SOCIOECONOMIC STATUS AND PSYCHOLOGICAL DISTRESS AMONG
WORKING-AGED AFRICAN AMERICANS

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ABSTRACT

Alexis Christine Dennis: Socioeconomic Status And Psychological Distress Among Working-
Aged African Americans
(Under the direction of Robert A. Hummer)

Researchers have consistently observed that high socioeconomic status (SES) is a fundamental cause of favorable mental and physical health outcomes among whites. Whether and how SES shapes the mental health of African Americans, however, remains unclear. Guided by a novel conceptual model, this study uses a sample of working-aged African Americans (n=776) from the Detroit Neighborhood Health Study to examine the relationship between several measures of SES with depression and anxiety, and the mechanisms that explain these relationships. Findings provide minimal support for SES as a strong predictor of mental health among African Americans in the Detroit context and suggest that other mechanisms, such as stressful or traumatic events, may be more important predictors of psychological distress among this sociodemographic group. This study adds to a growing body of literature indicating that structural factors considered to be fundamental causes of disease among whites may not operate similarly for racial-ethnic subpopulations.

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DNHS   Detroit Neighborhood Health Study

FCT   Fundamental Cause Theory

GAD-7   The General Anxiety Disorder Assessment

PHQ-9   The Patient Health Questionnaire

SES   Socioeconomic Status

INTRODUCTION

Researchers have consistently observed that higher socioeconomic status (SES) groups have more favorable physical and mental health outcomes than lower SES groups (Link and Phelan 1995; Mirowsky and Ross 2003). However, while strong SES-health gradients have been consistently observed for whites, they have not been uniformly observed across racial/ethnic subpopulations in the United States (Rodriguez et al. 1999; Pearson 2008). In particular, researchers have found SES-health gradients to be weaker among African Americans as compared to whites in studies examining physical health outcomes (Turner, Brown, and Hale 2017; Farmer and Ferraro 2005). These findings have led some to argue that while SES is widely considered to be a fundamental cause of health inequality (Link & Phelan 1995), SES may not be the strongest structural driver of health inequality among African Americans (Phelan and Link 2015; Pearson 2008; Turner, Brown, and Hale 2017). However evidence for an association between SES and mental health among African Americans is inconclusive, and the strength of an association between SES and mental health among African Americans also remains relatively unclear. Moreover, the mechanisms linking SES to mental health in this subpopulation also remain unclear.

This lack of clarity may stem from the many population-based studies on SES and mental health that have utilized samples predominantly composed of whites (for example: Ross and Van Willigen 1997; Miech and Shannahan 2000; Mirowsky and Ross 2001). Nationally representative studies that have not oversampled racial/ethnic minorities risk producing unreliable estimates for minority groups. Moreover, inadequate minority sample sizes have made

it difficult or impossible to investigate how heterogeneity within minority subgroups affects the outcome within that group. As such, the results of nationally representative studies that lack oversamples of African Americans may not be generalizable to African Americans (Jackson, Caldwell, and Sellers 2012). This lack of generalizability has created gaps in our understanding of the role and importance of SES to the psychological distress experiences of African Americans, specifically.

Understanding SES-psychological distress gradients among African Americans is a particularly important, yet understudied area of inquiry. First, African Americans are one of the largest racial minority groups in the U.S., comprising 14% of the population (US Census Bureau Information Office 2011). Moreover, African Americans have long experienced various forms of economic, political, social, and legal discrimination. Specifically, exposure to trauma and humiliation[1] throughout the eras of slavery, Jim Crow, and mass incarceration have had harmful implications for the mental health of this population over time (Postell 1953; Thompson-Miller 2011; Sewell, Jefferson, and Lee 2016). African Americans have also continued to disproportionately experience disadvantaged circumstances and exposure to stressors that can elevate their risk for psychological distress. For example, African Americans are overrepresented in low SES strata and endure elevated exposure to discrimination and trauma regardless of SES (Jackson et al. 2011). The collective and intergenerational impacts of historical traumas, discrimination, and oppression uniquely shape the psychological distress experiences of the African American population and warrant the attention of sociologists who are interested in health and illness (Evans-Campbell, Lincoln, and Takeuchi 2007).

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[1] For example: rape, whippings, and separation of families during the era of slavery; unequal, inferior treatment and lynching during the Jim Crow era; police shootings of unarmed African Americans in the mass incarceration era.

More attention to SES – psychological distress gradients among working-age[2] African Americans is also needed because this demographic group experiences a unique set of psychosocial stressors. In contrast to youth or the elderly, the working-age population is most likely to simultaneously juggle responsibilities for multiple roles at work, at home, and in the community. The pressure to fulfill exacting responsibilities associated with these roles, given limited time and resources, can generate psychological distress over time (Duxbury, Stevenson, and Higgins 2017). Furthermore, the rapidly changing economy and eroding social safety net generate additional anxiety and pressure among the working-age population as they strive to attain economic security (Cooper 2014). While these stresses of U.S. life apply to most working-age Americans, working-age African Americans experience additional daily stressors due to their race. For example, rates of incarceration, unemployment, and homelessness are disproportionately high among African Americans within this age range (Barnes and Bates 2017); these experiences can be distressing for those undergoing these conditions, as well as for affected family members and friends. Furthermore, working-age African Americans may regularly experience racial micro-aggressions and/or overt discrimination in their daily lives. The constant vigilance required for navigating structural or interpersonal discrimination in schools, neighborhoods, work places, and businesses, and through interactions with financial and legal institutions, can also adversely affect mental health across the life course (Lee and Hicken 2016).

This study aims to improve our understanding of the relationship between SES and psychological distress among African Americans by using a within-group analytical approach to addresses the following research questions:

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[2] While the working aged population is typically comprised of those ages 25 to 64, this study analyzes those between the ages of 25-66 based on the age for full Social Security benefits at the time data were collected.

RQ 1: How wide are SES gradients in psychological distress among African American adults?

RQ 2: Which mechanisms explain SES patterns of psychological distress among African American adults?

RQ 3: Is SES associated with psychological distress among African Americans as the adult life course unfolds?

I present a conceptual framework grounded in the Stress Process Model (Pearlin 1989) and Fundamental Cause Theory (Link and Phelan 1995; Phelan and Link 2015) to guide theoretical understanding of the relationship between SES and psychological distress for African Americans. This framework generated hypotheses to guide the study. I employed logistic regression and Random Effects models to answer the above stated research questions using data from the Detroit Neighborhood Health Study (DNHS). The DNHS contains a large, representative sample of African Americans residing in Detroit, captures socioeconomic variability among participants, and includes strong measures of the psychological distress outcomes of interest. Findings extend the sociology of mental health literature by documenting patterns of psychological distress by SES among working-age African Americans, and by illuminating mechanisms that uniquely connect SES to psychological distress outcomes within this large and historically disadvantaged racial group.

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BACKGROUND

Mixed Evidence for a SES-Psychological Health Gradient among African Americans

Over the last 20 years, researchers have documented inconsistent associations between SES and psychological distress among African Americans. A few studies have demonstrated a negative association between SES and psychological distress among African Americans. For example, Roxburgh (2009) found that higher SES African Americans exhibited lower psychological distress than lower SES African Americans. Moreover, Marshall and colleagues (2013) found that older African Americans with higher educational attainment and income had lower depressive symptoms than their counterparts with lower educational attainment and lower income. Similarly, Abel and colleagues (2014) examined depressive symptoms in a group of working-age African American women and found an association between lower income and higher depressive symptom scores. The results of these studies align with the established SES-psychological distress gradient such that high SES individuals benefit from lower psychological distress (Mirowsky & Ross 2003).

The majority of SES-psychological distress research, however, has not demonstrated a relationship between SES and psychological distress for African Americans (Williams, Takeuchi, and Adair 1992; Ostrove and Feldman 1999; Ennis, Hobfoll, and Schroder 2000; Breslau et al. 2006; Williams et al. 2007; Adler et al. 2008; Gavin et al. 2009). These studies operationalized SES using traditional measures of education, income, and/or occupation / employment. All studies measured either depressive symptoms or Major Depressive Disorder,

and one study (Breslau et al 2006) also measured anxiety disorders. Notably, all of these studies incorporated multiple racial/ethnic groups within their analytical samples. The results of these studies contradict the generally expected relationship between SES and psychological distress (Link and Phelan 1995; Mirowsky and Ross 2003).

A third group of studies have documented positive associations between SES and psychological distress among African Americans. In a study of adult African American men and women, Hudson and colleagues (2012) found that the highest income African American men (>$80,000) reported odds of having a Major Depressive Episode in the last 12-months that were 5.2 times higher than the lowest income men (< $17,000 annually). Recently, Salami and Walker (2014) found that higher SES African American college students had increased depressive and anxiety symptoms as compared to lower SES African American college students. Collectively, the results of these studies also contradict the established SES-psychological distress gradient (Link and Phelan 1995; Mirowsky and Ross 2003).

Together, these findings demonstrate that our understanding of the relationship between SES and psychological distress among African Americans is inconclusive. In particular, it is unclear whether an association exists, and how wide the SES-psychological distress gradient is for African Americans. Knowledge of the mechanisms linking SES to psychological distress among African Americans is also limited. While the majority of these studies focused on depression, it is also unclear whether the SES-psychological distress gradient looks the same for related outcomes, such as anxiety.

Why Study African Americans Living In Detroit?

Detroit offers a useful context for studying the relationship between SES and psychological distress among African Americans. The constellation of historical, economic, and racial forces that have shaped the lives of African Americans in Detroit also operate elsewhere in the U.S. Therefore, understanding the lives of African Americans in the Detroit context can shed light on the lives of African Americans living in other U.S. cities.

The manufacture of weapons and military-grade equipment during the Civil War transformed Detroit into a major U.S. city in the mid-1800s (Farley, Danziger, and Holzer 2000). Subsequently, the infrastructure developed in response to the Civil War made the rise of the auto industry possible in the early 1900s. This infrastructure (as well as Michigan's natural resources) enabled the city to meet the military's demands for automobiles during WWI (Farley, Danziger, and Holzer 2000). Detroit was an industrial powerhouse during WWII, manufacturing and exporting many vehicles and heavy equipment (Farley, Danziger, and Holzer 2000). The robust manufacturing and industrial sectors during this period fueled development of the modern middle-class. The industrial response to the demands of war shaped Detroit's rise to prominence during the 1950s as one of the wealthiest cities in America. By the mid 1950s, Detroit boasted the highest median income and homeownership rate of any city in America, as well as a population of approximately 1.8 million (Harris 2009; Tanner 2017).

African Americans benefitted from employment opportunities in the manufacturing and automotive industries. During the Civil war, the draft of whites and European immigrants into the Union Army created work opportunities in manufacturing sectors for free African Americans and fugitive slaves (Boyd 2017). Similarly, in the early 1900s the automobile industry offered unique employment opportunities for unskilled African Americans, making Detroit a prominent

destination for African Americans migrating from the Deep South during the Great Migration (Farley, Danziger, and Holzer 2000; Boyd 2017). These employment opportunities fueled rapid growth of the African American population in Detroit (Farley, Danziger, and Holzer 2000). Importantly, the best jobs in the auto-industry were initially reserved for whites. African Americans held positions characterized by brutal working conditions and long hours (Boyd 2017). Moreover, unions initially banned African Americans from joining (or allowed membership under Jim Crow-like conditions) (Boyd 2017; Farley, Danziger, and Holzer 2000). Eventually the United Auto Workers union began to allow African Americans full and equal membership to prevent employers from hiring African Americans as strikebreakers (Farley, Danziger, and Holzer 2000). Union membership created opportunities for blue-collar African American workers to earn even higher wages, comprehensive benefits, guaranteed raises, and union voting rights (Farley, Danziger, and Holzer 2000). For decades, the employment opportunities available to African Americans in Detroit surpassed those available to African Americans in other U.S. cities. While socioeconomic diversity within the African American population existed in Detroit as early as the late 1800s, the expanded employment opportunities available to African Americans through the auto industry, and the ability to unionize, expanded and solidified Detroit's Black Middle Class (Boyd 2017).

Beginning in the late 1950s, however, the prosperity of Detroit began to wane. The oldest manufacturing plants in the city became technologically obsolete and several manufacturing and automobile plants closed. Many manufacturing jobs shifted to the suburbs of Detroit, elsewhere in the U.S. or to other countries, and the remaining manufacturing and automobile plants modernized, fueling waves of layoffs (Farley, Danziger, and Holzer 2000). Competition from European and Asian automakers in the early 1970s, along with skyrocketing gas prices during

the OPEC oil crisis of 1973, limited demand for American-made cars and trucks. These changes fueled additional layoffs and plant closures in the auto industry. The changes during this period increased employment opportunities for highly skilled [mostly white] individuals with access to employment opportunities in the suburbs, and resulted in fewer employment opportunities, as well as depressed wages, for non-skilled [mostly African American] workers residing in the inner city (Farley, Danziger, and Holzer 2000). This period of decline continued such that by the 1990s Detroit led the nation in unemployment, poverty, abandoned factories and crime (Farley, Danziger, and Holzer 2000). The Great Recession of 2008 further crippled Detroit, as the few remaining employment opportunities disappeared (Harris 2009). By 2009, the city of Detroit was $300 million in debt, and one-third of the city was completely abandoned; Detroit's decision to cut city services, such as transportation and streetlights, added to the struggles of poor city residents (Harris 2009). By 2010, the unemployment rate in Detroit was 27% (Oosting, 2017).

As stated above, the forces that have fueled Detroit's rise and fall were not purely historical or economic; racism and persistent race-related segregation have also played prominent roles. Beginning in the 1700s, African Americans who first arrived in the city of Detroit experienced hostile and sometimes violent treatment from white European and Canadian immigrants (Farley, Danziger, and Holzer 2000; Boyd 2017). However, the proportion of African Americans in Detroit was relatively small compared to whites until the early 1900s. As the African American population in the city grew, and African Americans attained upward mobility, racial tensions in the city rose. Between 1941 and 1973, racial conflicts between whites and African Americans intensified over access to jobs and housing, neighborhood segregation, school integration, racist policing practices, and control over city government (Farley, Danziger, and Holzer 2000). These tensions catalyzed white flight from the city center to the suburbs, and

racial polarization crystallized during the 1970s and 1980s. By 1990, Detroit was the most racially segregated city in America, as the combination of white-flight and the collapse of the manufacturing and auto industries in the city center created a wealthy, white suburban ring surrounding an impoverished, black city center (Farley, Danziger, and Holzer 2000).

The economic rise and fall of Detroit may be more extreme when compared to other cities. However, the combination of historical events, economic changes, racism, and persistent segregation that have fueled the rise and fall of Detroit continue to operate in other U.S. cities. For example, the residual effects of white flight in Atlanta, Chicago, Boston, and New York City are apparent today. Moreover, historic manufacturing cities such as Flint, Buffalo, Binghamton, and Cleveland have also experienced decline in part due to our changing economy. Thus, studying the relationship between SES and psychological distress among African Americans residing in Detroit is a useful exercise because understanding the forces shaping African Americans' lives in Detroit provides a window into the plight of African Americans residing in other urban centers in the U.S.

CONCEPTUAL FRAMEWORK

The conceptual framework (Figure 1) depicts how the intersecting effects of race and

SES create variations in stress exposures and access to protective resources for African

Americans; these variations manifest in diverse experiences of psychological distress among this

sociodemographic group. Beginning on the left side of the model, racialized processes shape the

SES of African Americans (orange box). These processes also influence African Americans'

stress exposure (green box) and access to health-related resources (purple boxes). The dark blue

triangles represent the relationship between SES and psychological distress. As predicted by

Fundamental Cause Theory (detailed discussion below), low SES should lead to high

psychological distress, and high SES should lead to low psychological distress. Indicators of SES

– educational attainment (light blue triangle), income, homeownership, and employment status

(light blue rectangle) – are within the dark blue triangle for SES. A detailed discussion of the

relationship between these indicators is below. In accordance with the Stress Process Model

(detailed discussion below), the purple and green boxes represent key mechanisms that "govern

the effects of stressors on stress outcomes" and help to explain differences in health outcomes

"among socially and economically demarcated groups" (Pearlin 1989:252). These constructs also

represent resources that can constrain or enhance the context by which stressors operate (Pearlin

1989).

Figure 1. Conceptual Model of Psychological Distress Processes for African Americans
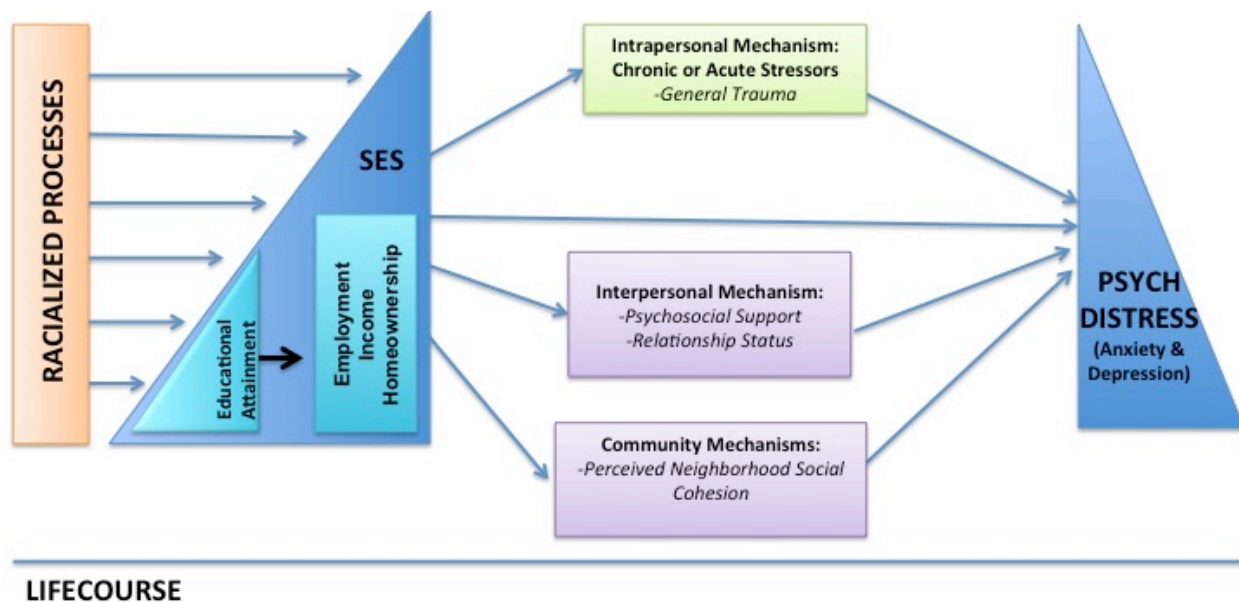
In the sections below, I present theoretical considerations and empirical evidence to suggest how race uniquely shapes SES-psychological distress gradients for African Americans. I then discuss potential mechanisms that link SES to psychological distress among African Americans. Subsequently, I present hypotheses grounded in this conceptual framework to guide the analysis.

Theoretical Considerations: Unequal Distributions of Psychological Distress

The Stress Process Model (Pearlin 1989) and Fundamental Cause Theory (FCT) (Link and Phelan 1995; Phelan and Link 2015) provide a foundation for understanding how SES shapes psychological distress among African Americans. According to the Stress Process Model, exposure to acute and chronic stressors shape mental health outcomes, and access to protective resources mediates the relationship between stressors and mental health (Pearlin 1989). The nature and number of both stressors and access to protective resources arise from the contexts of

people's lives. However, people are stratified within social hierarchies and experience different life contexts. Therefore, some sociodemographic groups will experience more psychological distress than others due to variations in the stresses and resources associated with their life contexts (Pearlin 1989). Put simply, stratified social and structural contexts unequally shape different groups' opportunities for positive mental health.

FCT complements the Stress Process Model by predicting the expected direction of health dis/advantage given a group's social position. Broadly, groups holding more advantaged social positions are expected to experience better health outcomes. Therefore, groups with high SES should experience less psychological distress due to their ability to access and utilize flexible socioeconomic resources (i.e., money, knowledge, power, prestige, and beneficial social networks). High SES groups can employ flexible resources to learn about and avoid health-related stressors and to achieve good health. These groups can also more competently address health-related challenges. In contrast, groups without similar resources likely experience barriers to prevention and treatment (Link and Phelan 1995). Thus, unequal access to flexible socioeconomic resources should create persistent socioeconomic health inequalities.

Theoretical Considerations: Racialized Processes

Racialized structural processes also shape sociodemographic groups' exposures to health-related stressors and access to protective resources. For example, scholars recognize racism as a fundamental cause of health inequality because structural and interpersonal racism differentially shape exposure to discrimination and harmful environments as well as access to socioeconomic resources (Phelan and Link 2015). Thus, when compared to whites, racial minorities should

experience more health risks and more barriers to accessing preventative measures and treatment, ultimately leading to persistent race-related health inequalities.

Racism, however, does not manifest in the same way across racial groups. Differences in how various populations arrived to the U.S. throughout history, and the corresponding policies and structural dis/advantages governing these groups, shaped unique trajectories for different racial groups in the U.S. over time. For example, African Americans have experienced centuries of racist economic, political, legal, and social discrimination and oppression in the U.S., such that African Americans have historically led, and continue to lead very different lives from their white peers (Thomas 2015; Williams and Mohammed 2013). Differences in life circumstances have resulted in African Americans having vastly different patterns of exposure to contextual stressors and health-related risks (Williams and Williams Morris 2000), as well as different access to coping resources (Woodward et al. 2010, Neighbors et al. 2008). As a result, African Americans have experienced persistent health inequalities as compared to whites (Williams, Priest, and Anderson 2016). For example, the life expectancy of African Americans is 3.4 years less than non-Hispanic white Americans, and when compared to whites, African Americans experience early onset of a range of morbidities across the life course (National Center for Health Statistics 2016; Williams and Mohammed 2009). Therefore, it is important to consider how racism has uniquely shaped the socioeconomic opportunities of African Americans in particular, to better understand SES-psychological distress gradients for this group.

Socioeconomic Variation among African Americans

Socioeconomic heterogeneity among African Americans has existed for decades (Frazier 1957). However, while researchers have devoted much attention to socioeconomic inequality

between African Americans and whites, researchers often overlook the socioeconomic inequality that exists among African Americans. For example, education is a particularly important vehicle for social mobility for African Americans, and the wealthiest African Americans have slightly higher educational attainment than high earning whites (Credit Suisse 2014). Educational attainment also shapes subsequent occupation, earnings, and the ability to build wealth later in life (Mirowsky and Ross 2015). High educational attainment among the wealthiest African Americans may influence some of the broader socioeconomic disparities observed among African Americans. For example, while 19.2% of all African Americans hold managerial or professional occupations, the top 5% of African Americans hold 36.3% of those managerial occupations (Credit Suisse 2014). While the median income for African American families in the U.S. is $30,495, the median income for the 95th percentile of African American families is $100,634 (Credit Suisse 2014). While 48% of all African American adults own a home, 89% of the wealthiest African American adults are homeowners (Credit Suisse 2014). Moreover, the top 5% of African Americans have a median net worth that is 47 times greater than that of an average African American, and 6 times greater than the median net worth of an average white adult (Credit Suisse 2014). It is important to recognize that socioeconomic variability and inequality exist not just between African Americans and other racial groups, but also among African Americans.

African Americans' life experiences, exposure to stressors, and access to coping resources vary across and within socioeconomic strata. While researchers have examined the stress exposures and coping resources that affect patterns of psychological distress for low SES African Americans, much less sociological research focuses on those in higher SES strata. In particular, less is known about the psychological distress patterns of these higher SES groups.

However, there is evidence that African Americans in higher SES strata experience social stressors that overlap with, and differ from, lower SES African Americans due to simultaneously occupying social positions of advantage and disadvantage (e.g., Braveman et al. 2015). For example, African Americans across SES strata experience discrimination-related social stressors such as being followed in stores or receiving poor treatment in restaurants (Feagin and Sikes 1994). Experiences of racial discrimination evoke feelings of despair, stress, anger, frustration, hurt, anxiety or even rage (Feagin and Sikes 1994; Landry and Marsh 2011). African Americans with high incomes or education levels, however, are more likely to experience discrimination due to higher levels of contact with whites (Cose 1993; Feagin and Sikes 1994; Foreman, Williams, and Jackson 1997; Kessler, Mickelson, and Williams 1999; Broman, Roya, and Hsu 2000). Members of the Black middle class are also more likely to report experiences of discrimination at work, which can lead to "token stress" and feelings of isolation (Jackson and Stewart 2003). However, high SES African Americans are also vulnerable to experiencing discrimination from other African Americans (Landry and Marsh 2011). The following section illustrates how various mechanisms stemming from differences in life-context can shape variations in African Americans' experiences of psychological distress.

Mechanisms Linking SES to Psychological Distress among African Americans

The intersection of racial and socioeconomic forces shape social and environmental mechanisms that are important for health. These mechanisms operate at intrapersonal (i.e.

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within-person), interpersonal (i.e., between people), and community levels[3] and can serve as sources of stress or as buffers to psychological distress.

Trauma manifests at the intrapersonal level. Depression is common after experiencing a traumatic event such as a car accident, sudden death of a loved one, or physical or sexual violence. African Americans across socioeconomic strata are at higher risk of exposure to some types of traumatic events than the general population, such as loss of a loved one (Alim et al. 2006; Umberson 2017), and exposure to trauma is more prevalent for low SES African Americans residing in urban areas. Trauma exposure is high among low SES African Americans, in part due to limited housing options located in disadvantaged neighborhoods. Living in a disadvantaged neighborhood is associated with increased psychological stress and depressive symptoms due to the constant threat of victimization, heightened levels of violent crime, and perceptions of neighborhood violence (Ross and Mirowsky 2001; Hill, Ross, and Angel 2005; Curry, Latkin and Davey-Rothwell 2008; Giurgescu et al. 2015).

Social support manifests at the interpersonal level and can be financial, tangible (i.e., resources), instrumental (i.e., informational), or emotional (Heaney and Israel 2008). Social support is directly beneficial for mental health, and buffers the harmful effects of stress exposure (Thoits 1995; Thoits 2011). For African American adults, positive social support from church and family members is protective against depression (Chatters et al. 2015). However, African Americans across SES strata may experience limited social support for different reasons. Low SES individuals may have less social support if the members of their social networks also have strained emotional, tangible, and/or financial resources (Elliot 2000). In contrast, higher SES African Americans are often connected to better-resourced social networks, but they may

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[3] These mechanisms can also operate at the institutional and structural levels. However, a discussion of these factors is beyond the scope of this project.

experience social and financial pressures to provide for lower SES family members (Thomas 2015), particularly if they are one of the first or few upwardly mobile members of their family (Patillo-McCoy 2000). Moreover, higher SES African Americans who live in more racially diverse or predominantly white neighborhoods often engage in strategic practices that limit their exposure to racism but also their access to social support from other African Americans (Landry and Marsh 2011).

Relationship status also manifests at the interpersonal level. Marriage is thought to benefit psychological health through provision of a stable relationship (Williams and Umberson 2004), as well as enhanced social and economic resources (Liu et al. 2010). Indeed, married and cohabitating African Americans have lower rates of depression than their unmarried, separated, or divorced peers (Taylor et al. 2012), and high levels of marital satisfaction can protect against psychological stressors caused by discrimination and financial strain (Lincoln and Chae 2010). However, rates of marriage are lower for African Americans than for other racial ethnic groups, and are particularly lower for African American women (Crowder and Tolnay 2000; Taylor et al. 2012).

Neighborhood Social Cohesion manifests at the community level and describes whether residents within a community share common values and are willing to intervene for the common good (Sampson, Raudenbush and Earls 1997; Sampson 2003). Disadvantaged neighborhoods often have low levels of social cohesion, and living in a community with poor social cohesion is associated with higher levels of depression (Kruger et al. 2007; Echeverria et al. 2008; Blair et al. 2014). In contrast, high SES neighborhoods are often more cohesive, and living in a neighborhood with high levels of social cohesion, social capital, and collective efficacy may be beneficial for mental health (Drukker and van Os 2003). Notably, the broader health benefits of

living in a socially cohesive neighborhood may be contingent upon the racial composition of neighborhoods (Mujahid et al. 2011; Geronimus et al. 2015).

Hypotheses

Based on the conceptual model (Figure 1) and the theoretical considerations described above, I present hypotheses to test the relationship between SES and psychological distress among African Americans. The focal independent variable of this study is SES. Education, income, and occupation are the most robust determinants of SES variation in health outcomes (Williams, Priest, and Anderson 2016), and the conventional approach to measuring SES entails including separate indicators for one or more of these determinants. Use of multiple SES measures is beneficial because different SES indicators can capture different aspects of health risk (Duncan et al. 2002). However, SES measures are also generally highly correlated with each other (Pudrovska 2014S). To account for this, I will independently assess the relationship between four separate indicators of SES – educational attainment, total household income, employment status, and homeownership – with psychological distress. I will also assess the relationship between the combined effect of these SES indicators with psychological distress. I will operationalize psychological distress as depression and anxiety. The relationship between SES and depression and anxiety is depicted by the blue triangles in Figure 1, and the first hypothesis is as follows:

> **H1:** *Working age African Americans with lower SES will have higher odds of depression and/or anxiety than African Americans with higher SES.*

Chronic and acute stressors are depicted in the green box. At the intrapersonal level, this includes general trauma. Key mechanisms that may mitigate stress are depicted in purple. At the

interpersonal level, this includes availability of psychosocial support and relationship status, and at the community level, this includes perceived neighborhood social cohesion. I hypothesize that accounting for intrapersonal, interpersonal, and community mechanisms will help to explain SES disparities in psychological distress as follows:

> ***H2a:*** *Lower SES will be associated with higher exposure to general trauma. This, in turn, will be associated with higher odds of depression and/or anxiety.*

> ***H2b****: Lower SES will be associated with lower levels of psychosocial support and not being married. These conditions, in turn, will be associated with higher odds of depression and/or anxiety.*

> ***H2c****: Lower SES will be associated with lower levels of perceived neighborhood social cohesion. This, in turn, will be associated with higher odds of depression and/or anxiety.*

METHODS

Methodological Considerations

The racialized processes operating within our society generate life chances and life trajectories that are not uniform across racial groups. Therefore, I did not assume that SES-psychological distress gradients operate in the same way across racial groups. Yet as stated above, the bulk of prior research on SES-psychological distress gradients incorporates multiple racial-ethnic groups within their analyses (Roxburgh 2009; Williams, Takeuchi, and Adair 1992; Ostrove and Feldman 1999; Ennis, Hobfoll, and Schroder 2000; Breslau et al. 2006; Williams et al. 2007; Adler et al. 2008; Gavin et al. 2009).

While between-group analyses reveal that a structural SES gap exists between racial groups, these analyses cannot fully unpack *how* structural forces shape diverging outcomes across racial-ethnic groups for two reasons. First, they rest on the assumption that structural forces operate in the same way across different groups (Pearson 2008; Thomas 2015). This is not the case. For example, SES measures are not equivalent across race (Williams, Priest, and Anderson 2016; Williams and Collins 1995), and research demonstrates that when compared to whites, college-educated African Americans are more vulnerable to unemployment than college-educated whites, and have less wealth and purchasing power at every education level (Kaufman, Cooper, and McGee 1997; Williams and Collins 1995). Second, these studies can mask the heterogeneity that exists within sub-groups. For example, a preponderance of prior sociological research included disproportionate numbers of poor African Americans in the study sample (Pearson 2008). Thus, many studies that purport to draw conclusions about "African Americans"

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as a group may conflate race and class, reflecting the experiences of low SES African Americans, rather than "African Americans" as a heterogeneous group. For these reasons, I examined the relationship between SES and psychological distress using a within-group analytical approach. This approach accounts for heterogeneity within African Americans as a sociodemographic group and mimics how structural forces manifest in the real world for this group. A within-group approach, thus, provides clarity by revealing the importance of SES as it uniquely operates among African Americans to affect psychological distress patterns. Moreover, within-group approaches illuminate specific mechanisms that link a structural force to specific micro-level outcomes for that group. Thus, examining the mechanisms that link SES and psychological distress within a sample of African Americans can provide nuanced insight into how socioeconomic forces stratify psychological health outcomes within this population.

Data Source

The Detroit Neighborhood Health Study (DNHS) is a prospective longitudinal study of primarily African American adults (ages 18 – 95 at Wave 1) living in Detroit, Michigan. The study design facilitates examination of questions related to how lifetime exposure to stressful and traumatic events and neighborhood environmental characteristics predict psychopathology and behavior. Researchers at the University of Michigan collected data in five waves from 2008 to 2013. During Wave 1 (2008-2009), researchers recruited 1,547 participants using a two-stage area probability sample of households within Detroit city limits. Substantial attrition occurred between Waves 1 and 2; therefore, during Wave 2 (2009-2010), researchers drew a supplemental sample of 534 individuals from the population using the same two-stage area probability sampling techniques from Wave 1. Thus, 2081 participants have ever completed a DNHS survey.

However, 1588 participants completed a survey during Wave 2 of the DNHS. Data collection for Waves 3, 4, and 5 took place in 2010-2011, 2011-2012, and 2012-2013, respectively. Although attrition also occurred between Waves 3, 4, and 5, researchers did not recruit new participants during these waves. The sample sizes for Waves 3, 4, and 5 are 1339, 845, and 353, respectively. Each year, DNHS participants completed a 40-minute telephone survey, providing demographic information and data about their perceptions of their neighborhood, basic health status, and access to social support. Interviewers obtained consent from each participant prior to beginning the interview, and respondents received $25 for participation.

Analytic Samples

I utilized a cross-sectional design to answer my first two research questions, which were: "How wide are SES gradients in psychological distress among African American adults?" and "Which mechanisms explain SES patterns of psychological distress among African American adults?" My analytic sample for this analysis includes working-age African Americans between the ages of 25 and 66 (n = 776) at Wave 1 who had complete data for all variables of interest. I restricted the sample to this age range because at age 25 most young adults in the U.S. have completed their education and entered the workforce. Furthermore, age 66 is currently the threshold to receive full Social Security retirement benefits.

I then employed a longitudinal design, using data from Waves 1 – 4[4] of the DNHS, to answer my third research question, "Are SES indicators associated with psychological distress among African Americans over time?" My analytic sample for this analysis included working-aged African Americans between the ages of 25 and 66 (n = 907). As stated above, substantial

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[4] I excluded Wave 5 of the DNHS due to sample size limitations and the lack of availability of variables of interest.

attrition occurred between Waves 1 and 2 of the DNHS, and researchers recruited additional

individuals into the study. As such, my analytic sample for the longitudinal analysis is slightly

larger than the analytic sample for the cross-sectional analysis, reflecting enrollment of new

participants into the study at Wave 2. Importantly, I analyzed an unbalanced panel, meaning that

I included all individuals who had data for all variables of interest in at least two time-points

across the four waves of data (rather than only including those who had complete data across all

four waves).

Variables included in Cross-Sectional Analysis

     Mental Health. I examined two mental health indicators: *depression* and *anxiety*. The

Patient Health Questionnaire (PHQ-9), a validated instrument based on DSM-IV criteria,

measures *depression* through a battery of Likert items (Kroenke, Spitzer, and Williams 2001).

Respondents indicated whether they felt bothered by any of the following nine symptoms in the

prior two weeks (0 = none of the time; 1 = several days; 2 = more than half the days; 3 = nearly

every day): I had little interest or pleasure in doing things; I felt down, depressed or hopeless; I

had trouble falling or staying asleep or slept too much; I felt tired or had little energy; I had a

poor appetite or overate; I felt bad about myself – like I was a failure or let my family down; I

had trouble concentrating on things like reading the newspaper or watching television; I was

moving/speaking so slowly that others noticed – or the opposite – I was so fidgety or restless that

I've been moving around more than usual; I've had thoughts of hurting myself or thought I'd be

better off dead (alpha = 0.86). Summed responses yielded a continuous score indicative of the

number and severity of participants' depressive symptoms (range: 0 – 27). I constructed a

dichotomous variable using a clinically-significant cut point: 0) PHQ-9 < 10; 1) PHQ-9 $\geq$ 10

(Kroenke, Spitzer, and Williams 2001). This cut-point has a sensitivity of 88% and specificity of 88% for major depression and indicates a possible need for antidepressants and/or psychotherapy (Kroenke, Spitzer, and Williams 2001). The General Anxiety Disorder Assessment (GAD-7) measures the frequency and severity of *anxiety* symptoms through a battery of Likert items (Spitzer et al. 2006). This instrument is also validated based on DSM-IV criteria and assesses whether participants were bothered by the following seven symptoms in the previous two weeks (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day): I felt nervous, anxious, or on edge; I was unable to stop or control worrying; I worried too much about different things; I had trouble relaxing; I was so restless that it was hard to sit still; I was easily annoyed or irritable; I felt afraid as if something awful might happen (alpha = 0.90). Summed responses yielded a continuous measure (range: $0 - 21$). I constructed a dichotomous variable using a clinically-significant cut point: 0) GAD-7 < 10; 1) GAD-7 $\geq$10 (Spitzer et al. 2006). This cut-point has a sensitivity of 89% and specificity of 82% for General Anxiety Disorder and indicates the need for further evaluation and possible treatment (Kroenke, et al. 2007).

SES. I analyzed four measures of SES: *educational attainment*, *total household income, employment status, and homeownership. Educational attainment* is a categorical measure: 1 = < 12 Years or GED; 2 = 12 Years; 3 = Some College or Technical Training; 4 = BA or higher (reference category). Participants' *total household income* in the previous year from all sources before taxes is also a categorical measure: 1= less than \$14,999; 2 = \$15,000 –\$24,999; 3 = \$25,000 - \$34,999, 4 = \$35,000 - \$49,999; 5 = \$50,000 or more (reference category). *Employment status* is measured categorically: 1 = full time (reference category), 2 = part time, 3 = not employed. *Homeownership* is also measured categorically: 0 = own home (reference category); 1 = does not own home.

Intrapersonal Mechanisms. Participants reported whether they experienced one or more of the following 30 *stressful or traumatic experiences* in the last year: a combat war zone; rape; sexual assault or forced/coerced unwanted sexual contact; shot or stabbed; held captive, tortured or kidnapped; mugged or threatened with a weapon; badly beaten up; serious car accident; serious accident or injury; natural disaster; diagnosed with life threatening illness or serious operation; child diagnosed with life threatening illness or operation; witnessed a murder or serious injury; discovered a dead body; close friend or relative was raped/sexually assaulted; close friend was seriously physically attacked; close friend was seriously injured in a vehicle crash; close friend was seriously injured in another accident; sudden unexpected death of friend or relative; parent with alcohol or drug problem; other family member with alcohol or drug problem; divorce or serious break up; lost job; emotionally mistreated; parents/caregivers physically fought; stressful legal problems; unemployed for more than 3 months; serious financial problems; problems accessing adequate healthcare; other stressful event. Summed items yielded a continuous measure ranging from 0 – 30 (alpha = 0.71).

Interpersonal Mechanisms. I also examined *psychosocial support* and *relationship status*. Participants reported their access to *psychosocial support* by responding to the following three items (0 = Strongly disagree, 1 = Somewhat disagree, 2 = Neither agree nor disagree, 3 = Somewhat agree, 4 = Strongly agree): Among my friends or relatives, there is someone who makes me feel better when I am feeling down; among my friends or relatives, there is someone I go to when I need good advice; my friends or relatives would lend me money if I needed it. Summed items yielded a measure ranging from 0 – 12 (alpha = 0.64). This analysis also includes a categorical variable for participants' current *relationship status*: 1) currently married (reference category); 2) divorced, separated, or widowed; or 3) never married.

Community Mechanism. I examined *perceived neighborhood social cohesion.*
Participants indicated whether their neighborhood was "close-knit or unified," neighbors
willingly helped each other, neighbors got along, neighbors shared common values, and
neighbors could be trusted (0 = Strongly disagree; 1 = Somewhat disagree; 2 = Neither agree nor
disagree; 3 = Somewhat agree; 4 = Strongly agree) (Sampson, Raudenbush and Earls 1997,
Echeverria et al., 2004). I reverse-coded two questions and subsequently summed all items to
construct a scale ranging from 0 to 20 points. Higher scores indicate greater individual-level
perception of neighborhood social cohesion (alpha = 0.55).

Additional Covariates. I also adjusted for *sex* (categorical measure), *age* (continuous
measure), and being the primary caregiver of a child under age 18 (hereafter: caregiver status,
categorical measure).

Variables included in Longitudinal Analysis.

I included all of the measures that I utilized in my cross-sectional analysis in my
longitudinal analysis: my outcome variables, *depression* and *anxiety,* were measured across
Waves 1 – 4. I included four SES indicators: *total household income* (measured at Waves 1 – 4),
homeownership (measured at Waves 1 and 2), *educational attainment* (measured at Waves 1 –
4), and *employment* (measured at Waves 1 and 2). I also included measures for *stressful or
traumatic experiences* (measured at Waves 1 – 4), *relationship status* (measured at Waves 1 – 4),
social support (measured at Wave 1) and *perceived neighborhood social cohesion* (measured at
Wave 1). Moreover, I adjusted for *sex* (measured at Wave 1), *age* (measured at Waves 1 – 4),
and *caregiver status* (measured at Wave 1).

In addition, I included an additional intrapersonal indicator of theoretical interest that was only measured at Wave 3 of the DNHS: *perceived discrimination*. Participants reported how often on a day-to-day basis they experienced one of the following nine situations (0 = Never; 1 = Rarely; 2 = Sometimes; 3 = Often): people act as if you are inferior; people act as if you are not smart; people act as if they are afraid of you; you are treated with less courtesy than others; you are treated with less respect than others; you receive poor service in stores or restaurants; people act as if you are dishonest; you are called names or insulted; you are threatened or harassed. Summed items yielded a continuous measure (0 – 36) (alpha = 0.82). I also adjusted for time trends with the variable *Wave*. I report descriptive statistics for all longitudinal variables included in this analysis in Table 4.

Analytic Plan for Cross-sectional Analysis

I conducted univariate and bivariate analyses to gain a preliminary understanding of all variable distributions and the relationships between variables of interest. Mental health scales are often analyzed as continuous variables. However, univariate analyses revealed the need to categorize the dependent variables (PHQ-9 and GAD-7) due to the large proportion of respondents whose scores were 0. Given that the epidemiological cut offs for the PHQ-9 and GAD-7 are in intervals of 5 (and may seem arbitrary to some), I tested the ordinality of each outcome using stereotype logistic regression models with the "slogit" command in STATA (Liu 2014). This model constrains the lowest category of the outcome variable to 0 and the highest category of the outcome variable to 1, and confirms that the outcome variable is ordinal if the following condition is satisfied:

$$1 = \emptyset_1 > \emptyset_2 > \emptyset_3 > \dots \emptyset_{J-1} > \emptyset_J = 0 \qquad (1)$$

Moreover, if any two categories are indistinguishable (i.e., $\emptyset_1 = \emptyset_2$) they can be collapsed into one category. Significant results of the stereotype logistic regression model confirmed ordinality of my dependent variables, pointing me towards an ordinal logistic regression model, rather than a multinomial logistic regression model. However, overlapping cut-points in some of my ordinal logistic regression models revealed the need to dichotomize the outcome variables. As such, I utilized a cut-point of ≥ 10 on the PHQ-9 and GAD-7 to dichotomize my dependent variables, and used logistic regression for my analyses.

Logistic regression uses maximum likelihood estimation to model the log odds that an event will occur. This model assumes that there is a latent continuous response underlying the dichotomous outcome, representing a propensity for depression or anxiety to occur in the context of this study:

$$\mathcal{Y}_i{}^*{}_{\text{(depression or anxiety)}} = \beta_1 + \beta_2(\text{SES indicators})_2 + \beta_3(\text{mechanisms})_3 + \beta_4(\text{controls})_4 + \varepsilon_I \quad (2)$$

$$\mathcal{Y}_i{}^* > 0 \rightarrow \mathcal{Y}_i = 1$$

$$\mathcal{Y}_i{}^* \leq 0 \rightarrow \mathcal{Y}_i = 1$$

$$E\left(\varepsilon_i \mid x_i\right) = 0$$

I also inspected all of my variables for missingness. I did not find any variables that were missing a substantial number of observations ($> 5\%$). Therefore, I employed casewise deletion, dropping observations with missing values on parameters of interest. Use of casewise deletion should yield unbiased standard errors and test statistics; however, it is possible that this method may yield slightly higher standard errors than other methods that address missing data.

I present descriptive statistics for all variables of interest in Table 1. I subsequently present 18 logistic regression models to examine the relationships between SES indicators and psychological distress (Table 2), as well as factors explaining these relationships (Table 3). I

utilized sampling weights to facilitate the ability to make population inferences. In Table 2, Models 1 – 5 examined the relationship between SES and depression, holding sex, age, and caregiver status constant. The first model in Table 2 tested the relationship between educational attainment and depression. The second model tested the relationship between total household income and depression. Model 3 examined the relationship between employment status and depression, and Model 4 tested the relationship between homeownership and depression. Model 5 tested the relationship between all SES and depression. Similarly, Models 6 – 10 in Table 2 examined the relationship between SES and anxiety, holding sex, age, and caregiver status constant. Model 6 examined the relationship between educational attainment and anxiety. Model 7 tested the relationship between total household income and anxiety. Model 7 tested the relationship between employment status and anxiety, and the eighth model tested the relationship between homeownership and anxiety. The 10th model tested the relationship between all SES and anxiety.

Table 3 examined whether intrapersonal, interpersonal, and community-level mechanisms explained the relationship between SES indicators and psychological distress. Models 11 – 14 examined depression, while Models 15 – 19 examined anxiety. All models adjusted for sex, age, and caregiver status. In Model 11, I examined whether lifetime stressful or traumatic events explained the relationship between SES and depression. In Model 12, I tested whether relationship status and psychosocial support explained the relationship between SES and depression. I examined whether neighborhood social cohesion explained the relationship between SES and depression in Model 13. I tested the combined effect of all mechanisms on the relationship between SES and depression in Model 14. Similarly, in Model 15 I examined whether lifetime stressful or traumatic events explained the relationship between SES and

anxiety. I examined whether relationship status and psychosocial support explained the

relationship between SES indicators and anxiety in Model 16, and I examined whether

neighborhood social cohesion explained the relationship between SES indicators and anxiety in

Model 17. I tested the combined effect of all mechanisms on the relationship between SES and

anxiety in Model 18. As a robustness check, I duplicated my analyses using Poisson models

(results not described here, ref: Appendix 1 and Appendix 2). In Tables 2 and 3, I present odds

ratios, p-values, and 95% confidence intervals for all models.

Analytic Plan for Longitudinal Analysis

　　　Using data from Waves $1 - 4$[5] of the DNHS, I estimated two Random Effects logistic

regression models to investigate whether SES indicators are associated with psychological

distress among African Americans over time:

$$\mathcal{Y}_{ij}*_{\text{(depression or anxiety)}} = \beta_1 + \beta_2(\text{SES indicators})_{2j} + \beta_3(\text{time varying mechanisms})_{3ij} + \beta_4(\text{time in-variant}$$

$$\text{mechanisms})_{4ij} + \beta_5(\text{time varying controls})_{5ij} + \beta_6(\text{time in-variant controls})_{6ij} \ (\varsigma_i + \varepsilon_{ij}) \qquad (2)$$

$$\mathcal{Y}_{ij} = 1 \Leftrightarrow \mathcal{Y}_{ij}* > 0$$

$$\xi_{ij} \ (\varsigma_i + \varepsilon_{ij})$$

where *time varying variables* are educational attainment, total household income,

homeownership, stressful or traumatic experiences, relationship status, age, and wave; and *time

in-variant variables* are employment status,[6] perceived discrimination, and sex. The Random

Effects model is a longitudinal model that uses a quasi-demeaned time transformation, which

enables estimation of time-invariant, as well as time-varying variables (Woolridge 2009). This

model also accounts for random heterogeneity in a sample by assigning each person a random

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[5] I excluded Wave 5 of the DNHS due to sample size limitations and the lack of availability of variables of interest.

[6] Although employment status was measured at multiple Waves of the DNHS, there was too little cross-wave
variation in employment status to treat it as a time-varying variable.

intercept. In the context of this analysis, the random intercepts account for each person's

underling propensity for depression or anxiety that may persist over time.

Data are missing at particular waves of the DNHS due to attrition from the study.

Researchers attempted to make up for attrition through recruitment of a supplementary sample at

Wave 2. Moreover, analyses from DNHS researchers reveal that the distributions for race, age,

sex, total household income, educational attainment, homeownership, and employment for those

who remained in the study sample are stable across all four waves of the dataset (McClure et al.

2017). Therefore, I assumed that the missing cases are ignorable, meaning that the parameters

driving missing data processes within the DNHS are unrelated to the parameters of interest for

this study. To address missing data, I employed listwise deletion, dropping observations with

missing values on parameters of interest. Use of listwise deletion should yield unbiased standard

errors and test statistics. However, my standard errors may be higher than if I employed

alternative techniques to address missing data.

I present descriptive statistics for all variables of interest in Table 4. I subsequently

present two Random Effects logistic regression models to examine the relationships between

SES indicators with depression (Table 5) and anxiety (Table 6) over time when accounting for

explanatory mechanisms. In Tables 5 and 6 I present odds ratios, p-values, and 95% confidence

intervals for all models.

RESULTS

Descriptive Results

Table 1 shows descriptive statistics for all variables included in the cross-sectional

analyses. The average age of respondents was 48.2 years. Twenty-eight percent were married;

almost 33% were divorced, separated, or widowed; and almost 39% had never married.

Approximately, 24% of respondents reported a PHQ-9 score of ≥10, and almost 19% reported a

GAD-7 score of ≥10. Approximately 18% of respondents completed fewer than 12 years of

school or earned a GED, and about 24% completed 12 years of school. The majority of

respondents completed some college / technical training (almost 37%) and almost 21% were

college graduates. The total household income of about 31% of respondents was less than

$14,999. About 14% of respondents earned between $15,000 and $24,999, an additional 14% of

respondents earned between $25,000 and $34,999, and an additional 14% of respondents earned

between $35,000 and $49,999. The total household income for 27% of respondents was $50,000

or more. Forty percent of respondents were employed full time, while about 10% reported part-

time employment. Almost 49% reported they were not employed. Almost 56% of respondents

were homeowners, while about 44% did not own their homes. Respondents reported an average

of 9.4 (SD = 6.10) lifetime stressful or traumatic events. However, respondents also reported

high levels of social support (mean =10.33, SD = 2.5) and perceived neighborhood social

cohesion (mean = 12.18, SD = 5.01).

Relationship between SES and Psychological Distress among Working Age African Americans

I report findings describing the relationship between SES indicators and depression after adjusting for sex, age, and caregiver status in Models 1 – 5 of Table 2. These models did not indicate an association between educational attainment and depression (Model 1) or total household income and depression (Model 2). In Model 3, I found a relationship between employment status and depression, such that the odds of reporting a PHQ-9 score of ≥ 10 among those who were employed part time was 3.43 times the odds of those who were employed full time ($p<0.05$). Moreover, those who were not employed had odds of reporting a PHQ-9 score of ≥ 10 that were 3.19 times the odds of those who were employed full time ($p<0.01$). I did not find an association between homeownership and depression (Model 4). I also examined the relationship between all SES indicators and depression in Model 5. In this model, the employment-depression gradient remained such that those who were employed part time ($\beta = 3.13$, $p<0.05$) and those who were not employed ($\beta = 2.99$, $p<0.01$) had increased odds of reporting a PHQ-9 score of ≥ 10 when compared with those who were employed full time. Other SES indicators remained insignificant in the full model. Notably, sex was statistically significant in each model ($p<0.05$ to $p<0.01$), such that women were more than twice as likely as men to report a PHQ-9 score of ≥ 10.

In Models 6 – 10 of Table 2, I report findings describing the relationship between SES indicators and anxiety after adjusting for sex, age, and caregiver status. Model 6 revealed a relationship between educational attainment and anxiety, such that those who completed fewer than 12 years of school or earned a GED had odds of reporting a GAD-7 score of ≥ 10 that were 3.38 times the odds of someone who completed a BA or higher ($p< 0.05$). However, the relationships between those with higher educational attainment and anxiety were not significant,

indicating a very narrow educational attainment-anxiety gradient. I did not find an association

between total household income and anxiety (Model 7). However, a gradient between

employment status and anxiety was evident such that those who were employed part time (β =

4.24, p<0.05) and those who were not employed (β = 2.53, p<0.05) had higher odds of reporting

a GAD-7 score of $\geq$10 than those were employed full time. Model 9 indicated a relationship

between homeownership and anxiety, such that the odds of reporting a GAD-7 score of $\geq$10

among those who were not homeowners were 2.60 times the odds of homeowners (p<0.05). I

examined the relationship between all SES indicators and anxiety in Model 10. In this model,

none of the SES indicators were statistically significant, indicating that there does not seem to be

a direct relationship between SES and anxiety. It is possible that in prior models (Models 6-9),

the significant SES indicators were picking up the effects of omitted variables that are associated

with measured SES indicators. Notably, sex was statistically significant in Models 6, 8, and 10,

such that women were more than twice as likely as men to report anxiety (p<0.05).

Mechanisms Linking SES to Psychological Distress among Working Age African Americans

I report findings describing mechanisms that may explain the relationship between SES

indicators and depression after adjusting for sex, age, and caregiver status in Models 11 – 14 of

Table 3. In Model 11, I examined intrapersonal stressors, namely, how stressful or traumatic

events mediated the relationship between SES indicators and depression. As in previous models,

I did not find an association between educational attainment, total household income, or

homeownership, and depression. Moreover, the employment-depression gradient narrowed and

weakened, such that only those who were not employed (β = 2.27, p<0.05) had higher odds of

depression when compared with those who were employed full time. I found an association

between stressful or traumatic events and depression, such that each additional stressful or traumatic event increased the odds of reporting a PHQ-9 score of ≥10 by 18% (p<0.001). This model indicated that the association between employment status and depression partially operates through stressful or traumatic events.

I investigated how interpersonal mechanisms (i.e., relationship status, availability of psychosocial support) shaped the relationship between SES indicators and depression in Model 12. I did not find any associations between educational attainment, total household income, homeownership, or relationship status and depression. However, the full employment status-depression gradient reappeared, such that the odds of reporting a PHQ-9 score of ≥10 among those who were employed part time were 3.04 times the odds of those who were employed full time ($p < 0.05$). The odds of reporting a PHQ-9 score of ≥10 among those who were not employed were 2.76 times the odds of those who were employed full time ($p < 0.01$). Moreover, each 1-point increase in psychosocial support reduced the odds of a PHQ-9 score of ≥10 ($\beta = 0.89$, $p < 0.05$). This model indicated that the effects of employment status may partially operate through psychosocial support, but not relationship status.

Model 13 investigated whether a community mechanism (i.e., perceived neighborhood social cohesion) shaped the relationship between SES indicators and depression. This model did not reveal an association between educational attainment, total household income, homeownership, or perceived neighborhood social cohesion and depression. The association between employment status and depression remained such that the odds of reporting a PHQ-9 score of ≥10 among those who were employed part time ($\beta = 3.08$, $p < 0.05$), or among those who were not employed ($\beta = 2.93$, $p < 0.01$), were higher than the odds for those who were

employed full time. This model indicated that SES does not seem to operate through perceived neighborhood social cohesion to influence depression.

In Model 14, I examined how all mechanisms shape the relationship between SES indicators and depression. In this model none of the SES indicators were statistically significant. The only mechanism that was significant was stressful or traumatic events, such that each additional stressful or traumatic event increased the odds of reporting a PHQ-9 score of ≥ 10 by 19% (p<0.001). This model indicated that the effects of employment status operate through trauma to shape depression. Moreover, the effects of stress inducing traumatic events seem to overpower the stress mitigating effects of psychosocial support to shape depression. Notably, across Models 11-14, sex was statistically significant in each model, such that women were about 2.5 times as likely as men to report depression (p<0.01).

In Models 15 – 18 of Table 3, I investigated mechanisms that may explain the relationship between SES indicators and anxiety after adjusting for sex, age, and caregiver status. In Model 15, I examined intrapersonal stressors, specifically, whether stressful or traumatic events mediate the relationship between SES indicators and anxiety. As with depression, I did not find a relationship between educational attainment, total household income, employment status, or homeownership and anxiety. Stressful or traumatic experiences were associated with anxiety, such that each additional experience increased the odds of reporting a GAD-7 score of ≥ 10 by 1.15 (p<0.001). This model indicates that stressful or traumatic experiences do not mediate the relationship between SES and anxiety. Instead, stressful or traumatic experiences are directly associated with anxiety.

I examined how interpersonal mechanisms may shape the relationship between SES indicators and anxiety in Model 16. In this model, I also did not find associations between any of

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the SES indicators and anxiety. I also did not find an association between relationship status or psychosocial support and anxiety.

Model 17 investigated how perceived neighborhood social cohesion shapes the relationship between SES indicators and anxiety. I did not find an association between any of the SES indicators, or perceived neighborhood social cohesion, and anxiety in this model.

I examined how all mechanisms shape the relationship between SES indicators and anxiety in Model 18. I did not find an association between educational attainment, employment status, total household income, or homeownership and anxiety. As in previous full models, stressful or traumatic experiences played an important role such that each additional stressful or traumatic experience increased the odds of anxiety by 15% ($p < 0.001$). However, in the full model, I did not find statistically significant associations between other possible mechanisms (i.e. relationship status, psychosocial support, perceived neighborhood social cohesion) and anxiety. This model underscored the finding that stressful or traumatic experiences may directly shape anxiety among African Americans. Finally, across Models 15-18, sex was statistically significant in each model, such that women had odds of reporting anxiety that were about 2.5 times those of men ($p < 0.01$).

Descriptive Results of Longitudinal Sample

Table 4 shows descriptive statistics for all variables included in the longitudinal analyses. The average age of respondents was 50 years. Approximately 29 percent were married; 36% were divorced, separated, or widowed; and almost 34% had never married. Approximately, 20% of respondents reported a PHQ-9 score of ≥ 10, and 15% reported a GAD-7 score of ≥ 10. Approximately 14% of respondents completed fewer than 12 years of education or earned a

GED, and approximately 24% completed 12 years of education. Almost 37% of respondents completed some college / technical training and 25% completed a BA or higher. The total household income of about 31% of respondents was less than $14,999. About 15% of respondents earned between $15,000 and $24,999, an additional 14% earned between $25,000 and $34,999, and about an additional 14% of respondents earned between $35,000 and $49,999. The total household income for 25% of respondents was $50,000 or more. About 37% of respondents were employed full time, while almost 10% reported part-time employment. Almost 53% reported they were not employed. About 57% of respondents were homeowners, while approximately 46% did not own their homes. Participants reported an average of 5.10 (SD = 5.31) lifetime stressful or traumatic events. Moreover respondents reported an average of 5.45 (SD=4.84) on the perceived discrimination scale. However, respondents also reported high levels of social support (mean =10.27, SD = 2.5) and perceived neighborhood social cohesion (mean = 12.29, SD = 5.92).

Relationship Between SES and Psychological Distress among African Americans Across the Adult Life Course

I report results from the Random Effects models on unbalanced panels. These models examined the relationships between SES indicators and depression and anxiety over 4 years holding sex, age, wave, and caregiver status constant and are reported in Tables 5 and 6, respectively. The analysis of depression (Table 5) indicated that holding other factors equal, there are no associations between educational attainment, total household income, homeownership, or employment and depression over time. However, I found a relationship between several mechanisms and depression. On average, each additional stressful or traumatic

experience increased the odds of reporting a PHQ-9 score of $\geq$ 10 by 27% (p < 0.001). I also found a relationship between perceived discrimination and depression such that each 1-point increase in perceived discrimination increased the odds of reporting a PHQ-9 score of $\geq$ 10 by 10% (p < 0.001). However, each 1-point increase in psychosocial support reduced the odds of reporting a PHQ-9 score of $\geq$ 10 over time ($\beta = 0.87$, p < 0.01). Furthermore, the odds of women reporting a PHQ-9 score of $\geq$ 10 were 1.99 times that of men (p < 0.05). I did not find relationships between relationship status or perceived neighborhood social cohesion and depression.

Results from my longitudinal analysis of SES and anxiety are found in Table 6. Holding other factors equal, I did not find a relationship between educational attainment, total household income, homeownership, or employment and anxiety. On average, each additional stressful or traumatic experience increased the odds of reporting a GAD-7 score of $\geq$ 10 by 22% (p < 0.001), and each 1-point increase in perceived discrimination increased the odds of reporting a GAD-7 score of $\geq$ 10 by 7% (p < 0.05). However, each 1-point increase in psychosocial support reduced the odds of reporting a GAD-7 score of $\geq$ 10 ($\beta = 0.86$, p < 0.01). I did not find an association between relationship status or perceived neighborhood social cohesion and anxiety.

The results of the auxiliary analysis (Tables 5 and 6) confirm the results from the cross-sectional analysis (Tables 2 and 3): among African Americans there is little or no direct association between SES indicators and depression and/or anxiety over time. However, factors beyond SES, in particular stressful or traumatic experiences, perceived discrimination, and psychosocial support, may be stronger direct determinants of psychological distress gradients among African Americans.

DISCUSSION

This study aimed to improve understanding of the relationship between SES and psychological distress among working age African Americans by documenting patterns of depression and anxiety, and identifying mechanisms that explain these patterns. A conceptual model depicting the SES-psychological distress process among African Americans (Figure 1) facilitated generation of several research hypotheses. I tested these hypotheses with logistic regression models using data from Wave 1 of the DNHS, and Random Effects logistic regression models and data from Waves 1 – 4 of the DNHS. I did not find associations between educational attainment, total household income, or homeownership and depression in cross-sectional or longitudinal analyses. While findings revealed an employment status-depression gradient among African Americans, the effects of employment seemed to work through stressful or traumatic experiences to increase the odds of depression. The SES-anxiety relationship unfolded differently such that SES did not appear to directly increase the odds of anxiety. In contrast, stressful or traumatic experiences appeared to directly increase the odds of anxiety. These findings extend arguments advanced by Pearson (2008) and Turner and colleagues (2017) to African Americans' mental health: SES disparities may not be strong predictors of mental health among African Americans.

The hypothesis that African Americans with lower SES will have higher odds of psychological distress than African Americans with higher SES was confirmed for employment status, such that those who were unemployed or employed part time had increased odds of

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depression when compared with those who were employed full time. These findings make sense given the Detroit context, and that data collection coincided with The Great Recession – a period during which unemployment peaked in Detroit. More broadly, these findings confirm prior research documenting a relationship between unemployment or part-time employment and increased mental distress (Brown et al. 2003) and depression (Diette et al. 2015; Rodriguez et al. 1999) among African Americans. Unemployment or (part-time employment when one desires to work full time) is stressful and can cause financial hardship, threaten one's self-identity, and provoke adverse coping behaviors (Brown et al. 2003). For the last 60 years the unemployment rate for African Americans across levels of educational attainment has consistently been twice that of non-Hispanic whites, and policymakers have devoted little attention to reducing this racial unemployment gap (The Editorial Board 2017; DeSilver 2013). Moreover, employed African Americans often make less than their non-Hispanic white peers and are often the first fired during downturns in the business cycle (Couch and Fairlie 2010). These patterns indicate a need for additional demographic research investigating how employment status, or types of employment, and job insecurity may disproportionately place African Americans at an increased risk of psychological distress. Opportunities for this type of research are particularly salient given structural changes in our economy in the form of globalization, and the recent rise of impermanent contract work characterized by unstable pay without benefits (NPR/Marist 2018), as well as recent findings that persistent perceived job insecurity is associated with increased psychological distress (Burgard and Seeyle 2017).

This study also examined mechanisms that explain SES-psychological distress patterns among African Americans. Findings confirm the hypothesis that lower SES is associated with higher exposure to stressful or traumatic events, which in turn, is associated with higher odds of

psychological distress. These findings also confirm prior research, demonstrating an association between trauma and depression and anxiety among African Americans (Smith 2014; Myers et al. 2015). There are a few pathways through which unemployment or part-time employment could operate through stressful or traumatic experience to increase the odds of depression. First, individuals who are unemployed or employed part-time may spend more time in their neighborhoods or at home (Krueger and Mueller 2008). Increased time spent in these contexts could increase trauma exposure, and the odds of depression, if these contexts are sources of stress. Second, the financial strain that accompanies persistent unemployment or part-time employment could incentivize some individuals to seek supplemental income through underground economies (Wilson 1997), which may in turn increase one's exposure to trauma in the form of violence. Third, financial expenses (e.g., medical bills, legal bills, burial expenses) often accompany stressful or traumatic events. For those who are unemployed, or employed part-time, and have limited savings or insurance, the stress of unanticipated traumatic events could intensify as individuals grapple with intersecting emotional, legal, and/or financial burdens.

The results of this study failed to provide support for other hypotheses. First, SES did not operate through relationship status, to influence lower levels of psychological distress. Moreover, it was inconclusive as to whether psychosocial support acts as a mediator between SES and depression and anxiety, such that this mechanism was insignificant in cross-sectional analyses, but significant in longitudinal analyses. These findings were surprising, contradicting prior research about the utility of marriage and social support to the psychological health of African Americans (Williams, Takeuchi, and Adair 1992; Taylor et al. 2012). However, these findings may not be generalizable to African Americans who are in a different stage of the life course, particularly the elderly. For elderly African Americans who have outlived many close relatives,

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are experiencing physical or cognitive declines, and/or who are retired and desire companionship, marriage and social support may be associated with reduced psychological distress.

Study results also did not support the hypothesis that SES, operating through perceived neighborhood social cohesion, is associated with lower levels of psychological distress. More than 80% of Detroit's residents are African American and live in hyper-segregated, racially homogenous neighborhoods (McGraw 2016). Thus, this finding was somewhat surprising given that researchers have found that those who live in racially homogenous neighborhoods perceive lower levels of social and physical environmental stress after accounting for the effects of poverty and residential stability (Schulz et al. 2008). However, I speculate that if one conceptualizes neighborhood social cohesion as a broader source of psychosocial support, the findings from this analysis make sense in the context of Detroit in 2008. It is possible that if there were high levels of poverty and unemployment among residents of particular neighborhoods, then neighbors could have very limited psychosocial stress-reducing resources to share with each other.

Longitudinal analyses revealed an association between SES and perceived discrimination. These findings align with a large body of literature linking perceived discrimination with increased psychological distress (Jackson et al. 1996; Williams and Mohammed 2009; Pascoe and Smart Richman 2009; Myers et al. 2015). These findings also confirm prior research conducted with African Americans in Detroit in which participants reported that they "frequently miss out on good jobs, promotions, and attractive homes and neighborhoods because of systematic and pervasive racial discrimination" (Farley, Danziger, and Holzer 2000:10). It is likely that the combination of hyper-segregation and relocation of many companies to the

suburbs, as well as structural racism and racial microaggression, contribute to the high unemployment rates among African Americans in Detroit.

Findings also indicated a sex difference, such that women had higher odds of reporting depression and anxiety than men, independent of SES indicators, and the intrapersonal, interpersonal, and community-level mechanisms examined in this study. This finding aligns with prior research in which African American women reported higher rates of depression than African American men (Williams et al. 2007; Cutrona, et al. 2005). Unfortunately power limitations prevented the use of interaction terms to further explore these findings. Moreover, some research indicates that mechanisms not available in the DNHS dataset, such as women's unique experiences of sexual objectification, racism, or use of internalization as a coping strategy drive sex differences in psychological distress between African American women and men (Carr et al. 2014). Regardless, understanding of the conditions that create different psychological distress experiences of African American men and women is important and warrants future sociological research.

This study has several limitations. First, different measures of SES capture different aspects of the SES construct (Duncan et al. 2002). Therefore, future analyses that utilize different SES measures may enhance our understanding of the relationship between SES and psychological distress among African Americans. Second, the mechanisms linking SES to psychological health tested here are not exhaustive. Future researchers should use the conceptual model (Figure 1) to propose and test additional mechanisms to expand our understanding of *how* SES does or does not operate to influence the psychological distress of African Americans. Third, the extent to which researchers and practitioners can widely generalize these findings to African Americans living in other geographic regions is unknown.

Fourth, the relatively small number of repeat measurements in the DNHS may limit the random effects estimates. Non-linear longitudinal models yield more consistent results with more waves of data (Dominici 2004). Fifth, longitudinal weights were not available for the DNHS dataset therefore results from the longitudinal analysis should be interpreted as general longitudinal associations between SES indicators and psychological distress among a sample of African Americans. Importantly, one should not utilize these results to make population inferences about the longitudinal effects of SES on psychological distress among African Americans in Detroit.

Sixth, the sample sizes for these analyses are smaller than what is typical for population-based sociological research. Moreover, the wide confidence intervals across models indicate that this study may be somewhat underpowered, potentially masking some significant results.[7] Finally, the associations presented here are not causal. This is an important limitation given ongoing debate as to whether poor mental health status causes lower SES. (Notably, a growing body of evidence demonstrates that typically low SES drives poor mental health (Braveman et al. 2010)). The random effects model did not have the capacity to address non-spuriousness by controlling for omitted variables associated with the predictors of interest. As such, future researchers could employ analytical strategies such as fixed effects models to gain more insight into the causal relationship between SES, various mechanisms, and depression and/or anxiety.

Despite these limitations, this study extends existing literature by examining the width of SES – psychological distress gradients among working-age African Americans. This study provides support for the idea that in contrast to population-based SES-psychological distress studies containing mostly whites, many traditional indicators of SES may not directly shape

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[7] Importantly, sensitivity analyses (data not shown) that entailed collapsing the education variable to three categories (i.e., HS, some college/tech training, BA or higher), and the income variable to three categories (i.e., < $24.9K, $25-49.9K, 50K or more), yielded results that matched those presented here.

mental health disparities among African Americans (Turner, Brown, and William 2017). Other mechanisms, such as stressful or traumatic events and perceived discrimination, may be more important predictors of psychological distress among this subpopulation. Results also underscore the need for researchers to design studies with a subpopulation's historical context in mind rather than assuming that structural processes that operate in primarily white samples extend to minority subpopulations. For policymakers, results suggest the possibility that improving employment opportunities for African Americans could have downstream intervention effects in the form of decreased psychological distress. Finally, results also suggest that practitioners might consider interventions that reduce exposure to, or address, African Americans' exposure to stressful or traumatic events and discrimination in order to reduce psychological distress.

Table 1. Descriptive Statistics of Working-Age African Americans for Cross-Sectional Analysis

Variables	% or Mean / (SD)
Depression	
PHQ-9 < 10	75.52 %
PHQ-9 ≥10	24.48 %
Anxiety	
GAD-7 < 10	81.06 %
GAD-7 ≥10	18.94 %
Age	48.22 (10.56)
Gender	
Women	57.60 %
Men	42.40%
Relationship Status	
Married	28.35 %
Divorced / Separated / Married	32.86 %
Never Married	38.79 %
Primary Caregiver of Children < 18	
No	61.21 %
Yes	38.79 %
Educational Attainment	
< 12 Years or GED	18.17 %
12 Years	23.97 %
Some College or Technical Training	36.98 %
BA or higher	20.88 %
Employment	
Full Time	40.21 %
Part Time	10.64 %
Not Employed	49.16%
Total Household Income	
Less than $14,999	31.44 %
$15,000 - $24,999	14.05 %
$25,000 - $34,999	13.79 %
$35,000 - $49,999	13.79 %
$50,000 +	26.93 %
Home Ownership	
Own Home	55.67 %
Do not own home (includes renters)	44.33 %
Lifetime Stressful or Traumatic Events	9.40 (6.10)
Social Support	10.33 (2.50)
Perceived Neighborhood Social Cohesion	12.18 (5.01)

Source: Detroit Neighborhood Health Study, n=77

Table 2. Logistic Regression Results of Psychological Distress among Working-Aged African Americans

	Depression					Anxiety				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Educational Attainment (REF = BA or higher)										
< 12 Years or GED	1.29 [0.42, 3.92]				0.53 [0.13, 2.08]	3.38* [1.05, 10.31]				1.77 [0.48, 6.51]
12 Years	0.82 [0.29, 2.32]				0.47 [0.13, 1.62]	0.74 [0.23, 2.35]				0.49 [0.12, 1.98]
Some College or Technical Training	1.82 [0.67, 4.96]				1.27 [0.43, 3.75]	1.79 [0.61, 5.19]				1.38 [0.48, 3.92]
Total Household Income (REF = $50,000+)										
Less than $14,999		2.07 [0.89, 4.79]			1.64 [0.59, 4.57]		1.91 [0.77, 4.74]			0.84 [0.26, 2.69]
$15,000 - $24,999		1.80 [0.61, 5.35]			1.83 [0.52, 6.50]		1.99 [0.63, 6.27]			1.55 [0.37, 6.42]
$25,000 - $34,999		1.76 [0.66, 4.71]			1.71 [0.58, 5.00]		1.49 [0.53, 4.21]			1.02 [0.33, 3.18]
$35,000 - $49,999		1.01 [0.38, 2.67]			1.00 [0.33, 2.98]		0.37 [0.11, 1.28]			0.31 [0.09, 1.08]
Employment (REF = Full Time)										
Part Time			3.43* [1.17, 10.05]		3.13* [1.13, 8.72]			4.24* [1.38, 13.03]		2.99 [0.95, 9.36]
Not Employed			3.19** [1.52, 6.71]		2.99** [1.46, 6.14]			2.53* [1.11, 5.73]		1.97 [0.88, 4.39]
Home Ownership (REF = Own home)										
Do not own home				1.57 [0.78, 3.13]	1.16 [0.52, 2.57]				2.60** [1.29, 5.27]	1.79 [0.77, 4.18]
Sex (REF = Men)										
Women	2.41** [1.27, 4.55]	2.10* [1.09, 4.03]	2.54** [1.30, 4.91]	2.23* [1.17, 4.24]	2.30** [1.24, 4.28]	2.25* [1.12, 4.45]	1.92 [0.96, 3.84]	2.37* [1.18, 4.76]	1.95 [1.97, 3.88]	2.22* [1.11, 4.40]
Primary Caregiver of child under 18										
Yes	1.20 [0.52, 2.78]	1.20 [0.52, 2.77]	1.28 [0.53, 3.07]	1.26 [0.53, 2.99]	1.19 [0.52, 2.77]	1.02 [0.43, 2.42]	1.04 [0.45, 2.40]	1.13 [0.47, 2.71]	1.12 [0.47, 2.64]	0.98 [0.42, 2.28]
Age	1.02 [0.99, 1.06]	1.03 [0.99, 1.07]	1.02 [0.99, 1.06]	1.03 [0.99, 1.07]	1.02 [0.98, 1.06]	1.02 [0.98, 1.05]	1.02 [0.98, 1.05]	1.01 [0.98, 1.05]	1.03 [0.99, 1.07]	1.02 [0.99, 1.06]
Constant	0.06** [0.01, 0.51]	0.03** [0.00, 0.37]	0.03** [0.00, 0.34]	0.06*** [0.01, 0.31]	0.03** [0.00, 0.43]	0.06** [0.01, 0.39]	0.06*** [0.01, 0.30]	0.05** [0.01, 0.33]	0.33*** [0.00, 0.25]	0.03** [0.00, 0.32]
Pseudo R^2	0.06	0.05	0.08	0.04	0.11	0.06	0.06	0.07	0.06	0.13
Prob > chi^2	0.01	0.11	0.00	0.05	0.02	0.01	0.07	0.01	0.02	0.02

Source: Detroit Neighborhood Health Study; n = 776
Key: Odds Ratio / 95% CI; *** P>|z| < 0.001; ** P>|z| < 0.01; * P>|z| < 0.05

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Table 3. Logistic Regression Results of Explanatory Mechanisms for Psychological Distress among Working-Aged African Americans

	Depression				Anxiety			
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Educational Attainment (REF = BA or higher)								
< 12 Years or GED	0.55 [0.14, 2.18]	0.57 [0.15, 2.13]	0.53 [0.14, 2.04]	0.66 [0.16, 2.65]	2.33 [0.70, 7.77]	1.77 [0.51, 6.19]	1.77 [0.47, 6.54]	2.63 [0.82, 8.48]
12 Years	0.42 [0.13, 1.42]	0.46 [0.13, 1.60]	0.45 [0.13, 1.56]	0.45 [0.13, 1.58]	0.49 [0.13, 1.87]	0.47 [0.12, 1.83]	0.50 [0.13, 2.18]	0.52 [0.14, 1.97]
Some College or Technical Training	1.00 [0.33, 3.03]	1.32 [0.46, 3.79]	1.24 [0.43, 3.62]	1.06 [0.35, 3.23]	1.23 [0.42, 3.63]	1.50 [0.55, 4.09]	1.39 [0.49, 3.98]	1.43 [0.49, 4.16]
Total Household Income (REF = $50,000+)								
Less than $14,999	1.15 [0.36, 3.64]	1.42 [0.52, 3.85]	1.52 [0.53, 4.44]	0.96 [0.30, 3.07]	0.52 [0.15, 1.73]	0.74 [0.23, 2.34]	0.87 [0.27, 2.83]	0.50 [0.14, 1.83]
$15,000 - $24,999	1.47 [0.46, 4.65]	1.59 [0.46, 5.55]	1.70 [0.48, 6.07]	1.18 [0.35, 3.94]	1.20 [0.31, 4.69]	1.50 [0.39, 5.84]	1.61 [0.38, 6.82]	1.29 [0.33, 5.08]
$25,000 - $34,999	1.26 [0.43, 3.69]	1.48 [0.50, 4.44]	1.64 [0.55, 4.84]	1.07 [0.34, 3.34]	0.73 [0.23, 2.29]	0.94 [0.32, 2.79]	1.05 [0.33, 3.32]	0.70 [0.22, 2.19]
$35,000 - $49,999	1.02 [0.31, 3.38]	0.92 [0.30, 2.82]	0.99 [0.33, 2.93]	0.90 [0.26, 3.04]	0.30 [0.08, 1.10]	0.27 [0.07, 1.05]	0.31 [0.09, 1.08]	0.25 [0.06, 1.05]
Employment (REF = Full Time)								
Part Time	2.52 [0.88, 7.21]	3.04* [1.08, 8.58]	3.08* [1.11, 8.57]	2.43 [0.83, 7.13]	2.62 [0.71, 9.63]	3.01 [0.93, 9.81]	3.01 [0.96, 9.38]	2.87 [0.78, 10.59]
Not Employed	2.27* [1.02, 5.07]	2.76** [1.34, 5.67]	2.93** [1.42, 6.06]	2.17 [0.94, 4.96]	1.47 [0.66, 3.28]	1.84 [0.83, 4.09]	2.02 [0.89, 4.54]	1.50 [0.65, 3.45]
Home Ownership (REF = Own home)								
Do not own home	0.85 [0.34, 2.10]	1.02 [0.46, 2.27]	1.16 [0.52, 2.58]	0.71 [0.29, 1.69]	1.56 [0.64, 3.81]	1.45 [0.66, 3.20]	1.80 [0.77, 4.19]	1.27 [0.54, 2.98]
Lifetime Stressful or Traumatic Events	1.18*** [1.11, 1.26]			1.19*** [1.12, 1.26]	1.15*** [1.07, 1.24]			1.15*** [1.08, 1.23]
Relationship Status (REF = Married)								
Divorced / Separated / Widowed		1.02 [0.46, 2.26]		1.44 [0.62, 3.37]		0.62 [0.26, 1.47]		0.74 [0.31, 1.79]
Never Married		1.99 [0.80, 4.96]		2.00 [0.70, 5.75]		2.38 [0.99, 5.72]		2.28 [0.87, 5.96]
Psychosocial Support		0.89* [0.79, 1.00]		0.90 [0.79, 1.02]		0.88 [0.78, 1.01]		0.88 [0.77, 1.00]
Perceived Neighborhood Social Cohesion			1.16 [0.98, 1.04]	1.00 [0.93, 1.08]			1.01 [0.94, 1.09]	1.06 [0.98, 1.15]
Sex (REF = Men)								
Women	2.61** [1.29, 5.32]	2.45** [1.31, 4.57]	2.35** [1.26, 4.41]	2.69** [1.34, 5.42]	2.45* [1.14, 5.24]	2.43** [1.23, 4.79]	2.19* [1.12, 4.30]	2.51* [1.21, 5.20]
Primary caregiver of child under 18								
Yes	1.06 [0.42, 2.67]	1.11 [0.48, 2.58]	1.20 [0.51, 2.79]	0.96 [0.41, 2.44]	0.87 [0.36, 2.14]	0.93 [0.37, 2.32]	0.98 [0.42, 2.27]	0.82 [0.32, 2.07]
Age	1.03 [0.98, 1.08]	1.03 [0.99, 1.07]	1.02 [0.98, 1.06]	1.04 [0.99, 1.08]	1.02 [0.98, 1.06]	1.04* [1.01, 1.08]	1.02 [0.99, 1.05]	1.04 [0.99, 1.08]
Constant	0.01*** [0.00, 0.19]	0.07** [0.01, 0.96]	0.04 [0.00, 0.68]	0.01** [0.00, 0.31]	0.01*** [0.00, 0.11]	0.04* [0.00, 1.21]	0.03*** [0.00, 0.35]	0.01** [0.00, 0.25]
Pseudo R^2	0.22	0.13	0.11	0.23	0.21	0.17	0.13	0.24
Prob > chi^2	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00

Source: Detroit Neighborhood Health Study; n = 776
Key: Odds Ratio / 95% CI; *** P>|z| < 0.001; ** P>|z| < 0.01; * P>|z| < 0.05

Table 4. Descriptive Statistics of Working Age African Americans for Longitudinal Analysis

	Overall Mean (SD) / or Overall %	Range
Depression		
PHQ-9 < 10	80.27 %	
PHQ-9 ≥10	19.73 %	
Anxiety		
GAD-7 < 10	84.98 %	
GAD-7 ≥10	15.02 %	
Age	50.39 (10.48)	25 - 70
Gender		
Women	59.11 %	
Men	40.89 %	
Relationship Status		
Married	28.92 %	
Divorced / Separated / Married	36.33 %	
Never Married	34.75 %	
Primary caregiver of child < 18		
Yes	34.26%	
No	65.74%	
Educational Attainment		
< 12 Years or GED	14.26 %	
12 Years	23.89 %	
Some College or Technical Training	36.85 %	
BA or Higher	25.00 %	
Employment		
Full Time	37.66 %	
Part Time	9.72 %	
Not Employed	52.62 %	
Total Household Income		
Less than $14,999	31.43 %	
$15,000 - $24,999	15.44 %	
$25,000 - $34,999	14.30 %	
$35,000 - $49,999	13.83 %	
$50,000 +	25.00 %	
Home Ownership		
Own Home	56.66 %	
Do not own home	46.34 %	
Stressful or Traumatic Events	5.10 (5.31)	0 – 27
Social Support	10.27 (2.54)	0 – 12
Perceived Neighborhood Social Cohesion	12.29 (4.92)	0 – 20
Perceived Discrimination	5.45 (4.84)	0 – 21

Source: Detroit Neighborhood Health Study; n = 907 observations

Table 5. Results from Unbalanced Random Effects Logistic Regression Model of Depression

	Beta
Educational Attainment (REF = BA or higher)	
< 12 Years or GED	1.15 [0.41, 3.29]
12 Years	1.17 [0.46, 2.99]
Some College or Technical Training	1.32 [0.58, 2.98]
Total Household Income (REF = $50,000+)	
Less than $14,999	1.70 [0.61, 4.76]
$15,000 - $24,999	2.54 [0.95, 6.77]
$25,000 - $34,999	0.69 [0.24, 2.01]
$35,000 - $49,999	1.61 [0.63, 4.10]
Employment (REF = Full Time)	
Part Time	2.10 [0.73, 6.05]
Not Employed	1.46 [0.70, 3.04]
Home Ownership (REF = Own home)	
Do not own home	1.24 [0.65, 2.35]
Lifetime Stressful or Traumatic Events	1.27*** [1.19, 1.36]
Perceived Discrimination	1.10*** [1.04, 1.17]
Relationship Status (REF = Married)	
Divorced / Separated / Married	0.72 [0.34, 1.50]
Never Married	0.65 [0.29, 1.48]
Psychosocial Support	0.86** [0.77, 0.96]
Perceived Neighborhood Social Cohesion	
Sex (REF = Men)	
Women	1.99* [1.09, 3.66]
Primary Caregiver of children under 18	
Yes	1.96 [0.99, 3.87]
Age	1.02 [0.98, 1.06]
Wave	3.01*** [1.55, 5.86]
Constant	0.00*** [0.00, 0.04]
sigma_u	1.66 [1.14, 2.43]
rho	0.46 [0.28, 0.64]
Wald chi^2	72.86
Prob > chi^2	0.00

Source: Detroit Neighborhood Health Study; n = 907 observations; Key: Odds Ratio, CI; ***P< 0.001; ** P< 0.01; * P < 0.05

Table 6. Results from Unbalanced Random Effects Logistic Regression Model of Anxiety

	Beta
Educational Attainment (REF = BA or higher)	
< 12 Years or GED	1.44 [0.49, 4.24]
12 Years	0.83 [0.30, 2.28]
Some College or Technical Training	0.92 [0.39, 2.18]
Total Household Income (REF = $50,000+)	
Less than $14,999	2.53 [0.82, 7.81]
$15,000 - $24,999	2.06 [0.70, 6.03]
$25,000 - $34,999	0.90 [0.29, 2.84]
$35,000 - $49,999	1.29 [0.46, 3.66]
Employment (REF = Full Time)	
Part Time	1.17 [0.38, 3.67]
Not Employed	1.00 [0.46, 2.20]
Home Ownership (REF = Own home)	
Do not own home	1.22 [0.61, 2.42]
Lifetime Stressful or Traumatic Events	1.22*** [1.14, 1.30]
Perceived Discrimination	1.07* [1.00, 1.14]
Relationship Status (REF = Married)	
Divorced / Separated / Married	0.94 [0.43, 2.08]
Never Married	0.70 [0.29, 1.70]
Psychosocial Support	0.86** [0.77, 0.96]
Perceived Neighborhood Social Cohesion	1.03 [0.96, 1.10]
Sex (REF = Men)	
Women	1.65 [0.87, 3.13]
Primary Caregiver of children under 18	
Yes	1.14 [0.55, 2.35]
Age	1.00 [0.96, 1.04]
Wave	2.08* [1.05, 4.09]
Constant	0.01** [0.00, 0.21]
sigma_u	1.70 [1.15, 2.51]
rho	0.47 [0.29, 0.66]
Wald chi^2	55.93
Prob > chi^2	0.00

Source: Detroit Neighborhood Health Study; n = 907 observations; Key: Odds Ratio, CI; ***$P < 0.001$; ** $P < 0.01$; * $P < 0.05$

APPENDIX 1. Poison Regression Results of Psychological Distress among Working-Aged African Americans

	Depression					Anxiety				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Educational Attainment (REF = BA or higher)										
< 12 Years or GED	0.16 (0.29)				-0.29 (0.31)	0.59 (0.21)**				0.11 (0.24)
12 Years	-0.11 (0.29)				-0.40 (0.30)	0.02 (0.22)				- 0.25 (0.24)
Some College or Technical Training	0.27 (0.27)				0.05 (0.26)	0.43 (0.21)*				0.21 (0.20)
Total Household Income (REF = $50,000+)										
Less than $14,999		0.36 (0.21)			0.19 (0.26)		0.47 (0.20)*			0.05 (0.23)
$15,000 - $24,999		0.25 (0.28)			0.26 (0.34)		0.33 (0.29)			0.20 (0.29)
$25,000 - $34,999		0.28 (0.24)			0.23 (0.24)		0.31 (0.23)			0.12 (0.24)
$35,000 - $49,999		-0.24 (0.23)			-0.26 (0.24)		-0.32 (0.27)			-0.39 (0.28)
Employment (REF = Full Time)										
Part Time			0.51 (0.25)*		0.43 (0.23)			0.80 (0.28)**		0.62 (0.27)*
Not Employed			0.63 (0.18)***		0.57 (0.17)***			0.71 (0.17)***		0.57 (0.18)**
Homeownership (REF = Own home)										
Do not own home				0.29 (0.17)	0.11 (0.18)				0.50 (0.14)***	0.26 (0.16)
Sex (REF = Men)										
Women	0.50 (0.16)***	0.43 (0.16)**	0.50 (0.16)**	0.46 (0.17)**	0.45 (0.15) **	0.47 (0.16)**	0.36 (0.16)*	0.47 (0.17)**	0.38 (0.16)*	0.40 (0.14)**
Primary caregiver of child under 18										
Yes	0.18 (0.21)	0.18 (0.21)	0.21 (0.21)	0.21 (0.21)	0.18 (0.19)	0.21 (0.18)	0.22 (0.18)	0.26 (0.18)	0.25 (0.18)	0.20 (0.16)
Age	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
Constant	0.83 (0.60)	0.66 (0.54)	0.59 (0.57)	0.62 (0.59)	0.61 (0.65)	0.74 (0.44)	0.76 (0.44)	0.64 (0.40)	0.56 (0.42)	0.47 (0.44)

Source: Detroit Neighborhood Health Study; n = 776; Odds Ratio / 95% CI; *** $P>|z| < 0.001$; ** $P>|z| < 0.01$; * $P>|z| < 0.05$

APPENDIX 2. Poisson Regression Results of Explanatory Mechanisms for Psychological Distress among Working-Aged African Americans

	Depression				Anxiety			
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(19)
Educational Attainment (REF = BA or higher)								
< 12 Years or GED	-0.23 (0.24)	-0.25 (0.29)	-0.29 (0.31)	-0.16 (0.24)	0.18 (0.20)	0.12 (0.23)	0.11 (0.24)	0.21 (0.19)
12 Years	-0.39 (0.24)	-0.39 (0.29)	-0.40 (0.31)	-0.34 (0.24)	-0.24 (0.21)	-0.26 (0.22)	-0.25 (0.24)	-0.22 (0.20)
Some College or Technical Training	-0.07 (0.22)	0.07 (0.25)	0.05 (0.26)	-0.03 (0.22)	0.13 (0.18)	0.23 (0.19)	0.21 (0.20)	0.16 (0.18)
Total Household Income (REF = $50,000+)								
Less than $14,999	-0.07 (0.24)	0.11 (0.26)	0.20 (0.27)	-0.01 (0.23)	-0.12 (0.22)	-0.01 (0.22)	0.05 (0.24)	-0.09 (0.23)
$15,000 - $24,999	0.18 (0.27)	0.18 (0.32)	0.27 (0.34)	0.14 (0.28)	0.12 (0.28)	0.17 (0.28)	0.21 (0.30)	0.14 (0.27)
$25,000 - $34,999	0.11 (0.21)	0.15 (0.24)	0.23 (0.24)	0.06 (0.22)	0.01 (0.22)	0.06 (0.22)	0.12 (0.24)	-0.01 (0.21)
$35,000 - $49,999	-0.20 (0.22)	-0.31 (0.25)	-0.26 (0.24)	-0.23 (0.23)	-0.32 (0.26)	-0.41 (0.27)	-0.39 (0.28)	-0.32 (0.26)
Employment (REF = Full Time)								
Part Time	0.30 (0.23)	0.41 (0.23)	0.43 (0.23)	0.32 (0.22)	0.55 (0.30)	0.61 (0.27)*	0.62 (0.27)*	0.57 (0.29)
Not Employed	0.36 (0.17)*	0.51 (0.18)**	0.57 (0.18)***	0.33 (0.17)	0.41 (0.16)**	0.52 (0.18)**	0.57 (0.18)**	0.39 (0.17)*
Home Ownership (REF = Own home)								
Do not own home	-0.04 (0.17)	0.02 (0.17)	0.12 (0.18)	-0.14 (0.16)	0.14 (0.14)	0.20 (0.15)	0.26 (0.16)	0.08 (0.13)
Lifetime Stressful or Traumatic Events	0.08 (0.01)***			0.08 (0.01)***	0.06 (0.02)***			0.06 (0.01)***
Relationship Status (REF = Married)								
Divorced / Separated / Married		-0.00 (0.19)		0.13 (0.16)		-0.11 (0.19)		-0.03 (0.18)
Never Married		0.41 (0.19)*		0.33 (0.18)		0.28 (0.18)		0.22 (0.17)
Psychosocial Support		-0.05 (0.02)*		-0.05 (0.02)*		-0.05 (0.02)*		-0.05 (0.02)*
Perceived Neighborhood Social Cohesion			0.00 (0.01)	0.02 (0.13)*			0.00 (0.02)	0.02 (0.02)
Sex (REF = Men)								
Women	0.43 (0.13)**	0.44 (0.14)**	0.43 (0.15)**	0.41 (0.13)***	0.41 (0.15)**	0.41 (0.14)**	0.40 (0.15)**	0.40 (0.14)**
Primary Caregiver of children under 18								
Yes	0.15 (0.17)	0.15 (0.20)	0.18 (0.19)	0.10 (0.16)	0.16 (0.15)	0.17 (0.17)	0.20 (0.16)	0.12 (0.16)
Age	0.01 (0.01)	0.02 (0.01)	0.01 (0.01)	0.01 (0.1)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)
Constant	-0.12 (0.59)	0.80 (0.76)	0.59 (0.69)	-0.06 (0.69)	-0.02 (0.47)	0.77 (0.61)	0.46 (0.46)	0.17 (0.59)

Source: Detroit Neighborhood Health Study; n = 776; Key: Odds Ratio / 95% CI; *** P>|z| < 0.001; ** P>|z| < 0.01; * P>|z| < 0.05

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