non-Hispanic whites. The method of the data collection consisted of face-to-face interviews. The last update of the survey occurred on April 12, 2007 to update the codebook and data (Research, 2007).

## **Measures**

### *Depression*

The dependent variable, depressive symptoms, was measured using the 11-item version of the Center for Epidemiologic Studies Depression (CES-D) scale. The original version of the scale is 20 items, and the ACL data uses a shortened version of the scale. This scale was created in 1977 by Radloff and is designed to measure depressive symptoms in the general population. It is a reliable and valid scale and although it is not designed for clinical diagnosis, it is based on symptoms of depression seen in clinical cases. The test has high internal consistency and test-retest reliability and is suitable for studying English-speaking African Americans and non-Hispanic whites. A person with a high score can be interpreted as “at risk” for depression or in need of treatment (Radloff, 1977).

The 11 item CES-D scale in ACL asks respondents to indicate on a 3-point scale how often (hardly ever, some of the time, and most of the time) they felt depressed in the past week. They responded on the 3-point scale to the following 11 items: I felt depressed; I felt everything I did was an effort; My sleep was restless; I was happy

(reverse coded); I felt lonely; People were unfriendly; I enjoyed life (reverse coded); I did not feel like eating, my appetite was poor; I felt sad; I felt that people disliked me; and I could not get “going.” High values on the index represent high levels of depression, with 16 as the customary cutoff point for clinically relevant depressive symptoms. Rafloff’s 1977 study found that 16.3% of the general population scored 16 or higher. The index is standardized and is constructed by taking the arithmetic mean of the eleven items used to build the index.

### *Race*

Race was measured by asking the participants to indicate the race that best describes them. For the purposes of this research, all races are excluded from the analysis except African American and non-Hispanic white. Race is coded as a dummy variable with “1” indicating African Americans and “0” indicating non-Hispanic Whites.

### *Socio-Economic Status*

Socio-Economic Status was measured by variables regarding income and education. Annual family income was measured by respondents choosing one response out of ten possible income responses which were: 1. Less than \$5,000, 2. \$5,000-\$9,999, 3. \$10,000-\$14,999, 4. \$15,000-\$19,999, 5. \$20,000-\$24,999, 6. \$25,000-\$29,999, 7. \$30,000-\$39,999, 8. \$40,000-\$59,999, 9. \$60,000-\$79,999, 10. \$80,000 and above. Wave IV differs slightly because there are 11 categories: 10 is left blank, 11 changed to \$80,000-99,999 and 12 is \$100,000 and above. Education was measured by placing the

respondents into categories regarding years of education ranging from 0-8 years, 9-11 years, 12 years, 13-15 years, 16 years and 17 years or more.

### *Physical Health and Functional Health Index*

Physical Health can be measured by self-rated health and functional health. Self-rated health scales are valid measures of overall health and are valid across ethnic groups (Chandola & Jenkinson, 2000; Ferraro & Kelley-Moore, 2001). The self-rated health question asks respondents to indicate how they would rate their health at the current time and respondents answer: excellent, very good, good, fair, and poor.

The functional health index is constructed using 6 items regarding functional impairment and the severity of the impairment and is a valid measure of health (Hall, Epstein, & McNeil, 1989). The following items were used in the index: Currently in a bed/chair all day; Degree of difficulty bathing yourself; Degree of difficulty climbing the stairs; Degree of difficulty walking several blocks; Have difficulty with heavy housework and If so, how much difficulty. If the respondent answered “yes” to the questions about functional impairment, they were then asked to indicate how much difficulty they experienced by answering either “no difficulty”, “a little difficulty”, “some difficulty”, “a lot of difficulty” or “cannot do”. If the respondent answered no to the questions about functional impairment the respondent would not have difficulty with tasks and would not be chosen for the degree of difficulty questions. The range for this scale is 1 to 4 for both waves of data.

A scale created in the ACL data set was formed with the following levels of functional impairment from the questions above: 1: Most Severe (respondents who are

currently in a bed/chair and/or who have a lot of difficulty bathing or cannot bathe); 2: Moderately Severe (respondents who have a lot of difficulty climbing stairs or cannot do it and/or have a lot of difficulty walking or cannot do it but were not in the previously defined severity level); 3: Least Severe Level (difficulty doing housework but were not in the two previously defined severity levels); and 4: No Functional Impairment (respondents answered no to all functional impairment questions).

### *Quality of Social Support*

Social support was based on the quality of relationships with the respondent and his or her spouse, children over 16, mother, father and friends. The relationships were assessed by the following questions: How much does your (kind of relationship) make you feel loved and cared for?, How much (is/are) (he/she/they) willing to listen to when you need to talk about your worries or problems?, How much is (he/she/they) critical of what you do?, and How much do you feel (he/she/they) (makes/make) critical demands on you? For each question, the respondents could answer 1: a great deal, 2: quite a bit, 3: some, 4: a little, 5: or not at all. This index was created by taking the arithmetic mean of the items and then standardizing the result. A high score represents positive support and a low score indicates negative support. The reliability of this scale is .67 for Wave I and .68 for Wave IV with a range of -4.68 and 1.43 for Wave I and -2.72 and 1.43 for Wave IV.

### *Quantity of Social Support*

Social support can also be measured by social integration and instances such as meeting participation and religious services can have a positive impact on mental health



(Cohen & Wills, 1985). The ACL contains two social integration indices, both formal and informal. The informal index contains two questions. The first is: In a typical week, about how many times do you talk on the telephone with friends, neighbors or relatives? The respondents could answer: 1: More than once a day, 2: once a day, 3: 2 or 3 times a week, 4: about once a week, 5: less than once a week, or 6: never. The second question was: How often do you get together with friends, neighbors or relatives and do things like go out together or visit in each other's homes? The respondents could answer: 1: More than once a week, 2: once a week, 3: 2 or 3 times a month, 4: about once a month, 4: less than once a month, or 5: never. The reliability of this scale is an alpha of .45 for Wave I and an alpha of .48 for Wave IV. Although the reliability scores are fairly low, this is to be expected with only two questions in the index. The range for Wave I is -3.07 to 1.55 and the same for Wave IV.

The formal social integration index also contained two questions. The first question is: How often do you attend meetings or programs of groups, clubs, or organizations that you belong to? The respondent could answer: 1: More than once a week, once a week, 2: 2 or 3 times a month, 3: about once a month, 4: less than once a month, or 5: never. The second question is: How often do you attend religious services? The response options are the same as the previous question. These indexes were reverse coded and high levels of social integration are indicated by high values. Both indexes take the arithmetic mean of the two questions to build the indices, which are standardized. The reliability of this scale is an alpha of .57 for Wave I and .56 for Wave IV with a range of -1.55 to 1.97 for Wave I and -1.36 to 1.97 for Wave IV.

### *Controls*

Other factors that can impact depression are personal factors which can provide a better overall understanding of depression among African Americans. Age is important because typically depression levels are lowest at middle age and progressively increase as age increases (Mossakowski, 2003). Respondent's self-reported age is used as a continuous variable. Gender is also important because typically women experience more depressive symptoms than men (Baiyewu et al., 2007; Cochran et al., 1999; Mirowsky & Ross, 1992). Gender is measured as a dummy variable, women as "1" and men as "0." Marital status is also important because marriage typically protects people from depressive symptoms (Cochran et al., 1999). In this study, being married or having a partner is coded as "1" while being divorced, separated or widowed is coded as "0".

### **Overview of Analysis**

First, descriptive statistics and correlations were performed among variables for Wave I and Wave IV. I conducted correlations on race, depressive symptoms, SES, health, functional impairment, quality of social support, and social integration as a form of formal and informal social support, gender, age and marital status for both waves of data. All hypotheses were tested for each wave of data. Then Ordinary Least Squares (OLS) regression modeling was used to determine the strength and association between the dependent and independent variables. OLS was used to examine the first hypothesis regarding depression, race and moderating variables. A second OLS model was based on the baseline OLS model from the first wave for the fourth wave of respondents. I

anticipated that abilities of the independent variables: SES, physical health and social support to explain racial differences would remain the same over the 18 year period.

## CHAPTER THREE

### RESULTS

This chapter will review the results of the analysis, which examines racial differences in depressive symptoms in two waves of data. First, descriptive statistics are reported for the study variables, followed by T-Tests comparing racial differences in the main study variables for both waves of data. Second, the correlations between the study variables are presented. Finally, the results of regression analysis are presented along with interpretations and discussions of the analysis according to the hypotheses. Weighted measures were tested for the oversample of African Americans and for the attrition rate in Wave IV. Both weights were found to be insignificant, therefore weights were omitted from the analysis (though the descriptive statistics are weighted). Statistical Package for the Social Sciences (SPSS) was used to analyze data.

#### **Descriptive Statistics of Demographics and Study Variables**

Tables 1 shows the descriptive statistics of all study variables that were measured at Waves I and IV.

Table 1: Descriptive Statistics of Study Variables

	Wave I (N = 2379)			Wave IV (N = 1767)		
	<i>M</i>	<i>S.D.</i>	<i>Range</i>	<i>M</i>	<i>S.D.</i>	<i>Range</i>
<b>Age</b>	59.86	12.12	[42,96]	58.79	12.86	[42-99]
<b>Education</b>	10.76	3.57	[0,17]	12.52	2.71	[0-17]
	<i>Percentage</i>			<i>Percentage</i>		
<b>African American</b>	11.3%			11%		
<b>Female</b>	55.6%			59.3%		
<b>Married</b>	69.5%			62%		
<b>Household Income</b>	<i>Percentage</i>			<i>Percentage</i>		
1=Below \$5,000	9.0%			0.5%		
2=\$5,000-9,999	14.50%			7.7%		
3=\$10,000-14,999	12.50%			10.2%		
4=\$15,000-19,999	10.20%			9.3%		
5=\$20,000-24,999	10.70%			8.8%		
6=\$25,000-29,999	8.30%			6.0%		
7=\$30,000-39,999	12.30%			16.6%		
8=\$40,000-59,999	12.40%			15.4%		
9=\$60,000-79,000	5.70%			11.0%		
10=\$80,000 and above	4.40%			---		
11=\$80,000-99,999	---			5.4%		
12=\$100,000 & above	---			9.1%		
<b>Self-Rated Health</b>	<i>Percentage</i>			<i>Percentage</i>		
Very good	16.6%			13.80%		
Good	37.40%			36.60%		
Fair	24.00%			29.60%		
Poor	17.00%			14.40%		

Note: Weighted statistics are reported

Source: Americans Changing Lives

<sup>1</sup> Education was measured by using level for Wave IV respondent's answers given in Wave I

The total number of respondents for Wave I is 2,379 and 1,787 for Wave IV; weighted statistics are reported to account for the oversample. The mean age for Wave I is 59.389 (S.D. = 12.12, Range [42-96], Table 1). The mean age for Wave IV is 58.79 (S.D. = 12.86, range [42-99]). The mean of years of education is 10.76 (S.D. = 5.57, Range [0-17], Table 1) in Wave I. Years of education was not collected for Wave IV, but Wave I education was measured for Wave IV participants, with a mean of 12.52 (S.D. = 2.71, range [0-17]). The percentage of African Americans is 11.3% in Wave I and 11% in Wave IV. The percentage of females in Wave I is 55.6% and 59.3% in Wave IV. The percentage of married people is 69.5% in Wave I and 62% in Wave IV. Household income goes up from Wave I to Wave IV. Fewer people's income falls in the lower categories between \$5,000 and \$30,000. In addition a fairly large amount of people have a household income of over \$100,000, a category that wasn't available in 1986. Part of this shift could be due to inflation, but about 14.5% of the people are make the top two amounts, compared to about 10.1% in Wave I. This suggests that Wave IV participants are slightly wealthier than those in Wave I. Self-rated health also changes from Wave I to IV. Fewer people report poor health in Wave IV, but more people report fair health in Wave IV. Good health remains fairly stable while very good health declines in Wave IV.

The attrition rate for the entire population due to mortalities in Wave IV is 64.6% compared to 35.5% due to drop out (mortalities comprised 32.7% of the entire study population and 17.9% of the entire study population dropped out of the study). Comparing the demographics, mortality and drop outs shows that 3% fewer women died compared to men and 2.2% fewer married people died compared to non-married people. There is no difference in African Americans and non-Hispanic whites regarding

differences in mortality compared to drop out. Comparing the lowest income group to the highest income group indicates a 3% decrease in mortality, with no noticeable patterns as income increases. There are no substantial differences regarding education. Table 2 shows the descriptive statistics comparing both waves of data. The variables were tested to evaluate any significant racial differences. T-Tests were used to test significance of racial differences with the corresponding levels of significance reported.

Table 2. Racial Differences in Main Study Variables – Wave 1 and 4				
		African Americans	Non-Hispanic Whites	
		Mean (s.d.)	Mean (s.d.)	Sig
Age	W1	57.97 (11.70)	60.07 (12.16)	n.s.
	W4	57.25 (12.20)	57.72 (13.41)	n.s.
Education	W1	10.10 (3.77)	11.8 (3.11)	***
	W4	11.60	12.82	***
Household Income	W1	\$15,000-19,99 (2.61)	\$20,000-24,999 (2.62)	***
	W4	\$25,000-29,999(3.01)	\$40,000,59,999 (2.67)	***
Social Support Quality	W1	.12 (.74) <sup>1</sup>	.07 (.80)	n.s.
	W4	.00 (.72)	-.01 (.68)	n.s.
Social Support Informal Quantity	W1	-.38 (1.05)	-.04 (1.02)	***
	W4	-.15 (.89)	.00 (.80)	*
Social Support Formal Quantity	W1	.24 (1.05)	.05 (1.00)	***
	W4	-.09 (.98)	.02 (.01)	n.s.
Functional Health	W1	3.51 (.89)	3.56 (.85)	n.s.
	W4	3.28 (1.12)	3.40 (1.01)	n.s.
Self-rated Health	W1	3.28 (1.09)	3.45 (1.17)	*
	W4	3.25 (1.02)	3.57 (1.03)	***
Depression	W1	.19 (1.07)	-.11 (.94)	***
	W4	.02 (.98)	-.29 (.89)	***

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

Source: Americans Changing Lives

<sup>1</sup> Ranges: Social Support Quality W1: [-4.68,1.43], W4: [-2.72,1.43]; Informal Quantity of Social Support W1: [-3.07, 1.55] W4: [-3.07, 1.55]; Formal Quantity of Social Support W1: [-1.55, 1.97] W4: [1.36, 1.97]; Depression W1: [-1.18, 4.47] W4: [-1.16, 4.08]

<sup>2</sup> Note: Weighted statistics were reported

There are many significant racial differences in study variables. Non-Hispanic whites have significantly more years of education (p<.001) than African Americans.



Non-Hispanic whites also have significantly higher incomes ( $p < .001$ ) for both waves of data compared to African Americans, meaning that non-Hispanic whites have a higher SES than African Americans and income levels go up in Wave IV for both groups. There is not a significant difference in quality of social support. In contrast, non-Hispanic whites experience higher quantities of informal support in both waves ( $p < .001$  Wave I,  $p < .05$  Wave IV) while African Americans experience significantly higher quantities of formal support ( $p < .001$ ) in Wave I but not Wave IV. Both types of quantity of support go up in Wave IV for non-Hispanic whites; informal quantity goes up for African Americans while formal quantity decreases. Racial differences in functional health in Wave I and Wave IV are not significant. Self-Rated health is slightly lower ( $p < .05$ ) for African Americans in Wave I and is significantly lower ( $p < .001$ ) for African Americans in Wave IV and quality of health goes down for both groups in Wave IV. African Americans experience significantly higher levels ( $p < .001$ ) of depressive symptoms for both waves of data and levels of depressive symptoms go down for both groups in Wave IV.

### *Hypothesis Testing*

H1: African Americans will experience higher levels of depressive symptoms compared to non-Hispanic Whites.

The first hypothesis to be tested examined whether African Americans experienced higher rates of depressive symptoms than did non-Hispanic whites. Table 2 shows that African Americans experience significantly higher levels of depressive symptoms compared to non-Hispanic whites in both waves ( $p < .001$ ). This confirms that

in both 1986 and 2004, African Americans experience significantly higher levels of depressive symptoms compared to non-Hispanic whites, which supports Hypothesis One.

H2: African Americans will have significantly lower SES, poorer physical health, poorer quality of social support but higher quantities of formal interactions than non-Hispanic whites.

The second hypothesis to be tested examined whether African Americans additionally experienced lower SES, poorer health and better social support. Table 2 shows that Non-Hispanic whites have significantly more years of education ( $p < .001$ ) than African Americans. Non-Hispanic whites also have significantly higher incomes ( $p < .001$ ) for both waves of data compared to African Americans, meaning that non-Hispanic whites have a higher SES than African Americans and income levels go up in Wave IV for both groups but non-Hispanic whites continue to earn significantly more than do African Americans. There is not a difference in quality of social support. In contrast, non-Hispanic whites experience higher quantities of informal support in both waves ( $p < .001$  Wave I,  $p < .05$  Wave IV) while African Americans experience significantly higher quantities of formal support ( $p < .001$ ) in Wave I but not Wave IV. Both measures of quantity of social support go up in Wave IV. Racial differences in functional health in Wave I are not significant, but in Wave IV African Americans experience slightly lower ( $p < .05$ ) functional health. Self-Rated health is slightly lower ( $p < .05$ ) for African Americans in Wave I and is significantly lower ( $p < .001$ ) for African Americans in Wave IV and self-rated health goes down for both groups in Wave IV. The second hypothesis is partially supported because although African Americans did experience significantly lower SES, poorer health, higher rates of formal social support

compared to non-Hispanic whites, the racial differences regarding quality of social support were not found to be significant.

#### *Correlations among Study Variables*

Table 3 shows the correlations among study variables in Wave I and Table 4 shows the correlations among study variables in Wave IV. The correlation matrix can be used to identify covariates, and to detect multicollinearity among study variables. As shown in Tables 3 and 4, there are some associations above .40. All other Pearson Correlation Coefficients are below .40 indicating very little colinearity. Directions of the correlations of the major study variables correspond with the hypothesized associations of the study. Being African American and female are related to higher levels of depression. High SES, high levels of social support and good health are negatively associated with depressive symptoms, therefore no associations are contrary to the hypothesized associations in the study.

Table 3: Correlations among Study Variables: Wave I N= 2,379

	1	2	3	4	5	6	7	8	9	10	11	12
1. African American	1.00											
2. Age	-.06 <sup>b</sup>	1.00										
3. Female	.02	.08 <sup>c</sup>	1.00									
4. Married	-.21 <sup>c</sup>	-.20 <sup>c</sup>	-.20 <sup>c</sup>	1.00								
5. Education	-.29 <sup>c</sup>	-.26 <sup>c</sup>	-.00	.17 <sup>c</sup>	1.00							
6. Income	-.28 <sup>c</sup>	-.37 <sup>c</sup>	-.19 <sup>c</sup>	.45 <sup>c</sup>	.53 <sup>c</sup>	1.00						
7. Quality Social Support	-.04	.19 <sup>c</sup>	.12 <sup>c</sup>	-.03	-.01	-.06 <sup>a</sup>	1.00					
8. Quantity of Informal Support	-.15 <sup>c</sup>	.04	.21 <sup>c</sup>	-.02	.19 <sup>c</sup>	.07 <sup>b</sup>	.15 <sup>c</sup>	1.00				
9. Quantity of Formal Support	.10 <sup>c</sup>	.01	.09 <sup>c</sup>	.05 <sup>a</sup>	.10 <sup>c</sup>	.04 <sup>a</sup>	.13 <sup>c</sup>	.25 <sup>c</sup>	1.00			
10. Self-Rated Health	-.12 <sup>c</sup>	-.19 <sup>c</sup>	-.04	.12 <sup>c</sup>	.29 <sup>c</sup>	.33 <sup>c</sup>	.10 <sup>c</sup>	.10 <sup>c</sup>	.11 <sup>c</sup>	1.00		
11. Functional Health	-.07 <sup>b</sup>	-.29 <sup>c</sup>	-.10 <sup>c</sup>	.14 <sup>c</sup>	.24 <sup>c</sup>	.30 <sup>c</sup>	-.02	.06 <sup>b</sup>	.12 <sup>c</sup>	.51 <sup>c</sup>	1.00	
12. Depressive Symptoms	.15 <sup>c</sup>	.03	.07 <sup>b</sup>	-.21 <sup>c</sup>	-.29 <sup>c</sup>	-.25 <sup>c</sup>	-.28 <sup>c</sup>	-.12 <sup>c</sup>	-.13 <sup>c</sup>	-.40 <sup>c</sup>	-.35 <sup>c</sup>	1.00

<sup>a</sup>  $p < .05$ ; <sup>b</sup>  $p < .01$ ; <sup>c</sup>  $p < .001$

<sup>1</sup> Missing values are excluded listwise.

<sup>2</sup> Source: Americans' Changing Lives Table

Table 4: Correlations among Study Variables: Wave IV N= 1767

	1	2	3	4	5	6	7	8	9	10	11	12
1. African American	1.00											
2. Age	-.05 <sup>a</sup>	1.00										
3. Female	-.07 <sup>b</sup>	.15 <sup>c</sup>	1.00									
4. Married	-.21 <sup>c</sup>	-.24 <sup>c</sup>	-.23 <sup>c</sup>	1.00								
5. Education	-.18 <sup>c</sup>	.24 <sup>c</sup>	-.11 <sup>c</sup>	.19 <sup>c</sup>	1.00							
6. Income	-.24 <sup>c</sup>	-.42 <sup>c</sup>	-.22 <sup>c</sup>	.49 <sup>c</sup>	.52 <sup>c</sup>	1.00						
7. Quality Social Support	-.00	.05 <sup>a</sup>	.06 <sup>a</sup>	-.05 <sup>a</sup>	.02	.002	1.00					
8. Quantity of Informal Support	-.06 <sup>a</sup>	.08 <sup>b</sup>	.17 <sup>c</sup>	-.14 <sup>c</sup>	.03	-.08 <sup>b</sup>	.20 <sup>c</sup>	1.00				
9. Quantity of Formal Support	.05 <sup>a</sup>	.03	.07 <sup>b</sup>	.07 <sup>b</sup>	.19 <sup>c</sup>	.11 <sup>c</sup>	.09 <sup>c</sup>	.17 <sup>c</sup>	1.00			
10. Self-Rated Health	-.13 <sup>c</sup>	-.18 <sup>c</sup>	-.10 <sup>c</sup>	.15 <sup>c</sup>	.25 <sup>c</sup>	.32 <sup>c</sup>	.13 <sup>c</sup>	-.03	.14 <sup>c</sup>	1.00		
11. Functional Health	-.06 <sup>b</sup>	-.30 <sup>c</sup>	-.16 <sup>c</sup>	.19 <sup>c</sup>	.24 <sup>c</sup>	.35 <sup>c</sup>	.07 <sup>c</sup>	.02	.11 <sup>c</sup>	.45 <sup>c</sup>	1.00	
12. Depressive Symptoms	.14 <sup>c</sup>	-.01	.09 <sup>c</sup>	-.16 <sup>c</sup>	-.23 <sup>c</sup>	-.24 <sup>c</sup>	-.25 <sup>c</sup>	-.03	-.16 <sup>c</sup>	-.36 <sup>c</sup>	-.33 <sup>c</sup>	1.00

<sup>a</sup>  $p < .05$ ; <sup>b</sup>  $p < .01$ ; <sup>c</sup>  $p < .001$

<sup>1</sup> Missing values are excluded listwise.

<sup>2</sup> Source: Americans' Changing Lives

## **OLS Regression Analyses Predicting Depressive Symptoms**

Regression models for baseline data for both waves of data were performed in order to investigate the strength and association between the independent variables and depression. Results of regression analyses are presented for the study hypotheses. Tables include adjusted R-square ( $\text{Adj-R}^2$ ), unstandardized coefficients (B), standard error (s.e.), and the significance level (\*) of each coefficient. Correlation diagnostics were tested for both waves of data and no variances were significantly inflated.

Table 5. Unstandardized OLS Coefficients Regressing Depression Index on Race, SES, Social Support, Functional Health and Covariates for Wave 1 Sample (N = 2379)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
African American	.321*** (.044)	.238*** (.045)	.071n.s. (.046)	.231*** (.044)	.132** (.041)	0.062n.s. (.042)	.069n.s. (.042)
Age		-.001n.s. (.002)	-.008*** (.002)	.004* (.002)	-.011*** (.002)	-.008*** (.002)	-.008*** (.002)
Female		.067n.s. (.044)	.055n.s. (.043)	.183*** (.042)	.033n.s. (.040)	0.117** (.039)	.114* (.039)
Married		-.372*** (.044)	-.273*** (.046)	-.339*** (.041)	-.309*** (.039)	-.268*** (.040)	-.266*** (.040)
Education			-.048*** (.007)	---	---	-.028*** (.006)	-.028*** (.006)
Income			-.046*** (.011)	---	---	-.010n.s. (.010)	-.009n.s. (.010)
Soc Supp-Qual				-.365*** (.026)	---	-.323*** (.023)	-.298*** (.024)
Soc Supp-Quant- Informal				-.058*** (.019)	---	-.024n.s. (.018)	-.025n.s.. (.018)
Soc Supp-Quant- Formal				-.094** (.020)	---	-.036n.s. (.018)	-.037* (.018)
Functional health					-.227*** (.023)	-.220*** (.022)	-.222*** (.022)
Self-rated health					-.262*** (.019)	-.204*** (.019)	-.212*** (.019)
Interaction: SS&SR Health							.072*** (.019)
Constant	-0.064	.162	1.336	.099	1.542	1.713	1.708
Adjusted R-sq	2%	5%	10%	15%	23%	30%	30%

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

<sup>1</sup> Source: Americans Changing Lives

Table 6. Unstandardized OLS Coefficients Regressing Depression Index on Race, SES, Social Support, Functional Health and Covariates for Wave 4 Sample (N= 1767)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
African American	.302*** (.054)	.225*** (.055)	.097n.s. (.055)	.243*** (.053)	.126* (.051)	0.084n.s. (.051)	.088n.s. (.050)
Age		-.004* (.002)	-.010*** (.002)	-.002n.s. (.002)	-.010*** (.002)	-.012*** (.002)	-.012*** (.002)
Female		.102* (.050)	.055n.s. (.049)	.149* (.049)	.030n.s. (.046)	0.044n.s. (.045)	.042n.s. (.045)
Married		-.253*** (.051)	-.097n.s. (.053)	-.235* (.049)	-.180*** (.047)	-.109* (.049)	-.114* (.048)
Education			-.048*** (.010)	---	---	-.031** (.009)	-.032*** (.009)
Income			-.066*** (.011)	---	---	-.032** (.010)	-.031** (.010)
Soc Supp- Qual				-.326*** (.032)	---	-.266*** (.030)	-.253*** (.030)
Soc Supp- Quant- Informal				.022n.s. (.029)	---	.021n.s. (.027)	.018n.s. (.027)
Soc Supp- Quant- Formal				-.136*** (.023)	---	-.059* (.022)	-.060* (.022)
Functional health					-.247*** (.026)	-.215*** (.026)	-.212*** (.026)
Self-rated health					-.233*** (.023)	-.178*** (.023)	-.171*** (.023)
Interaction: Social Support & SR Health							.102*** (.025)
Constant	-.270	.046	1.51	-.078	.126	2.552	2.488
Adjusted R- sq	1.9%	4%	10%	11.8%	20.%	26.5%	27.3%

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

<sup>1</sup> Source: Americans Changing Lives



### *Hypothesis Testing*

H3: Differences in SES, physical health, and social support will each explain a portion of racial group differences in depressive symptoms; when all three variables are included in the model, they will account for all racial group differences in depressive symptoms.

The third hypothesis to be tested evaluates the association between the variables. Specifically, the regression models in Tables 5 and 6 test this hypothesis. Table 5 displays the coefficients for Wave 1. Model 1 shows the bivariate association between racial group membership and depressive symptoms. This model indicates that African Americans have significantly higher depressive symptom scores than do non-Hispanic whites. Model 2 includes the bivariate association from Model 1 and adds the control variables, age, gender and marital status, which indicate that only one variable is significantly associated with depressive symptoms: marital status. The association is negative, meaning that those who are married are have lower rates of depressive symptoms compared to those who are not married. Model 3 then adds two measures of SES: income and education. Both variables are significantly and negatively associated with depressive symptoms, meaning that those who have higher incomes and educational levels are less likely to experience depressive symptoms than those who have lower incomes and educational levels. In addition, the race coefficient becomes insignificant once the SES variables are added ( $B = .238, p < .001$  Model 2 to  $B = .071, p > .05$  Model 3). This decrease in the size of the race coefficient suggests a substantial proportion of racial group differences in depression could be attributed to economic inequality. Model 4 shows the control variables with the addition of three social support variables: quality of social support, informal quantity and formal quantity of social support. These

variables are also all significantly and negatively associated with depressive symptoms. Those who experience higher rates of social support are likely to experience fewer depressive symptoms. The addition of social support does change the race variable substantially ( $B = .238, p < .001$  Model 2 to  $B = .231, p < .001$  in Model 4) and it again becomes statistically significant in this model. Model 5 includes the controls and two measures of physical health: self-rated health and functional health. Both variables are significantly and negatively associated with depressive symptoms meaning that those experiencing better physical health are less likely to experience depressive symptoms. The addition of the health variable causes the size of the race coefficient to drop about 50% relative to model two, although in this case it remains significant ( $B = .238, p < .001$  Model 2 to  $B = .132, p < .01$  in Model 5). Model 6 shows the addition of the controls and all hypothesized variables: SES, social support and physical health. In this model, age, marital status, education, quality of social support, and both health variables are significantly and negatively associated with depressive symptoms. When all the explanatory variables were added together, gender became significantly associated with depressive symptoms, indicating that females are more likely to experience depressive symptoms than males. Income is no longer significant in this model. With all explanatory measures included, the size of the race coefficient decreased substantially and became statistically insignificant ( $B = .238$  in Model 2,  $p < .001$  to  $B = .069, p > .05$  in Model 6). Quantity of informal social support also becomes insignificant in Model 6.

Model 7 includes control variables, explanatory variables and the interaction term formed by centering and multiplying quality of social support and self-rated health,

Interaction terms were tested for all SES and health measures and this measure was the only significant finding. Figures for interaction terms are listed in the next section. The interaction term is significantly associated with depressive symptoms and the race coefficient remains insignificant. All associations remain the same as in Model 6, but quantity of formal social support becomes significant, although the size of the coefficient only increases slightly. The race coefficient also remains non-significant.

Table 6 showed the results from the same regression models run using data from Wave IV were different in comparison to Wave I. The overall trends remain the same, and the explanatory measures did significantly reduce racial differences in depressive symptoms. Model 1, Table 6 shows the bivariate association between racial group status and depressive symptoms. This model also shows that 18 years after the original data were collected, the remaining African Americans participants are significantly more likely to experience depressive symptoms than are non-Hispanic whites. Model 2 shows the addition of the controls, age, gender and marital status, to the bivariate association. Age and marital status are significantly and negatively associated with depressive symptoms, meaning that those who are older and married are less likely to experience depressive symptoms compare to those who are younger and not married. Gender is also significantly associated with depressive symptoms, meaning that females are more likely to experience depressive symptoms than males. These results differ somewhat from those found in Wave 1 (Table 5, Model 2) because neither age nor gender were significantly associated with depression in 1986. The controls accounted for a portion of the racial group differences in depressive symptoms, reducing the race coefficient by

about 30% ( $B = .302, p < .001$  Model 1, to  $B = .225, p < .001$ , Model 2). Model 3 shows the controls with two measures of SES added, income and education. Both variables are significantly and negatively associated with depressive symptoms, meaning that those with higher incomes and higher educational attainment are less likely to experience depressive symptoms. The addition of SES in Model 3 including controls rendered the race coefficient insignificant ( $B = .225, p < .001$ , Model 2 to  $B = .097, p > .05$ , Model 3) just as it did in Wave 1. Model 4 includes the controls and the social support variables: quality of social support and formal and informal quantities of social support. Quality of social support and formal quantity of social support are significantly and negatively associated with depressive symptoms. This means that those with good quality social support and a high quantity of formal interactions are less likely to experience depressive symptoms than those with poor quality and fewer formal interactions. The addition of social support in Model 4 made the race coefficient increase ( $B = .225, p < .001$ , Model 2, to  $B = .243, p < .001$ , Model 4). This suggests that relatively little of the racial group differences in depression are due to differences in social support. Model 5 includes the controls and the addition of two physical health measures: self-rated health and functional health. Both variables are significantly and negatively associated with depressive symptoms. This shows that those in better health are less likely to experience depressive symptoms than those in poorer health. The addition of physical health in Model 5 explained some differences but the race coefficient remained marginally significant ( $B = .225, p < .001$ , Model 2, to  $B = .126, p < .05$ , Model 5). Model 6 in Table 6 shows all three sets of explanatory variables in the model together. The model accounts

for 26.5% of the variance in depressive symptoms; the race coefficient has dropped substantially compared to that shown in Model 2 and is no longer significant ( $B=.225$ ,  $p<.001$  to  $B=.084$ ,  $p>.05$ ). Age, marital status, education, income, quality of social support, quantity of formal social interactions, functional health and self-rated health are all significantly and negatively associated with depressive symptoms. Model 7 shows the controls and explanatory variables with the addition of the interaction term of quality of social support and self-rated health. The associations remain the same in this model and the interaction term is significantly associated with depressive symptoms and the race coefficient remains non-significant. Hypothesis two is fully supported because the explanatory measures explained a significant amount of racial differences.

H4: Social support will moderate the association between SES and depressive symptoms.

H5: Social support will moderate the association between health status and depressive symptoms.

This hypothesis tests the buffering aspects of social support. Interactions were tested for all SES, and physical health variables, as well as social support and race. Interaction terms were formed of centering and multiplying quality of social support with all SES and physical health variables individually. The only interaction found to be significant was the association between health status and depressive symptoms. Social support was not able to moderate the association between SES and depressive symptoms; therefore Hypothesis four was not supported. The interaction is not shown in the tables because the association was not significant. The only interaction that was found to be significant was between self-rated health and quality of social support. The association

between quality of social support and self-rated health was found to be significant for both waves in Tables 5 and 6 ( $B = .072, p .000$  Wave I and  $B = .102, p .000$  Wave IV), therefore hypothesis five is supported. The Figures below (Figures 1 and 2) graph the interaction and display the association between health and depression at three levels of social support (low, medium and high). Though the interactions for both Waves are significant, there is only a relative minor impact on depression with a difference in just one point on an eleven-point scale. Figure 1 indicates that there is a very small interaction with low support because the line spans almost half of a point on the depression scale compared to the others, but given that the lines in the graph are nearly parallel, this interaction is not very strong. Figure 2 shows that those with low quality social support are especially vulnerable to depression as physical health becomes worse. Figure 2 also indicates that social support may have a marginal buffering effect because social support has less influence on depression when health is good. Although the interaction was itself significant these results indicate that any buffering effect of good quality social support on the association between health status and depressive symptoms is marginal.

Figure 1: The Moderating Effect of Social Support, Wave I

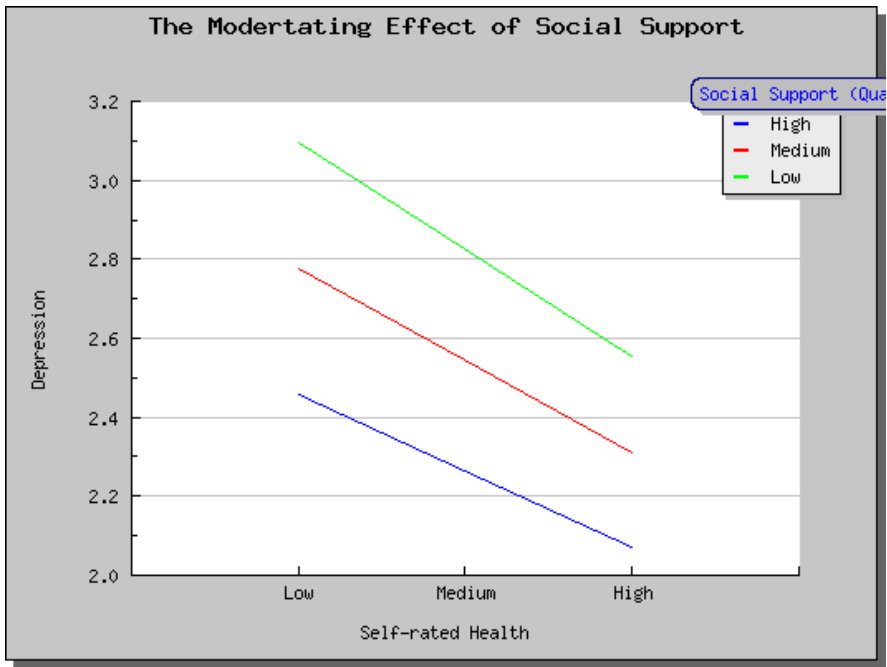
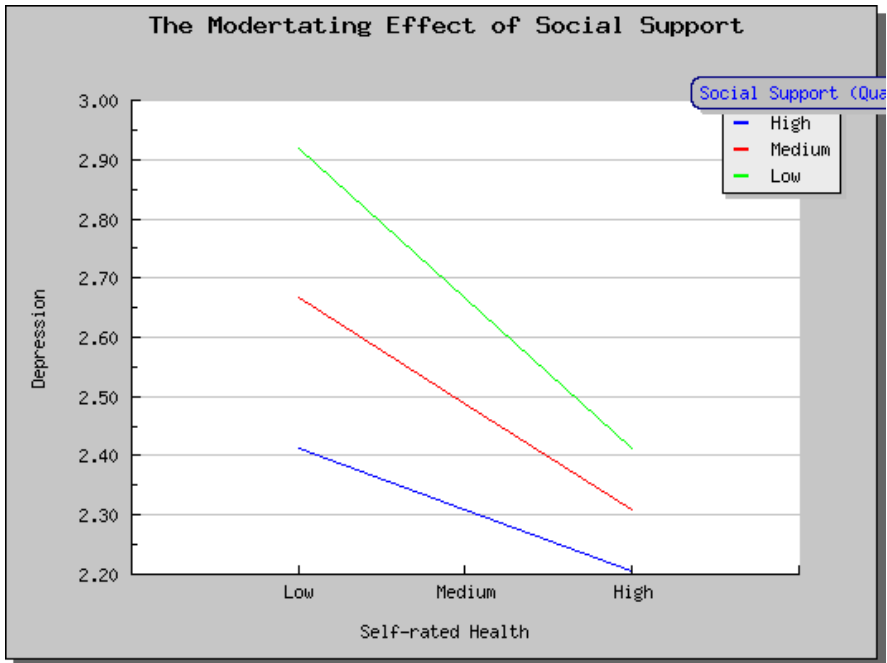


Figure 2: The Moderating Effect of Social Support, Wave IV



H6: The abilities of SES, physical health and social support to explain racial group differences in depressive symptoms will remain the same over time.

The final hypothesis tests whether there is evidence of change in the underlying social processes that account for racial group differences in depressive symptoms. This hypothesis will be tested by comparing changes in the strength and significance of the race coefficient between the two waves. The abilities of SES, physical health and social support to explain racial differences in depressive symptoms do appear to have remained consistent over time. In both waves, SES explains large proportions of the racial group differences in depressive symptoms. These coefficients are presented in Model 3 of Tables 5 (Wave I) and 6 (Wave IV). In each table, the addition of SES reduces the size of the race coefficient by 75% and renders the race variable non-significant ( $B = .071$ , Wave I, Table 5 and  $B = .097$ , Wave IV, Table 6). Social support does not explain racial group differences in depressive symptoms in either wave (see Model 4 in Tables 5 and 6). In Wave I, the race coefficient only drops a few points after the addition of the social support variables ( $B = .238$ ,  $p < .001$  in Model 2 to  $B = .231$ ,  $p < .001$  in Model 4, Table 5). In Wave IV, the race coefficient increases slightly after the addition of the social support variables ( $B = .225$ ,  $p < .001$  in Model 2 to  $B = .243$ ,  $p < .001$  in Model 4, Table 6). The physical health variables explain about the same amount of racial group differences in depressive symptoms in both waves (see Model 5, Tables 5 and 6). Although the health variables do not render the race coefficient insignificant, they do explain a large portion of the differences ( $B = .132$ , Wave I, Table 5 and  $B = .126$ , Wave IV, Table 6 compared to starting Beta levels around .230 for both waves in Models 2). Model 7, which



includes the interaction term, resembles Model 6 in that the race coefficient remains insignificant and there is not a large change in the coefficient. The abilities of the variables to explain racial group differences in depressive symptoms do remain the same over time, therefore Hypothesis 6 is supported.

### *Summary*

As predicted, African Americans experience more depressive symptoms than non-Hispanic whites in both waves of data. Adding the independent variables and controls largely explains racial group differences in depressive symptoms in both waves of data. The introduction of the three sets of explanatory variables reduces in the size of the race coefficient in each year about an equal amount (73% in 1986 and 71% in 2004). African Americans have significantly lower levels of education, income, quality of social support, and poorer health in both time periods. With respect to quantity of social support, African Americans have more formal social interactions but fewer informal interactions than non-Hispanic whites. The ability of SES, health, quality of social support, and quantity of formal social support to explain racial differences in depressive symptoms remains the same over time. The most powerful explanatory variable in accounting for racial differences in depressive symptoms is SES. The hypothesis that social support could act as a buffer against the effect of low SES or poor health on depressive symptoms low SES or poor health was partially supported. The findings indicated that good quality social support could help to reduce the negative effects of poor physical health on depressive

symptoms but only marginally. These results are consistent with all predictions and at least partially support all hypotheses.

## CHAPTER FOUR

### DISCUSSION

This study aimed to identify racial differences in depressive symptoms and the contributors to these differences. Although many studies investigate racial differences in mental health, few studies have jointly evaluated all three major contributors to racial differences: SES, physical health and social support. The effects of the contributors are subject to debate, with some claiming that once a certain contributor is taken into account, racial differences are not significant. In addition few have also compared racial differences in depression at multiple points in time. A major advantage of this study is the ability to compare symptoms and contributors over time. The following sections discuss results, limitations and directions for further research.

#### *Racial Differences in Depressive Symptoms*

Racial differences in depressive symptoms have been noted for years. African Americans have been noted for experiencing more depressive symptoms than non-Hispanic whites (Blazer, Landerman, Hays, Simonsick, & Saunders, 1998). Some of these differences are thought to be caused by inequalities of SES, physical health and social support. African Americans typically have a lower SES than non-Hispanic whites, (Williams et al., 1992). African Americans also have higher levels of risk for developing an illness and experience much higher levels of chronic illness than non-Hispanic Whites (Cummings et al., 2003). Good quality social support can help protect people against

developing depression or depressive symptoms (Carrington, 2006; Hays et al., 1997; Holt & Espelage, 2005). The actual racial differences in depressive symptoms and the contributors have been disputed however (Biafora, 1995; Hunter, 2002).

These factors led to the main research question of this study which examined the influence of the contributors to racial differences and compared the influences at two different points in time. The comparison of the two points in time was used to examine the social processes that may have changed over the 18 year period. It was expected that African Americans would experience more depressive symptoms than non-Hispanic whites, and experience lower SES, poorer physical health and quality social support. Once controls and the contributors to racial differences were added, it was expected that the racial difference would be rendered non-significant. It was also expected that the effects of the contributors would remain the same over time. Finally, good quality social support was thought to moderate the effects of low SES and poor physical health.

In support of these hypotheses, it was found that African Americans did indeed experience more depressive symptoms than non-Hispanic whites in both waves of data. Additionally, African Americans experienced lower SES, poorer health and differences in social support than non-Hispanic whites in both waves. African Americans did have higher quantities of formal support in Wave I, but this difference did not persist over time. These findings coincide with previous studies concerning racial differences in depressive symptoms (R. Kessler, Harold W. Neighbors, 1986; Latkin & Curry, 2003; Vega & Rumbaut, 1991).

The race variable was reduced to insignificance in both waves of data, suggesting that there have not been substantial changes in social processes underlying group differences in depression. The influences of the independent variables on racial group differences in depressive symptoms remain similar in both waves of data. These results highlight the racial inequalities exist regarding SES and health. African Americans experience persistent economic inequalities and differences in health in both 1986 and 2004. These inequalities are associated with elevated rates of depressive symptoms suggesting that that African Americans are at greater risk than non-Hispanic whites for developing depression because of these inequalities. These findings are especially important to consider because in American society, many problems and shortcomings are emphasized as individual failure, not as a product of an unfair society. Social discrimination and oppression manifests as individual depression.

In sum, all of the hypotheses were at least partially supported in this study. African Americans experience more depressive symptoms and more inequality regarding factors that influence depression. The measures explain a large proportion of racial group differences in both waves of data and the influences of the explanatory measures are relatively stable in both waves.

#### *The Buffering Effect of Social Support*

Contrary to the initial hypothesis, good quality social support could not moderate the effects of SES or functional health on mental health. Quality of social support did marginally moderate the effects of poor physical health on depressive symptoms.

Meaning that, as health declines, good quality social support can slightly reduce increase in depressive symptoms. It was found that in Wave IV that those experiencing lower levels of social support experienced a slightly higher increase in depression as physical health declined.

### *Limitations*

This study has several limitations, and the main limitation of this study is the lack of study variables concerning racial discrimination. Generally, racial discrimination is related to poorer health, and the association is the strongest with mental health. African Americans still experience high amounts of discrimination (Birzer & Smith-Mahdi, 2006). Depression and perceived discrimination can also lead to health problems (Banks, Kohn-Wood, & Spencer, 2006; Williams, Neighbors, & Jackson, 2003). Nonwhites report much higher levels of discrimination than non-Hispanic whites. Problem drinking and other risky coping mechanisms can also become consequences of discrimination (Martin, Tuch, & Roman, 2003). These findings indicate that discrimination and racial differences are still important factors when identifying contributing factors of depression. Though the Americans Changing Lives dataset contains information on job discrimination, there are no questions concerning racial discrimination, which could have been a major factor in the racial differences in depressive symptoms, especially in 1986.

A second limitation of the study is that there was no way to identify racial differences in physician's diagnoses of depression. There are many findings that suggest that non-Hispanic whites are diagnosed with depression more than African Americans (George & Lynch, 2003). Often times African Americans and Hispanics are diagnosed

with major depression less frequently than non-Hispanic whites (Harman et al., 2004; Kales et al., 2005; Strothers et al., 2005). It would be useful to compare rates of diagnosis compared to the amount and frequency of depressive symptoms experienced and how this differs among African Americans and non-Hispanic whites.

A third limitation of the study concerns the questions regarding quantity of social support. There were only four questions available concerning the quantity of informal and formal social support. Though the relationship was significant, more questions could have led to a better reliability score and additional insight into the effects of the amount of social support a person receives, especially considering the large amount of non-significant findings regarding social support. Additionally, questions regarding coping mechanisms for the depressive symptoms experienced could have provided even more information about the effects of depression on individuals.

#### *Directions for Further Research*

Despite the limitations, this study did find that differences in SES and health largely explain racial group differences in depressive symptoms, and there is no evidence to suggest that the effect of these factors has changed over time. Additional research should be conducted that will evaluate the effects of racial discrimination on depressive symptoms, and the ways in which racial discrimination has changed over the years in this country. It is especially important to study the effects of SES on depression due to the findings of this study. Carefully conducted longitudinal studies could also provide additional insight into the changes and causes of racial difference in depressive symptoms

and will help identify patterns of change. Increased attention is being placed on differences in the ways in which men and women express depressive symptoms. Additional depressive indices that are sensitive to these differences may provide a better understanding of the consequences of depression in the future. This study identifies some of the inequalities and structural discrimination that African Americans experience. Further investigation into the causes of economic, health-related and social inequalities that still exist would be very useful. An understanding of the causes for these inequalities could help outline programs and begin interventions to start alleviating the inequalities experienced by African Americans.



## APPENDIX

### Items and Scales Included in this Study

#### CESD-11 Scale of Depressive Symptoms (Radloff, 1977)

Instructions: Please look at page 5 of the yellow booklet where you will find a list of statements describing how people sometimes feel. After each statement, please put an "X" in the answer category that indicates how often you felt that way DURING THE PAST WEEK. (Again, the best answer is usually the one that comes to your mind first, so do not spend too much time on any one statement. (If you prefer, I can read the statements to you.)

- 1 = Never/Hardly ever
- 2 = Some of the time
- 3 = Most of the time

1. I felt depressed
2. I felt that everything I did was an effort.
3. My sleep was restless.
4. I was happy.
5. I felt lonely
6. People were unfriendly
7. I enjoyed life.
8. I did not feel like eating. My appetite was poor.
9. I was sad.
10. I felt that other people disliked me.
11. I could not "get going".

#### Income

If we include the income from all these sources, and add all of your (and your spouse's) earnings, what would your total income before taxes for the last 12 months add up to?

*Wave I*

- 1 = Below \$5,000
- 2 = \$5,000-9,999
- 3 = \$10,000-14,999
- 4 = \$15,000-19,999
- 5 = \$20,000-24,999
- 6 = \$25,000-29,999
- 7 = \$30,000-39,999
- 8 = \$40,000-59,999
- 9 = \$60,000-79,000

10 = \$80,000 and above

*Wave IV*

- 1 = Below \$5,000
- 2 = \$5,000-9,999
- 3 = \$10,000-14,999
- 4 = \$15,000-19,999
- 5 = \$20,000-24,999
- 6 = \$25,000-29,999
- 7 = \$30,000-39,999
- 8 = \$40,000-59,999
- 9 = \$60,000-79,000
- 10 = \$80,000-99,999
- 11 = \$100,000 and above

Education

What is the highest grade of school or year of college you have COMPLETED?

Answers placed into 6 categories:

- 1 = 0-8 years
- 2 = 9-11 years
- 3 = 12 years
- 4 = 13-15 years
- 5 = 16 years
- 6 = 17 years or more

Self-Rated Health

How would you rate your health at the current time?

- 1 = Excellent
- 2 = Good
- 3 = Fair
- 4 = Poor

Functional Health

- 1 = Yes
- 2 = No

1. Do you currently have difficulty bathing yourself?
2. Does someone help you bathe?
3. Do you have difficulty climbing stairs?
4. Do you have difficulty walking several blocks because of your health?

5. Would you currently have any difficulty doing heavy work around the house such as shoveling snow or washing walls because of your health?

If answered yes to above questions:

1. How much difficulty do you have?
  - 1 = A little
  - 2 = Some
  - 3 = A lot
  - 4 = Cannot do

### Social Support

- 1 = A great deal
- 2 = Quite a bit
- 3 = Some
- 4 = A little
- 5 = Not at all

### *Spouse Total Support*

1. How much does your (husband/wife/partner) make you feel loved and cared for?
2. How much do you feel (he/she) makes too many demands on you?
3. How much is (he/she) willing to listen when you need to talk about your worries or problems?
4. How much is (he/she) critical of you or what you do?

### *Child Total Support*

1. How much (does/do) your (son/daughter/children) make you feel loved and cared for?
2. How much do you feel (he/she/they) (makes/make) too many demands on you?
3. How much (is/are) (he/she/they) willing to listen when you need to talk about your worries or problems?
4. How much (is/are) (he/she/they) critical of you or what you do?

### *Mother Total Support*

1. How much do your (mother/RELATIONSHIP) make you feel loved and cared for?
2. How much do you feel she makes too many demands on you?
3. How much is she willing to listen when you need to talk about worries or problems?
4. How much is she critical of you or what you do?

### *Father Total Support*

1. How much do your (father/RELATIONSHIP) make you feel loved and cared for?
2. How much do you feel he makes too many demands on you?
3. How much is he willing to listen when you need to talk about worries or problems?

4. How much is he critical of you or what you do?

*Friend/Relative Total Support*

1. On the whole, how much do your friends make you feel loved and cared for?
2. Again, on the average, how much do you feel your friends and other relatives make too many demands on you?
3. How much are these friends and relatives willing to listen when you need to talk about your worries or problems?
4. How much are they critical of you or what you do?

Informal Quantity of Social Support

In a typical week, about how many times do you talk on the telephone with friends, neighbors or relatives?

- 1 = More than once a day
- 2 = Once a day
- 3 = Two or three times a week
- 4 = About once a week
- 5 = Less than once a week
- 6 = Never or no phone

How often do you get together with friends, neighbors or relatives and do things like go out together or visit in each other's homes?

- 1 = More than once a week
- 2 = Once a week
- 3 = Two or three times a week
- 4 = About once a month
- 5 = Less than once a month
- 6 = Never

Formal Quantity of Social Support

How often do you attend meetings or programs of groups, clubs or organizations that you belong to?

- 1 = More than once a week
- 2 = Once a week
- 3 = Two or three times a week
- 4 = About once a month
- 5 = Less than once a month
- 6 = Never

How often do you usually attend religious services?

1 = More than once a week

2 = Once a week

3 = Two or three times a week

4 = About once a month

5 = Less than once a month

6 = Never

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