CAN SOCIAL RELATIONSHIPS EXPLAIN THE RACE PARADOX IN MENTAL HEALTH?

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ABSTRACT OF THE DISSERTATION

Can the Strength of Social Ties

Explain the Race Paradox in Mental Health?

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Biomedical research consistently finds that blacks have worse physical health than whites, even after controlling for socioeconomic status or *SES*. This relationship is expected, given blacks' disproportionate exposure to psychosocial stress and discrimination. However, despite decades of research on the topic, there is surprising lack of consensus regarding race differences in mental health status. In general, studies have found that blacks tend to have better mental health than whites, although the direction and magnitude of this relationship varies depending on the outcome used. How might we resolve these discrepant findings of race differences in mental health that run counter to both the race patterns found for physical health and the well-established SES gradient in health? Most past research attributes these unexpected findings (hereafter referred to as "the race paradox in mental health" to the idea that African Americans have stronger social networks that protect them against psychosocial distress. There has been little comparative work examining race differences in the structure of social ties, and

virtually no research explicitly testing whether stronger social ties among blacks relative to whites (if they exist) can account for the race paradox in mental health. Using data from the 2003-2005 National Survey of American Life, I explore the extent to which family relationships, friendships, fictive kin relationships, and relationships with church members can explain the race paradox in mental health (using measures for any DSM mood/anxiety disorder, CES-D depressive symptoms, and self-rated mental health). The findings have implications for mental health measurement and how we understand the nature of social relationships among African Americans.

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I dedicate this project to my beautiful sons, Masai and Naim. Thank you for understanding the sacrifices I made to complete my studies. It was all for you.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1 - INTRODUCTION

This project is motivated by one consistent and largely inexplicable finding in the extant literature on mental health and well-being in the United States. Past research consistently finds that blacks have worse physical health than whites, on a wide array of health indicators. This association is robust, even after controlling for socioeconomic status (SES). This finding is expected, given blacks' disproportionate exposure to psychosocial stress, discrimination, and low SES. However, despite decades of research on the topic, there is surprising lack of consensus regarding racial and ethnic differences in mental health status. In general, studies have found that blacks tend to have better mental health than whites, although the direction and magnitude of this relationship varies depending on the outcome used.

How might we resolve these discrepant findings of race differences in mental health that run counter to both the racial patterns found for physical health and the well-established SES gradient in health? In this project, I explore whether (and if so, to what extent) the quantity and quality of four social relationships - families, friends, fictive kin, and church members - can explain the race paradox in mental health.

HOW DOES RACE AFFECT MENTAL HEALTH?

In an important theoretical piece, Brown and colleagues (1999) argue that race, ethnicity, and culture affect mental health in three plausible ways. Most importantly, racial/ethnic minorities are disproportionately exposed to various social stressors (e.g., poverty, discrimination) that place them at higher risk of poor mental health. Secondly, the validity and reliability of mental health assessment in these populations is influenced

by the following four factors: 1) the inadequate sampling of minority groups in large psychiatric epidemiologic studies; 2) differential item interpretation; 3) clinical misdiagnosis; and 4) clinical misinterpretation and misclassification of symptoms. Because these factors could influence the accuracy of research on race differences in mental health status, they must be considered both when interpreting past research.

Brown and colleagues (1999) further suggest that predictors of mental health status may vary (both in terms of statistical significance and direction of effect) depending on race/ethnicity and cultural context. This last mechanism is especially important for the present project. As Brown and colleagues suggest, most studies simply control for race and assess the relative role of each predictor in determining mental health status for pooled samples consisting of both blacks and whites. However, a small body of emerging research has directly interrogated the dominant assumption that the well-known predictors of mental health status (e.g., social ties, psychosocial stress) operate in the same fashion for both whites and blacks (e.g., Kiecolt, Hughes, and Keith 2008).

Scholars have recently called for the field to move beyond descriptive studies of race/ethnic differences in mental health status, in favor of addressing "meatier" research questions with a more contextual focus on these patterns (e.g., Takeuchi and Williams 2003). The dominant analytic strategy in the field focuses on "identifying social and psychological factors that may account for race differences in health and well-being outcomes" (Lincoln, Chatters, and Taylor 2003: 391). However, some have noted the possibility that social and psychological factors may have differential effects for various race/ethnic groups (Lincoln et al. 2003).

EMPIRICAL FINDINGS ON RACE DIFFERENCES IN MENTAL HEALTH

Given the complex and often contradictory findings between race and mental health (depending on the outcome measure used), I briefly review past literature for each measure.

Psychological Well-Being

Ryff, Keyes, and Hughes (2003) found that African Americans had significantly higher psychological well-being than whites on all six subscales in the 1995 Midlife Development in the U.S. (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance), except that this protective effect only surfaced for the purpose in life measure after controlling for education. Another study yielded different results, however. Using data from the 1995 Detroit Area Study, Williams and colleagues (1997) explored whether race differences in mental health status could be explained by the relative contributions of SES, general stress, and discrimination. The findings indicated that although whites initially had higher levels of psychological well-being (using a single measure of self-rated quality of life), this difference was fully explained by income. Moreover, after accounting for race-related stress (e.g., discrimination, everyday discrimination), blacks reported marginally higher levels of psychological well-being than whites. These contradictory findings might be explained by differences in sample characteristics. MIDUS likely oversampled more high-SES blacks than the Detroit Area Study, which would explain who are more likely to have better mental health than low-SES blacks in Detroit.

Psychological Distress

An early but comprehensive review (Vega and Rumbaut 1991) found higher symptoms of psychological distress among blacks than whites, although these differences were often attenuated or eliminated after controlling for social class. However, in their review of 23 articles published between 1973 and 1991, only five studies used data from multiple sites across the United States, which limits the generalizability of their findings. One notable study found no significant racial differences on a six-item scale of psychological distress (Williams, Yu, Jackson, et al. 1997). After accounting for two measures of discrimination, however, blacks were significantly less distressed than whites. Using more recent data from the 1997-2001 National Health Interview Survey, Bratter and Eschbach (2005) examined the interactive effect of race and social class on distress, finding that blacks reported less non-specific psychological distress than whites, especially at lower SES. These findings were robust to the inclusion of demographics and measures of acculturation, social class, marital status, and physical health. In finding that lower SES is less detrimental to blacks than whites, these results run counter to the double jeopardy theory, which would suggest that low-SES blacks would have worse mental health than low-SES whites.

Psychiatric Disorder

A large body of contemporary research has examined psychiatric disorders based on the Diagnostic and Statistical Manual of Mental Disorders (DSM). Using data from the 1990-1992 National Comorbidity Survey, Breslau and colleagues (2005) explored race/ethnic differences in both lifetime risk and persistence of psychiatric disorders

(measured as current diagnosis with onset at least two years prior). This paper collapsed 13 DSM-III-R diagnoses into three broad categories for mood disorders (major depression, dysthymia, and mania), anxiety disorders (agoraphobia, generalized anxiety disorder, panic disorder, simple phobia, social phobia, and post-traumatic stress disorder), substance use disorders (alcohol abuse and dependence, drug abuse and dependence) and one summary measure for any disorder. Breslau and colleagues (2005) found that blacks had lower unadjusted 12-month prevalence of any substance use disorder and any DSM-III-R disorder than whites. This association was even stronger when examining lifetime prevalence; multivariate survival models (controlling for age, gender, and education) found that blacks had lower lifetime risk of mood, anxiety, and substance use disorders (and any disorder) than whites.

In terms of persistence among lifetime cases, controlling for all variables, blacks had higher odds than whites of having persistent mood, anxiety, and any disorder. That is, although blacks did not display higher lifetime risk of psychiatric disorders than whites, among those with any DSM-III-R diagnosis, blacks were more likely to have persistent diagnosis trajectories. Another strength of this study is that it included interaction analyses to determine whether the association between race/ethnicity and lifetime prevalence of psychiatric diagnosis varied across other population subgroups (i.e., by gender, cohort, period of the lifespan, and SES). The findings indicated that that among blacks only, males had lower lifetime prevalence of anxiety disorders (Breslau, Kendler, Su, et al. 2005).

A subsequent analysis using data from the National Comorbidity Survey Replication (2001-2003) found that blacks had significantly lower unadjusted lifetime

prevalence of panic disorder, generalized anxiety disorder, and any anxiety disorder than whites (Breslau, Aguilar-Gaxiola, Kendler, et al. 2006). Blacks also had significantly lower lifetime prevalence of bipolar disorder, mood disorder, alcohol abuse/dependence, drug abuse/dependence, and any disorder. Survival analyses adjusting for age and sex created even stronger protective effects for blacks regarding estimates of lifetime risk. With only two exceptions (agoraphobia without panic disorder and specific phobia), blacks had lower lifetime risk than whites for all anxiety disorders. Blacks also had lower risk than whites of any disorder, any substance disorder, major depression, and any mood disorder. There were no race differences in terms of any impulse disorder.

Consistent with past studies (Breslau et al. 2005; Breslau et al. 2006), a related study using data on DSM-IV diagnoses from the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions found that blacks had significantly lower unadjusted 12-month prevalence for seven indicators, including any alcohol use disorder, major depression, and any anxiety disorder. Any drug use disorder was the only disorder for which the current prevalence among blacks exceeded that of whites (Smith, Stinson, Dawson, et al. 2006). Using pooled data from the 2001-2003 National Survey on Drug Use and Health, Harris and colleagues (2005) found that, compared to whites, African Americans had significantly lower rates of at least one mental health symptom and serious mental illness, which was defined as having at least one DSM-IV disorder in the past 12 months (excluding substance disorders) along with serious impairment.

Data from the 1980-1983 Epidemiologic Catchment Area found that compared to whites, blacks had lower lifetime prevalence of major depressive episode, major depression, dysthymia, obsessive-compulsive disorder, drug or alcohol abuse or

dependence, and anorexia nervosa (Zhang and Snowden 1999). Similar results were found by Williams and colleagues (2007) using the 2001-2003 National Survey of American Life; blacks had lower lifetime prevalence of major depressive disorder than whites but similar 12-month prevalence as whites. However, consistent with the findings by Breslau and colleagues (2005), chronicity of major depressive disorder was higher among African Americans than whites (Williams, Gonzalez, Neighbors, et al. 2007). Moreover, African Americans were more likely than whites to report that their depression was severe or very severe (Williams et al. 2007), consistent with earlier findings that persistence of disorders is stronger among blacks than whites (Breslau et al. 2005).

Overall, most past research using psychiatric diagnoses finds that blacks have similar or better mental health than whites. Nonetheless, findings regarding persistence and chronicity indicate that blacks are disadvantaged in this regard, highlighting the need to improve the quality of mental health services among this group. To the best of my knowledge, no past studies have examined the consistency of these findings using more general measures of psychological well-being.

SOCIAL RELATIONSHIPS

The earliest sociological work on the structure of social relationships was put forth by Emilé Durkheim (1951), who linked social integration (measured primarily as marital status, religious involvement, employment, and parenthood) with one aspect of mental health, aggregate suicide rates. Prospective research using the Alameda County Study found that higher levels of social integration (measured as marital status, contact with extended family and friends, church membership and other organizational

involvement, and contact with family and friends) was associated with significantly lower mortality over nine years (Berkman and Syme 1979). Other prospective studies have yielded similar results (Blazer 1982; House, Robbins, and Metzner 1982).

Though Durkheim's work was canonical in the field, the concept of social support has been developed most thoroughly by the work of House and colleagues (House 1987; House, Umberson, and Landis 1988), who coined the term "social relationships" to refer to two structures (social integration and social networks) and three processes (relational demands and conflicts, social regulation or control, and social support) of interpersonal relationships. Social integration refers to the existence, quantity, or type of social relationships, while social networks refer to the structure of both dyadic and multi-person social relationships (e.g., size, density, reciprocity, frequency, dispersion, heterogeneity).

While social structures refer to the object aspects of social relationships, the three processes specify the functional content or quality of relationships (House 1987; House et al. 1988). House and colleagues acknowledge that three processes are not entirely independent and can therefore affect each other. Relational demands and conflicts refer to the negative health-deteriorating aspects of social relationships. The second process, social regulation or control, refers to the regulatory nature of social relationships. Depending on the content of a relationship, social regulation can either be salubrious or damaging to health (i.e., one can either encourage or discourage a loved one to engage in positive health behaviors). The third and most commonly studied process of social relationships is the concept of social support, which House and colleagues (1988: 302) define as, "the positive, potentially health promoting or stress-buffering aspects of

relationships such as instrumental aid, emotional caring or concern, and information." This process will serve as the main focus of this work.

Social support is widely accepted to be a multi-dimensional construct; various indicators of social support are only weakly associated with each other (Berkman and Syme 1979; Blazer 1982; House 1987; Turner 1999). An important limitation from this body of research is that it presumes, but does not explicitly test, that the processes of social support serve as mediating variables to link the structural aspects of social support (e.g., marital status, church membership) to various health outcomes (House et al. 1988). For example, Durkheim linked social integration to suicide through his concept of meaning and purpose; those with higher levels of social integration were thought to have lower risk of suicide because they had more meaning and purpose due to their relationships with other people and social institutions. However, there were no measures to test this concept and no individual-level measures were employed. In this work, I evaluate the distinctive effects of multiple dimensions of family and church relationships in predicting health outcomes.

There is a long-standing question of whether social support has a main or buffering effect on health status (House et al. 1988). A main/direct effect would operate at all times, fulfilling a universal human need for attachment and facilitating involvement in support networks. In other words, those who perceive they have more or higher quality social relationships are less likely to become distressed, while those who perceive they have fewer or lower quality social relationships are more likely to be distressed. Conversely, a buffering or moderating mechanism would imply that the health-promoting effects of social support are protective only in times of psychosocial distress. Under this

model, psychosocial stress is less distressing when one perceives they have high levels of support. Most scholars agree that the main and buffering mechanisms of social support can operate either alone or in concert, and that this interplay can depend on demographic factors such as social class (House, 1987; House et al. 1988; Turner 1999; Gadalla 2009). While the main focus of this project is not to differentiate between the main or buffering effects of social support among blacks and whites, it is important to consider the multifaceted way in which social support operates.

Social Support, Social Strain, and Health

Recent research has highlighted the importance of considering both the positive and negative characteristics of social relationships. Some have suggested that both emotional support and emotional strain exert independent influences on mental health. Antonucci, Akiyama, and Lansford (1998) found that, among older married adults with children, having demanding networks was related to less happiness for men while having network members who "got on their nerves" was associated with less happiness for women. In an analysis of data from the 1990-1992 National Comorbidity Survey, social support from family was associated with fewer anxiety and mood disorder episodes, while social strain was associated with increasing numbers of anxiety and mood disorders (Bertera 2005). Similar findings have emerged from samples of blacks only. Among 778 African American women from the first wave of the Americans' Changing Lives Survey, Gray and Keith (2003) found that the positive aspects of social relationships reduced depressive symptoms while the negative aspects increased depressive symptoms. These results were robust to the inclusion of age, marital status, employment status, number of

children residing in the household, a composite measure of SES based on occupation, income, and education, and health status.

There is also evidence that the health-damaging effects of emotional strain exceed the health-enhancing effects of emotional support (see Lincoln 2000 for an excellent review). Using data from the National Comorbidity Survey, Bertera (2005) found that positive social support from relatives was related to fewer anxiety and mood disorder episodes, while social negativity was associated with increasing numbers of anxiety and mood disorders. Different findings emerged for relationships with spouses and friends, however. Positive spousal support was unrelated to the number of anxiety and mood disorder episodes, but spousal negativity was associated with significantly more episodes. The same association was found for support and strain from friends. A study using daily diary data from older adults found that although negative exchanges occurred less often, they were more strongly related to daily mood than positive exchanges (Rook 2001). For example, negative exchanges increased negative mood and undermined positive mood, but positive exchanges increased positive mood only. Similar patterns were found for well-being and depressive symptoms in these data (Rook 2001) and in another study examining positive/negative exchanges, psychological well-being, and psychological distress using national data from the Late Life Study of Social Exchanges study (Newsom, Rook, Nishishiba, et al. 2005).

In a cross-sectional analysis of 277 older adults, positive exchanges predicted significantly higher positive affect and negative exchanges predicted significantly higher negative affect. However, in a short-term longitudinal analysis of these data, negative exchanges were associated with higher negative affect and lower positive affect, but

positive exchanges were not associated with either outcome (Newsom, Masami, Morgan, et al. 2003). The findings from this study suggest that the health benefits of positive interactions are fleeting, while the detrimental health effects of negative interactions are more persistent.

Taken together, these findings indicate the need to incorporate both positive and negative indicators of social relationships into empirical research endeavors, as both characteristics may co-occur within a social relationship and both support and strain likely cause independent and interactive effects on health..

Social Relationships, Gender, and Race

Some have suggested that the structure and processes of social relationships vary by other important demographic characteristics. A descriptive study using data from the Danish Longitudinal Health Behaviour Study found both age and gender differences in social networks (marital status; household composition; number of children; and frequency of contact with children, peers, friends, and others) and social support (number of confidants for emotional support; number of relatives who can provide emotional support; frequency with which talking to partner/spouse puts respondent at ease; instrumental social support from friends or family; conflict with partner; conflict with family; conflict with friends; and conflict with colleagues; Due, Holstein, Lund, et al. 1999). Instrumental support received, frequency of contact, and conflict with all relationship types declined with age. However, emotional support did not vary by age. While men and women had the same number of contacts, middle-aged men had more contact with friends while middle-aged women had more contact with children.

Women generally engage in more close social relationships than men. For example, using data from the 1980 Social Networks in Adult Life, Antonucci and colleagues (1998) found that women reported approximately one more very close relationship than men although women did not differ from men in terms of in terms of less close social ties. In terms of structure, a greater number of close social relationships (but not less close relationships) was negatively related to a one-item measure of happiness, an association that was not found for men. Another study using data from the Whitehall Study II found that women reported significantly more people in their primary networks than men; moreover, they reported more satisfaction with their close relationships than men (Fuhrer and Stansfeld 2002).

There is some suggestive evidence that gender and race may moderate the association between social ties and mental health. With regard to gender, Walen and Lachman (2000) found that partner support, partner strain, and family support were associated with psychological well-being (measured as life satisfaction, positive mood, and negative mood) for both men and women. However, they also found that family strain was more strongly related to well-being for women than men, not surprising given that women have historically been responsible for kinwork in families (di Leonardo 1987). Additionally, family and friend support operated as a buffering mechanism more for women than men. Another cross-sectional study found race differences in the association between social ties and mental health (Lincoln et al. 2003). Although negative social interaction was associated with higher psychological distress for both whites and blacks, social support was associated with higher distress only among blacks. While traumatic events were associated with negative social interactions with relatives

among both blacks and whites, financial strain was associated with negative interactions among whites only. In addition, social support mediated the association between financial strain and psychological distress among whites only.

As a whole, past research on social ties suggests that future research should focus on both positive and negative aspects of social support. It is also important that future work assess whether race and gender affect the association between social ties and mental health.

OUTLINE OF THE DISSERTATION

Chapter 2 is entitled, "Can Family Relationships Explain the Race Paradox in Mental Health?" In this chapter, I test whether nine different aspects of family relationships (tangible support received from family, tangible support given to family, balanced tangible support, frequency of interaction with family, perceived tangible support, subjective family closeness, emotional support from family, emotional strain from family, and the interaction of emotional support*emotional strain) can explain the race paradox in mental health. Following the same objective, Chapter 3 ("Relationships of Choice: Can Friendships or Fictive Kin Relationships Explain the Race Paradox in Mental Health?") examines whether the quantity/quality of friendships or fictive kin relationships can explain the race paradox in mental health. Chapter 4 ("The Race Paradox in Mental Health: Testing the Explanatory Power of Church-Based Social Ties") explores the role of church-based social relationships in explaining the race paradox in mental health. I conclude in Chapter 5 with a review of the major findings, implications for policy and practice, and recommendations for future research.

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CHAPTER 2 -

CAN FAMILY RELATIONSHIPS EXPLAIN THE RACE PARADOX IN MENTAL HEALTH?

Past research has found that African Americans typically enjoy better mental health outcomes than whites. The strongest and most consistent association is found for psychiatric disorders. For example, data from the 1980-1983 Epidemiologic Catchment Area study (Zhang and Snowden 1999), the 1990-1992 National Comorbidity Survey (Kessler, McGonagle, Zhao, et al. 1994; Breslau, Kendler, Su, et al. 2005), the 2001-2003 National Comorbidity Survey Replication (Breslau, Aguilar-Gaxiola, Kendler, et al. 2006), and the 2001-2003 National Survey of American Life (Williams, Gonzalez, Neighbors, et al. 2007) all found that blacks have lower rates than whites for the vast majority of psychiatric disorders.

Although less consistent conclusions have been found for psychological distress (Vega and Rumbaut 1991; Williams, Yu, Jackson, et al. 1997; Bratter and Eschbach 2005) and psychological well-being (Williams et al. 1997; Ryff, Keyes, and Hughes 2003), the bulk of the evidence finds the blacks have better mental health outcomes than whites. These findings can collectively be referred to as the "race paradox in mental health" because they are counterintuitive; blacks' historically lower social and economic standing and greater exposure to discrimination would suggest greater prevalence of mental health problems than whites.

The most common argument put forth to explain the race paradox in mental health is based on the idea that blacks have stronger family networks that protect them against mental distress. Although many scholars have suggested this, other work has

proposed that structural changes in the economy (i.e., deindustrialization) have undermined these ties (Roschelle 1997). Therefore, it remains unclear whether these flourishing networks still exist among Black families, and if so, whether they are capable of explaining the race paradox in mental health.

SOCIAL SUPPORT AND STRAIN

Countless studies have found that social relationships are associated with beneficial mental health outcomes (e.g., Bertera 2005; Kawachi and Berman 2001). Social causation and social selection are two primary models for explaining these associations (Turner 1999). The social causation model proposes that positive social relationships cause better mental health outcomes both because they fulfill a fundamental human need for attachment to others and because they facilitate the exchange of social support. Social causation theory has two different strands. The direct influence argument posits that social support directly affects health outcomes (even in the absence of acute or chronic stress) while the buffering argument proposes that the quality of social relationships operates as a coping mechanism to help individuals in times of stress through the provision of emotional and/or instrumental (i.e., tangible) support. However, there is general consensus within the field that both mechanisms can operate either alone or in concert (Turner 1999).

Countering the idea that social relationships cause mental health outcomes, the social selection model is a classic example of reverse causation. Social selection proposes that mental health can structure the quantity and quality of social relationships. The positive association between quality of social ties and mental health is because those

who are mentally ill are less likely than those of sound mental health to secure and maintain quality social relationships. It could also be the case that those suffering from mental health problems acquire higher levels of support than mentally healthy individuals. Another important finding in the social support literature is that perceived levels of support have a stronger effect on mental health outcomes than objective characteristics such as network size and structure (Wethington and Kessler 1986; Turner 1999).

Though there has historically been more attention paid to the positive aspects of social ties, interest in the negative characteristics of social relationships has been growing. Some scholars have found that both emotional support and emotional strain exert independent influences on health (Gray and Keith 2003; Bertera 2005), while others have concluded that the health-damaging effects of emotional strain exceeded the health-enhancing effects of emotional support, primarily among married couples (Lincoln 2000; Rook 2001; Newsom, Masami, Morgan, et al. 2003; Newsom, Rook, Nishishiba, et al. 2005). As a whole, past work suggests the importance of assessing both perceived and objective support in addition to the positive and negative characteristics of social relationships.

Interrelations Between Social Support Indicators

Social support is known to be multi-faceted, encompassing dimensions such as instrumental, emotional, informational, financial, and regulatory (e.g., health-monitoring). Using data from a nationally representative study of elderly adults, Liang and colleagues (2001) determined that social support (using a composite measure of

tangible, informational, and emotional support) has both indirect and direct effects on depressive symptoms. For example, the receipt of support directly increased depressive symptoms, perhaps due to feelings of being a burden to the provider of support. However, support receipt also indirectly reduced symptoms through the mechanism of anticipated support, leading to a weaker total effect on depressive symptoms. These findings underscore the idea that support measures can have positive and negative effects on mental health outcomes, based on the inclusion of other support measures. Second, although providing support did not directly affect depressive symptoms, it indirectly affected depressive symptoms because of its association with negative interaction. Finally, the inclusion of anticipated support also strengthened the association between negative interaction and depressive symptoms.

Neither the provision nor the receipt of support is universally salubrious to mental health; either one can have positive or negative effects on individuals. For example, those who provide support may derive psychological benefits from helping others; conversely, they may experience psychological strain if they provide support too often or to too many individuals. Receiving support from others may enhance well-being through feelings of being cared for but support receipt may also lead to psychological distress if the recipient feels guilty for receiving help. Overall, the driving factor regarding whether the provision of support is health-enhancing or health-deteriorating may be the level to which the recipient can reciprocate the support. Early research on social exchange theory proposed that individuals seek to receive as much as possible from social relationships, suggesting that providing support may not moderate the association between support receipt and mental health outcomes (e.g., Becker 1974). Equity theory suggests that

individuals would be happiest in social relationships characterized by equal levels of giving and receiving support (e.g., Homans 1958).

Empirical research has yielded mixed findings for these theories. Equity theory has been supported by research done within three self-help populations. Maton (1988) found that within three self-help populations, bidirectional supporters (those who both gave and received support frequently) had better well-being than those who were not involved in support change, or those who only received or only provided (unidirectional supporters). Likewise, in a church setting, Maton (1987) found that bidirectional supporters had greater life satisfaction than those who only gave or only received support. Subsequent work (Liang, Krause, and Bennett 2001) found evidence against more common theories of social exchange and equity. Although this analysis did not specifically assess those who received and provided support frequently, they found that individuals who receive more support than they provide had more frequent depressive symptoms than those who underbenefit from support exchange. Liang and colleagues (2001) instead found support for the theory of esteem enhancement; overbenefiting from support exchange resulted in increased distress while underbenefiting was associated with lower distress. As a whole, this body of work strongly underscores the importance of considering multiple measures of support in addition to both the individual and joint effects of support receipt/provision.

PATTERNS OF BLACK FAMILY INTERACTION

In one of the earliest and most influential analyses of black family functioning, Carol Stack (1974/1983) conducted a comprehensive ethnography of low-income blacks

in a fictional community in the Midwest which she coined "The Flats." Stack's work emphasized the following three key aspects of black family functioning: extended and flexible living arrangements across multiple households, elaborate support networks (including shared responsibility for domestic tasks, child and elder care, and financial assistance); and filial responsibility to three-generational households, typically led by women. In The Flats, systems of mutual obligation and reciprocity tied black families together, allowing them to "stretch" their meager resources in order to survive financial strain from job loss and marital/relationship changes. Other ethnographic work in this regard has uncovered similar patterns of mutual aid within black families in Chicago (Aschenbrenner 1973; Aschenbrenner 1983) and the greater Boston area (Feagin 1968).

While extremely influential for bringing a sociological lens to the previously understudied topic of black family life, Carol Stack's work has since been applied universally with less consideration of how these patterns may vary across other segments of black families, across historical time, and in higher-SES residential contexts. Her work also disproportionately focuses on the positive aspects of social relationships - placing less emphasis on the stressful characteristics that could undermine or eliminate the health-enhancing benefits of social relationships. As Anne Roschelle (1997) argues, this distinction is important because public policies limiting social service benefits to African Americans have been designed on the premise that black families are universally tight-knit and self-reliant for instrumental support. In addition, as Taylor, Chatters, and Jackson (1999) point out, a serious flaw of ethnographic work is its general reliance on snowball sampling which, by definition, only captures those who are involved in support

networks. These limitations reduce the generalizability of Stack's findings to black families of different social classes and to those who are not engaged in support networks.

Second Generation Research: National Survey of Black Americans

In response to the limitations of ethnographic work, most subsequent work on black family structure and patterns of interaction has used the landmark data from the National Survey of Black Americans, a longitudinal survey conducted in four waves between 1979 and 1992. This body of work has largely focused on patterns of black family organization, informal social support networks, and religiosity. These data extended past research because they are based on a nationally representative probability sample of African Americans.

An analysis of Wave 1 NSBA data found that close proximity to extended family was negatively associated with life satisfaction among younger respondents, while family closeness was positively associated with life satisfaction only among older respondents (Ellison 1990). Neither immediate family residence nor frequency of contact with extended family was associated with life satisfaction, and subjective family closeness was also the only significant family predictor of personal happiness (Ellison 1990).[1] A more recent (cross-sectional) analysis of NSBA data found similar results regarding subjective family closeness, which was significantly associated with higher personal happiness and life satisfaction (Taylor et al. 2001). The receipt of support from family members was also a significant predictor of subjective well-being, but in an unexpected way. Relative

[1] Although happiness and life satisfaction are not standard measures of mental health, they are cognitive appraisals of well-being (Campbell, Converse, and Rogers, 1976) that are correlated with mental health. Of the outcomes considered in this paper, these measures are most similar to self-rated mental health, an indicator that has received sparse attention in past literature.

to those who reported never needing help from family, those who received help had significantly lower happiness and life satisfaction; those who never received help had lower happiness only. Frequency of family contact was not associated with happiness or life satisfaction. Overall, research using NSBA finds consistently strong associations between family closeness and mental health, with weaker yet significant associations for receipt of family support.

While the extremely rich findings from the National Survey of Black Americans were groundbreaking due to its use of a national probability sample and four-wave panel design (1979-1992), it only sampled black respondents. Therefore, NSBA was unable to compare the findings with other racial/ethnic groups to determine whether the patterns of family formation and interaction are unique to only blacks or common among other groups as well.

Third Generation Research: National Survey of Families and Households

The third generation of research in the Stack tradition predominantly uses data from the National Survey of Families and Households (NSFH) to examine race differences in patterns of family interaction. Using Wave I data (1987-1988), Silverstein and Waite (1993) found few race differences in the exchange of both emotional and instrumental support from family members among adults at midlife and beyond. Among both men and women, they found no significant race differences in the odds of giving and receiving emotional support and the odds of receiving instrumental support. Although black and white men had similar odds of providing instrumental support to others, black women were less likely than white women to provide instrumental support to others.

This finding - which runs counter to the work of Stack - could be attributed to the fact that it takes time, money, and/or other financial resources to provide practical support, while emotional support can be provided with the investment of time but not of money. Importantly, age*race interaction analyses found that this pattern was reversed at older ages; that is, older black women were more likely than older white women to provide instrumental support.

An analysis of data from the second wave of NSFH (1992-1994) also showed stronger race differences in support among women than men. Sarkisian and Gerstel (2004) found that black men were extremely similar to white men in terms of involvement in kin support networks. Although black men were significantly less likely than white men to be involved in the exchange of financial support with kin, socioeconomic status entirely explained this difference. However, substantial differences in support networks were found between white and black women. Black women were more likely than white women to engage in reciprocal exchanges of transportation, child care, and household help, while white women were more likely than black women to be involved in reciprocal exchanges of emotional support (Sarkisian and Gerstel 2004).

These findings might reflect the fact that white women are more likely than black women to be in high-quality marriages, which would aid in the exchange of emotional support (Broman 1993; Broman 2005). Both of these findings (higher practical support exchange among black women and high emotional support exchange among white women) might be partially attributed to the fact that black women are less likely than white women both to be married (Census 2004) and to be in high-quality marriages (Broman 1993; Goodwin 2003; Broman 2005).

An analysis of data from the 1990-1992 National Comorbidity Survey (Kiecolt, Hughes, and Keith 2008) found that blacks and whites showed more similarities than differences in terms of social integration (i.e., contact with kin, contact with friends, spouse/partner support, spouse/partner strain, kin support, kin strain, and friendship strain). This study found four significant race differences; blacks were more likely to report that they had another confidant and to attend church more frequently, were less likely to report friendship support and that their spouse/partner was a confidant, more likely to report that they had another confidant, and reported lower levels of friendship support than whites. These findings are consonant with past work finding that blacks have higher levels of religiosity (Kim and McKenry 1998; Taylor, Chatters, and Jackson 2007) and lower marital quality than whites (Broman 1993; Goodwin 2003; Broman 2005).

In a direct rebuttal to Stack's (1973/1983) ethnographic work, Roschelle (1997) used NSFH data to examine race differences in the provision and receipt of child care services among women and race differences in the provision and receipt of household assistance among men (i.e., home/car repairs and other work around the house). Contrary to Stack's well-accepted thesis, nativity status and proximity to siblings and adult children entirely explained the initially higher propensity for black women to provide child care to family. Black women were less likely than white women to provide child care to non-family (e.g., friends, neighbors, co-workers), receive child care help from family, and receive child care help from non-family. Black men exhibited less network involvement than white men on three of the four household assistance measures. With the exception of receipt of household assistance from non-family members (which

showed no race differences), black men were less likely than white men to provide household assistance to family and non-family, and to receive household assistance from family (Roschelle 1997). These findings suggest that, in the present historical time, black families demonstrate either similar or lower levels of support than white families. It is likely that these lower levels of family support could be at least partially attributed to the lower marriage rates among blacks relative to whites (Census 2004).

Similar findings have emerged using longitudinal data from elderly participants in the Chicago Health and Aging Project (Barnes, Mendes de Leon, Bienias, et al. 2004). The results showed that relative to whites, blacks had significantly smaller social networks (measured separately as the number of children, relatives, and friends respondents reported seeing at least once a month). Data on adults aged 60 and older from the 1992-1993 Survey of Social Relations also found that blacks had significantly smaller social networks than whites (Ajrouch, Antonucci, and Janevic 2001). Despite smaller networks, blacks had significantly more family members in their social networks (regardless of age) and more frequent contact with network members, although these differences narrowed with increasing age. This type of disaggregation is important because, as past research has suggested that exclusive family networks among the elderly have less health-enhancing effects than diverse or friend networks (Litwin 2001). These findings suggest reduced mental health benefits among blacks who tend to have more family-centered networks, relative to whites who tend to have more friendship-centered social networks. Other sociological research has found that heterogeneous social networks confer a wider range of support resources than less diverse networks (Granovetter 1973; McPherson, Smith-Lovin, and Cook 2001).

As a whole, findings based on samples of both blacks and whites (Silverstein and Waite 1993; Roschelle 1997; Kiecolt et al. 2008) are contrary to both those of Stack (1974/1983) and the ensuing findings of blacks' heavy involvement in informal support networks from the National Survey of Black Americans (Taylor 1986; Ellison 1990; Taylor, Chatters, and Jackson 1999; Taylor et al. 2001). As Roschelle (1997) proposes, it is highly plausible that these networks existed in specific segments of the black community in the past but were since damaged by factors such as the labor market disadvantage of black men following deindustrialization and the influx of crack cocaine and ensuing violence in many low-income black communities.

RESEARCH OBJECTIVE

In this paper, I explore the extent to which multiple aspects of family relationships explain the race paradox in mental health. I extend past research in three critical ways. First, Stack (1974) primarily focused on the reciprocal exchange of tangible support for finances, child care, and temporary shelter. Likewise, subsequent findings from the National Survey of Black Americans (NSBA) (Taylor 1986; Ellison 1990; Taylor et al. 1999; Taylor et al. 2001) focused primarily on the receipt of tangible support from family, with no data assessing the role of emotional support. Second, Stack and the ensuing body of research from NSBA focused primarily on the actual exchange of support among family. However, there is evidence indicating that perceived support is a stronger buffer of stress from adverse life events than actual support received (Wethington and Kessler 1986). Third, the NSBA body of research and, to a lesser extent, Stack's work (1974), overlooked both the role of social strain, the interactive

effects of disproportionate exchange of support, and the interactive effects of emotional support and emotional strain. This is an important consideration, given that recent research has underscored the need to take into account the negative aspects of social relationships (i.e., Antonucci, Akiyama, and Lansford 1998).

In response to these gaps in the literature, I will examine the roles of: 1) the exchange of tangible support and the receipt of emotional support from family; 2) the receipt of social strain from family; 3) the interactive effects of social support and social strain; and 4) the relative importance of objective and perceived support and their respective roles in explaining the race paradox in mental health. I employ data from the National Survey of American Life, a nationally representative sample that is more heterogeneous than other studies in terms of both race and socioeconomic status.

METHODS

I used nationally representative, secondary data from the 2001-2003 National Survey of American Life (NSAL), a cross-sectional survey conducted by the University of Michigan Program for Research on Black Americans. The NSAL is one of three studies that comprise the Collaborative Psychiatric Epidemiology Surveys funded by the National Institute of Mental Health. Building on the strengths of NSBA, NSAL was designed to explore racial and ethnic differences in mental disorders, psychological distress, and informal and formal service use as well as a variety of presumed risk and protective factors (Heeringa, Wagner, Torres, et al. 2004).

The core sample of the NSAL was based on a multi-stage national probability sample of African-American households (with at least one Black adult aged 18 and older

who did not self-identify as Afro-Caribbean) in the 48 contiguous states of the United States. The four stage sampling process included a primary stage sampling of US Metropolitan Statistical Areas (MSAs) and counties, a second stage sampling of area segments, a third stage sampling of housing units within the selected area segments, and finally, random selection of eligible respondents from the sample housing units. A unique feature of the NSAL (versus the other CPES surveys) was that African Americans and Afro-Caribbeans were oversampled within area segments. English-speaking respondents were drawn from Census blocks that had African American populations of at least 10%, based on the 1990 Census. After identifying a sample housing unit, the interviewer conducted a short screening questionnaire with a knowledgeable adult to determine whether the household met the eligibility criteria of the study. If so, a respondent was randomly selected to complete the study interview. Data were primarily collected using face-to-face interviews via computer-assisted instruments. Post-stratification weights were used to adjust the sample to the demographic characteristics of the U.S. population. The overall response rate was 72%. The high response rate can be partially attributed to the fact that NSAL interviewers were matched to the race/ethnicity of the respondents.

OUTCOMES

I considered three mental health outcomes. The first outcome was based on diagnostic categories from the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). I examined a composite measure of any DSM mood

disorder (major depressive disorder with hierarchy;[2] major depressive episode; dysthymia; dysthymia with hierarchy; mania; hypomania; bipolar I; bipolar II; or bipolar sub-threshold) or any DSM anxiety disorder (generalized anxiety disorder; generalized anxiety disorder with hierarchy; panic attack; panic disorder; social phobia; agoraphobia without panic disorder; agoraphobia with panic disorder) in the past 12 months.[3] A similar approach was used by Kiecolt, Hughes, and Keith (2008), who examined any DSM substance use disorder and any DSM disorder among whites and blacks in the 1990-1992 National Comorbidity Survey. Because of small sample sizes in some of the less common disorders, a respondent was categorized as having any disorder ("1") if they met the criteria for any of the disorders of these disorders and coded as "0" if they did not meet the criteria for any disorders.

To complement to the clinical psychiatric disorder indicator, I used two outcomes that tap common indicators of distress. Depressive symptoms were measured using the 12-item version of the Center for Epidemiologic Studies for Depression (CES-D) scale, which asked respondents how often in the past week they experienced the following symptoms: felt depressed; had crying spells; felt hopeful about the future; felt [I] was just as good as other people; was happy; enjoyed life; had trouble keeping [my] mind on what [I] was doing; [my] sleep was restless; people were unfriendly; felt people disliked [me]; felt everything [I] did was an effort; and could not get "going." There were four potential response categories for each item, including 0=rarely/none of the time/less than one day;

[2] The "hierarchy" rule requires that the symptoms not occur during a higher-order diagnosis. For example, to meet the criteria for generalized anxiety disorder with hierarchy, symptoms must not occur during a depressive episode or another mood disorder, which are considered higher-order diagnoses. The goal of this definition is to avoid dual diagnosis for those conditions whose symptoms tend to overlap.

[3] The following disorders were not considered because they were only asked of African Americans: substance use/abuse disorders, post-traumatic stress disorder, all eating disorders, conduct disorder, and ADHD.

1=some/little of the time/1-2 days; 2=occasionally/moderate amount of time; and 3=most/all of the time/5-7 days. I reverse-coded four of these scale items (felt helpful about the future, felt just as good as other people, was happy, and enjoyed life) so that higher values corresponded with more frequent depressive symptoms. I subsequently created a scale of depressive symptoms based on the average of the answered items, resulting in a scale ranging from 0/low through 3/high. The reliability for the depressive symptom scale was 0.77. Finally, self-rated mental health was initially measured using five categories for excellent, very good, good, fair, and poor. Because of small cell sizes, I collapsed "poor" and "fair" into one category for "poor/fair" and coded this variable so that higher values indicated less favorable self-rated mental health.

INDEPENDENT VARIABLES

Race was originally measured using four categories for African American, Afro-Caribbean, non-Hispanic white, and Hispanic/Latino. For the purposes of this project, I focused only on those who self-identified as African American (n=3,570), Afro-Caribbean but born in the United States (n=373), and non-Hispanic white (n=891). I excluded Afro-Caribbeans who were born outside the U.S. (n=1,065) due to the unique experiences of immigration and acculturation. I also excluded Hispanics/Latinos due to their small sample size (n=183) and because the largest and most consistent paradoxes in mental health are found between blacks and whites. Age was measured in years and gender was measured using a dummy variable for male.

Potential Mediators: Family Relationships

In order to explain the race paradox in mental health, I considered nine potential mediators for family relationships. I selected this group of mediators based on the work by House and colleagues (1988), which proposes that social support operates primarily as a mediating mechanism on health. I first considered four measures of tangible support. Tangible support received was measured using the question, "How often do people in your family - including children, grandparents, aunts, uncles, in-laws and so on help you out?" and included categories for very often, fairly often, not too often, and never. There were two voluntary categories for "never needed help" and "I have no family." Tangible support given was measured using the question, "How often do you help out people in your family - including children, grandparents, aunts, uncles, in-laws and so on?," and used the same five original categories. I collapsed both of these measures into three categories for very often, fairly often, and not too often/never/never needed help/have no family. The inclusion of those with no family into the "never" category (n=21) is consistent with Sarkisian's approach (2007).

In addition to examining the main effects of the provision and receipt of tangible support among family members, I calculated four interaction terms for support given*support received among family, using the reference category of "very often" for both measures. I refer to this measure as balanced tangible support. Finally, perceived tangible support was assessed using an open-ended survey question, "How many people in your family would help you out if you needed help?" with a potential range of 0-97 individuals. I recoded this variable into categories for 0-5 family members, 6-10 family members, and more than 10 family members. This measure was important to consider

given evidence that perceived support operates more strongly as a stress buffer than objective (received) support (Wethington and Kessler 1986).

The fifth potential mediator for family relationships was frequency of interaction, measured using the survey question, "How often do you see, write, or talk on the telephone with your family or relatives who do not live with you?" This measure included categories for nearly every day (1), at least once a week (2), a few times a month (3), at least once a month (4), a few times a year (5), hardly ever (6), or never (7). I collapsed this variable into four categories for rare interaction (a few times a year, hardly ever, or never), monthly interaction (a few times a month or at least once a month), weekly interaction (at least once a week), and daily interaction (nearly every day). I controlled for frequency of interaction because blacks have more frequent interaction with members of their social networks than whites (Ajrouch et al. 2001) and because frequency of contact is generally positively associated with mental health (Lin and Peek 1999).

To complement the four measures of tangible support, I included four measures of emotional support/strain due to their well-established association with mental health (e.g., Rook 2001; Bertera 2005). Subjective closeness was measured using the survey question, "How close do you feel towards your family members?" and included categories for very close, fairly close, not too close, and not close at all. I collapsed the latter two categories into "not too close/not close at all" and reverse-coded the variable so that higher values indicated higher levels of subjective closeness. Previous NSBA analyses have found family closeness to be a significant predictor of the receipt of

tangible support from family members (Taylor 1986), life satisfaction (Ellison 1990; Taylor et al. 2001), and happiness (Taylor et al. 2001).

Scant research has assessed race differences in emotional support and strain among family; however, results based on black-only samples suggest that blacks simultaneously experience both high levels of social support and strain from family (Neighbors 1997). Emotional support was based on the following three questions asking NSAL respondents how often family members provided the following acts of support: 1) make [you] feel loved and cared for; 2) listen when you talk about [your] private problems or concerns; and 3) express interest and concern for [your] well-being. Emotional strain included the following three questions asking respondents how often family engage in the following behaviors: 1) make too many demands on [you]; 2) criticize [you] and the things [you] do; and 3) try to take advantage of [you]. All emotional support and emotional strain variables included response choices for very often, fairly often, not too often, and never.

I recoded these variables into three categories for never/not too often, fairly often, and very often and reverse-coded all variables such that higher values indicated higher emotional support and higher emotional strain. I then created two different scales for emotional strain and emotional support, based on the mean of the answered items, resulting in scales ranging from 1 (low support/strain) to 3 (high support/strain). This approach is consistent with that of Gray and Keith (2003), who averaged both supportive and problematic aspects of social relations separately for five separate social relationships. The overall reliability for the three-item emotional support scale was 0.75 and the reliability for the three-item emotional strain scale was 0.69. The pairwise

correlation for emotional support and emotional strain was low (*r*=.-0.17), which is consistent both with both past analyses (Gray and Keith 2003) and the idea that positive and negative aspects of social relationships are two distinct constructs that lie on separate dimensions. I also calculated a single interaction term for emotional support*emotional strain in light of the possibility that the effect of social support on mental health may vary based on the level of social strain from that relationship (Schuster, Kessler, and Aseltine 1990).

Other Controls

I controlled for marital status because of its documented protective effect on mental health (Waite 1995; Waite and Gallagher 2000) and because blacks are less likely than whites to be married (U.S. Census Bureau 2004). Moreover, blacks are more likely to have poor marital quality than whites (Broman 1993; Goodwin 2003; Broman 2005). Marital status was originally measured using three categories for married/cohabiting, divorced/separated/widowed, or never married. It was not possible to disaggregate the married/cohabiting category without using the restricted NSAL data. I added an additional category for "partnered" for those who were either never married or formerly married (i.e., divorced, separated, or widowed) but reported a current romantic involvement. Therefore, I used the following categories for marital status: married/cohabiting, divorced/separated/widowed, never married, or partnered. I chose this operationalization in light of recent studies that show that the formation of new marital or cohabiting unions either partially attenuates (Willits, Benzeval, and Stansfeld

2004) or completely eliminates (Blekesaune 2008) the association between prior partnership dissolution and higher psychological distress.

Self-rated health was initially measured on a five-point scale for excellent, very good, good, fair, or poor. I subsequently recoded this measure into a dummy variable for "favorable physical health," with "1" indicating excellent, very good, or good health and "0" indicating fair or poor health. It was important to control for physical health because of its strong correlation with mental health (Schnittker 2005) and because blacks have worse physical health than whites (Read and Gorman 2006; Williams 2005). Number of children living in the household (aged 17 and younger) and number of adults living in the household were measured continuously and top-coded at six. I included this measure due to past findings that parents generally had significantly more depressive symptoms than non-parents (Evenson and Simon 2005) and because blacks historically display higher fertility rates than whites (Centers for Disease Control and Prevention 2009).

It was important to include measures of social class because high SES is strongly associated with mental health (Eaton and Muntaner 1999; Yu and Williams 1999) and because blacks have lower socioeconomic status on average than whites (U.S. Census Bureau 2009). Education was measured using four categories for less than high school, high school graduate, some college, and college graduate or more. Household income was originally measured in dollars and top-coded at $200,000; I subsequently transformed this variable using a started logarithm (+$1,000) to reduce skew. Region was measured using categories for Northeast, Midwest, West, and South. Consistent with the approach used by Roschelle (1997), I included region as a covariate in recognition of

past research finding stronger feelings of filial responsibility among families in the South, relative to other regions (Burr and Mutchler 1999).

ANALYTIC STRATEGY

The first step of the analysis was to run descriptive and bivariate statistics to describe the analytic sample. To assess potential mediators, I followed the detailed causal steps approach outlined in Baron and Kenny's classic paper (1986). Four criteria must be satisfied for a variable to qualify as a potential mediator. First, the key predictor (race) should predict the outcome (mental health), net of all controls. This step tests the race paradox in mental health. Second, the key predictor (race) should predict the potential mediator (family relationships), net of all controls. Third, the potential mediator (family relationships) should predict the outcome (mental health), net of all controls. After meeting these criteria, the mediator should be entered into the full regression model and either completely or partially explain the association between the predictor (race) and the outcome (mental health).

I considered nine potential mediators for family relationships: 1) tangible support received; 2) tangible support given; 3) balanced tangible support (interaction terms for tangible support received* tangible support given); 4) emotional support received; 5) emotional strain received; 6) an interaction term for emotional support*emotional strain; 7) perceived tangible support; 8) subjective closeness; 9) frequency of interaction. A correlation matrix (Appendix 2A) found fairly moderate correlations between the family relationship measures, ranging from r=-0.013 for family strain and tangible support received to r =0.57 between subjective family closeness and family support. Based on

the correlation matrix, all variance inflation factors were below 2.5 and all tolerance values exceeded 0.40; based on standard criteria, these correlations did not create any multicollinearity issues (Allison 1999). Race was the key predictor in all mediation analyses.

To assess the first criterion that the key independent variable predict the outcome, I estimated multivariate binary logistic regression models (predicting any DSM mood/anxiety disorder), a multivariate ordinary least squares (OLS) regression model predicting depressive symptoms, and an ordinal logistic regression model predicting self-rated mental health. All coefficients in this stage represent the predictive power of race (1=non-Hispanic black, 0=non-Hispanic white) on mental health, net of all controls.

To assess the second criterion that the key predictor (race) predict the potential mediator, I estimated the following set of models: 1) multivariate ordinal logistic regression models predicting receipt of tangible support, provision of tangible support, closeness, and frequency of interaction; 2) one multivariate multinomial logistic regression model predicting balanced tangible support; and 3) multivariate OLS regression models predicting emotional support, emotional strain, the interaction of emotional support*emotional strain, and perceived tangible support. The coefficients in this stage represent the predictive power of race on the potential mediators, net of all controls.

To assess the third criterion that the potential mediator predict the outcome, I conducted multivariate ordinal logistic regression predicting self-rated mental health, multivariate binary logistic regression predicting any mood/anxiety disorder, and multivariate OLS regression predicting frequency of depressive symptoms. The

coefficients in this stage represent the predictive power of family relationships on mental health, net of all controls.

The final step of the analysis plan tested each of the potential mediators in full models, both independently and simultaneously. I conducted multivariate binary logistic regression models to predict the odds of any mood/disorder in the past 12 months. I also conducted multivariate ordinary least squares regression models to predict frequency of CES-D symptoms in the past 30 days and multivariate ordinary logistic regression models to test self-rated mental health. In addition to testing race differences, all multivariate models include controls for gender, age, marital status, self-rated physical health, household structure (number of adults and number of children aged 17 and younger), region, and SES (education, total household income). All analyses adjusted for the complex sampling design using the provided sampling weights (which included post-stratification adjustments) and the survey estimation procedures in Stata 11.0 (StataCorp 2009).

NSAL initially consisted of 4,834 non-Hispanic whites and blacks. However, 3.3% of cases (n=161) were missing data for self-rated mental health, and 9.4% of cases (n=453) were missing data for CES-D depressive symptoms. There were no missing cases for any DSM mood/anxiety disorder. Excluding cases listwise would have eliminated 224 potential cases (5% of the eligible sample); therefore, I conducted multiple imputation procedures using ICE commands in Stata 11.0 to impute missing values on all covariates.[4] Notably, I did not impute missing values for any of the mental health outcomes; cases were excluded if they were missing data on any outcome.

[4] The following variables had no missing values and were therefore not imputed: race, gender, age, household structure, region, education, and income.

Therefore, the final analytic sample consisted of 4,367 NSAL participants (586 whites and 3,781 blacks) with complete data on all outcome measures. More detailed information on missing data patterns can be found in Appendix 2A. For all analyses, I adjusted for the complex sampling design using the survey estimation procedures in Stata 11.0 (StataCorp 2009).

RESULTS

Table 2.1 displays the unweighted demographic characteristics of the study sample. Inferential statistics (chi-square and independent sample *t*-tests) were used to test for bivariate differences by race, both on the overall variable and separately for each category of the variable, where appropriate. Roughly 43% of respondents were men, with no race differences found. This is important because black men are generally underrepresented in data collection efforts. The mean age of the sample was 43, though blacks were roughly four years younger than whites ($p<.05$). Relative to whites, fewer blacks were married/cohabiting but significantly higher proportions of blacks were coupled. Roughly 81% of the sample reported being in favorable self-rated health, with no race differences found for this measure of health status. African Americans reported significantly more children under age 18 ($p<.01$) and more adults ($p<.05$) in the household. In terms of geographic location, blacks were more likely to live in the Midwest ($p<.001$) while whites were slightly more likely to live in the West ($p<.10$). Whites were considerably more educated than blacks; for example, whites (32%) were more than twice as likely as blacks (15%) to have a college degree ($p<.001$). Likewise,

whites had significantly higher average household income than blacks ($46,778 vs. $36,551, respectively, $p<.01$).

I assessed the comparability of the NSAL analytic sample (unadjusted) and the U.S. population on three key sociodemographic measures - marital status (U.S. Census Bureau 2004), educational attainment (U.S. Census Bureau 2009), and income (U.S. Census Bureau 2005). Compared to the proportion of those married in the NSAL and the Census, similar proportions of white men (58% and 60%, respectively), black men (43% vs. 40%, respectively) and black women (30% and 29%, respectively) were currently married. Larger departures were found among white women in NSAL relative to the Census (43% vs. 55%, respectively). It is important to note, however, that the NSAL collapsed categories for married and cohabiting and so it was impossible to disaggregate this category without access to the restricted data.

The socioeconomic status of both whites and blacks in NSAL was lower than Census estimates. For example, 91% of whites in the Census earned at least a high school diploma, compared to 83% of whites in NSAL. Roughly 82% of blacks in the Census earned at least a high school diploma, compared to 75% of NSAL participants. Similarly, mean household income among NSAL respondents was lower than national estimates. On average, white NSAL respondents had total household incomes of $43,650, compared to Census estimates of $60,478. The average household income of black NSAL respondents was also lower than national estimates ($32,897 vs. $39,877, respectively). The relatively low socioeconomic standing of NSAL respondents, as compared to Census estimates, can be explained by the sample design of NSAL, which

only drew respondents from Census tracts with at least 10% African American populations.

Table 2.1 also displays descriptive statistics of the mental health outcomes, including bivariate tests of race differences. Approximately 8% of the sample was classified as having any mood disorder, 14% was classified as having any anxiety disorder, and 18% had any mood or anxiety disorder. Although there were no significant race differences on the two separate measures for any mood disorder and any anxiety disorder, blacks were slightly less likely to have had any mood or anxiety disorder in the past 12 months ($p<.10$). Blacks had significantly fewer depressive symptoms in the past 30 days than whites ($p<.001$) and were significantly more likely than whites to report excellent self-rated mental health (31% vs. 22%, respectively; $p<.001$). The bivariate patterns for the mental health outcomes were consistent with the race paradox in mental health.

A few significant race differences were found regarding family relationships. There were no race differences in the receipt of tangible help received from family. However, blacks were significantly more likely than whites to provide tangible support to their family very often (47% vs. 38%, $p<.05$). Perceived tangible support was higher among whites than blacks; for example, 22% of whites reported having more than 10 family members that can help out, compared to 17% of blacks ($p<.05$). Overall, blacks had more frequent family interaction than whites; for example, 50% of blacks and 40% interacted with their family members nearly every day ($p<.05$). Roughly 71% of the sample reported feeling very close to their family, followed by 22% who felt fairly close to their family members; no race differences were found regarding subjective closeness.

Scales for both family emotional support and family emotional strain ranged from 1/low to 3/high. The mean family support score was 2.32, with no significant race differences. However, blacks reported significantly higher family strain than whites (1.31 vs. 1.17; $p<.001$).

Testing the Race Paradox in Mental Health

Table 2.2 displays coefficients from multivariate logistic regression models predicting any DSM mood/anxiety disorder in the past 12 months, mean CESD-12 depressive symptoms in the past 30 days, and self-rated mental health. In addition to race, all models control for gender, age, marital status, self-rated health, household structure (number of children under 18 and number of adults currently living in the household), region, and SES (education and total household income).

As the first set of columns shows, relative to whites, blacks had 33% lower odds of being diagnosed with any DSM mood or anxiety disorder ($p<.05$). Men had 36% lower odds of having any mood/anxiety disorder than women ($p<.05$); and each additional year of age was associated with a 2% reduction in the odds of any mood/anxiety disorder ($p<.01$). Marital status was marginally predictive of any mood or anxiety disorder; compared to those who were married or cohabiting, those who had experienced marital disruption (OR=1.49, $p<.10$) and those who were coupled (OR=1.28, $p<.10$) had slightly higher odds of any mood or anxiety disorder ($p<.10$). Those who reported favorable physical health had 68% lower odds of any mood/anxiety diagnosis ($p<.001$). Household structure did not significantly predict any DSM mood/anxiety disorder. Those who lived in either the Northeast or the Midwest had 46% higher odds of

any mood or anxiety disorder, relative to those who lived in the South ($p<.05$ for both). Although education did not reach statistical significance, increasing household income was associated with slightly lower odds of any DSM mood or disorder ($p<.10$). The race differences found for any mood/anxiety disorder replicate past research showing lower rates of DSM mental disorder among blacks in both the 1990-1992 National Comorbidity Study (Breslau et al. 2005; Kessler et al. 1994), its 2000-2003 replication (Breslau et al. 2006), and the 2001-2003 National Survey of American Life (Williams et al. 2007).

Contrary to past research (George and Lynch 2003; Gore and Aseltine 2003; Mossakowski 2008), blacks scored significantly lower than whites on the CES-D depressive symptom scale (B=-0.24; $p<.001$). These conflicting findings may reflect NSAL's use of the shortened 12-item CES-D scale. Although the 12-item version used in NSAL included both interpersonal relations items (which are more commonly reported by blacks), it included less than half of the somatic symptoms from the complete 20-item scale, items which are more commonly endorsed among blacks (Iwata, Turner, and Lloyd 2002). Increasing age ($p<.001$) and favorable physical health ($p<.001$) were each strongly associated with less frequent depressive symptoms. Neither measure of household structure significantly predicted CES-D depressive symptoms. Relative to living in the South, living in the Midwest was associated with slightly more frequent depressive symptoms while living in the West was associated with significantly fewer depressive symptoms ($p<.10$). Those with less than a high school education had significantly more depressive symptoms than those with a college degree ($p<.001$) and increasing income was associated with significantly fewer depressive symptoms

($p<.001$). Neither gender nor marital status were significant predictors of depressive symptoms.

Consistent with the race paradox in mental health, I found a protective association (favoring blacks) between race and self-rated mental health. Blacks had 34% higher odds of reporting a better mental health rating than whites ($p<.05$). To the best of my knowledge, this is the first study assessing race differences in self-rated mental health. Men had 45% higher odds of reporting a better mental health rating than women ($p<.001$), while those who reported favorable physical health had five times higher odds of reporting a better mental health rating than those with fair or good physical health ($p<.001$). Those with less than a high school education had 33% lower odds of reporting a better mental health category than those with a college degree. Age, marital status, household structure, region, and income were not significant predictors of self-rated mental health.

In terms of general patterns across the four mental health outcomes, the following general patterns were observed: 1) men had significantly lower odds of any mood/anxiety disorder and higher odds of better self-rated mental health than women; 2) increasing age was associated with significantly lower odds of all outcomes, with the exception of self-rated mental health; 3) marital status was a weak predictor of any mood/anxiety disorder only; 4) favorable self-rated physical health was strongly and consistently associated with better mental health status; 5) neither measure of household structure significantly predicted any of the mental health outcomes; 6) region was a significant predictor of any DSM mood/anxiety and a weak predictor of depressive symptoms and self-rated mental health; 7) educational attainment was significantly associated with depressive symptoms

and self-rated mental health; and 8) household income significantly predicted depressive symptoms and weakly predicted any DSM mood/anxiety disorder. Overall, the multivariate analysis replicated past findings regarding the race paradox in mental health.

MEDIATION ANALYSES

Following the first stage of Baron and Kenny's (1986) the causal steps approach, controlling for all covariates, race significantly predicted any mood/anxiety disorder, depressive symptoms, and self-rated mental health (see Table 2.2). Table 2.3 shows a summary of potential qualifying mediators for family relationships. Net of all controls, step 2 tested the predictive power of race on family relationships and Step 3 tested whether family relationships significantly predicted mental health.

After completing the analyses for these steps, four variables qualified as potential mediators for any DSM mood/anxiety disorder (tangible support given to family, balanced tangible support, perceived tangible support, and emotional strain from family). The following five variables qualified as potential mediators for depressive symptoms*:* tangible support given, balanced tangible support, perceived tangible support, frequency of family interaction, and emotional strain. Last, four variables qualified as potential mediators for self-rated mental health (balanced tangible support, perceived tangible support, frequency of family interaction, and emotional strain). In terms of general patterns, balanced tangible support, perceived tangible support, and family strain qualified as potential mediators for all three outcomes. Moreover, tangible support provided to family qualified as a potential mediator for two of the three mental health outcomes (any mood/anxiety disorder, and depressive symptoms).

The final step of the mediation analysis was to enter the potential mediating variable into a multivariate regression model with the full set of controls. I performed this step first for each potential mediator individually and then with all indicators simultaneously. Table 2.4A displays the results from mediation models for any DSM mood/anxiety disorder in the past 12 months. There were four potential mediators for this outcome (tangible support given to family, balanced tangible support, perceived tangible support, and family support). In the baseline model, blacks had 33% lower odds of disorder than whites, confirming the race paradox in mental health. Including each of the potential mediators independently and simultaneously failed to explain the race paradox in any DSM mood/anxiety disorder. The coefficients across models gained in strength and statistical significance across models, which is the opposite of what would be expected if family relationships could explain the race paradox in mental health.

Similar results were found in the mediation analysis for depressive symptoms, measured on a scale from 0/low to 3/high (Table 2.4B). Five variables emerged as potential mediators for this outcome - tangible support given, balanced tangible support, perceived tangible support, frequency of family interaction, and emotional strain. In the initial model (excluding family relationships), blacks scored roughly one-quarter point lower on the depressive symptom scale than whites (B=-0.24, $p<.001$). The inclusion of tangible support given to family and balanced tangible support changed neither the magnitude nor the statistical significance of this association. The same patterns were found for perceived tangible support, frequency of family interaction, and family strain, and the full model containing all potential mediators. The race paradox in depressive symptoms persisted for each of these models.

Table 2.4C shows the mediation results based on ordinal logistic regression models for self-rated mental health. In the baseline model (which excluded family relationships but included all controls), blacks had 25% lower odds of reporting a worse mental health category than whites ($p<.05$). Balanced tangible support, perceived tangible support, and family strain could not explain the race paradox in self-rated mental health. The frequency of family interaction dropped this association to marginal significance ($p<.10$); however, the race coefficient remained unchanged. Including all four measures simultaneously did not fully explain the race paradox; blacks still had lower odds than whites of reporting a worse mental health category (OR=0.71, $p<.05$).

DISCUSSION

Past research has consistently found that blacks experience better mental health than whites, an unexpected finding given black Americans' lower socioeconomic standing and higher exposure to discrimination in the United States. Most studies link these findings to a separate body of research that suggests that blacks' strong social ties, especially concerning family relationships, explains this paradox. To the best of my knowledge, only one previous study has explicitly tested this notion. In an analysis using data from the 1990-1992 National Comorbidity Survey, Kiecolt, Hughes, and Keith (2008) found that neither friendships nor family relationships could explain lower psychological distress and lower rates of psychiatric disorder among blacks relative to whites. I extended their analysis by using more recent data from a more diverse sample, additional measures of family relationships, and additional mental health outcomes.

The present results replicate past research showing better mental health status among blacks than whites (e.g., Breslau et al. 2005; Breslau et al. 2006), but provide little support for Stack's findings (1974/1983) of strong, intricate, supportive family relationships among blacks. Based on bivariate findings, blacks in NSAL provided more frequent tangible support to family, had more frequent interaction with family members, and reported significantly more fictive kin than whites. However, they reported more emotional strain from family and less frequent tangible support from fictive kin than whites. Moreover, there were no significant race differences in terms of tangible support received from family, closeness to family, and emotional support received from family. Whites reported slightly higher levels of perceived tangible support and more frequent tangible support given to fictive kin.

Mediation analyses found that none of the family measures could explain (either fully or in part) why blacks had fewer depressive symptoms, better self-rated mental health, and lower rates of any mood/anxiety disorder in the past 12 months. Importantly, the inclusion of some family relationship measures actually strengthened the association between race and mental health. These findings suggest the need to explore other avenues to explain the race paradox in mental health. In the following chapters, I assess whether friendships, fictive kin, or church-based relationships can explain the race paradox in mental health.

This analysis has important limitations to consider. Most importantly, there was a dearth of measures available to assess the availability and quality of spousal tangible and emotional support; the only measure available in NSAL asks respondents to rate the quality of their current romantic relationship. Tempering this limitation is the awareness

that past literature finds lower marital quality among blacks than whites (Goodwin 2003; Broman 2005), which reduces the probability that this specific social tie could explain race differences in mental health. Second, the data do not contain any measure for availability or receipt of financial support. This is probably not a major concern, however, given past findings that whites are more likely than blacks to participate in the exchange of financial support (Sarkisian and Gerstel 2004). Therefore, it is not likely that the inclusion of this measure - if available - would explain the race paradox in mental health. Finally, as with all cross-sectional approaches, reverse causation is a potential concern. For example, it may not be that social support mediates psychological distress, but rather, that psychological distress activates processes of social support to cope with the crisis.

Although the predominant explanation for the race paradox has been social relationships (and to a lesser extent, religiosity), two other explanations have been put forth. First, some scholars have attributed the race paradox in mental health to the idea that the measurement tools used are culturally biased. Most past researchers in this regard have assessed depressive symptoms with the CES-D scale, with some finding that blacks are more likely than whites to endorse the somatic symptoms (e.g., poor appetite, everything is an effort; Iwata et al. 2002), while others have indicated that blacks are more likely endorse interpersonal items (e.g., people were unfriendly to me; Cole 2000; Lee unpublished manuscript; Rosenfield and Smith 2008). Conversely, whites are more likely than blacks to endorse mood symptoms such as feeling lonely or sad (Iwata et al. 2002). Therefore, given the multiple versions of the CES-D scale used in the literature

(9-item, 12-item, 15-item), the proportion of items represented on these scales could either refute or support the race paradox in mental health.

Jackson and Knight (2006) suggest another explanation for the race paradox in mental health. They have proposed that blacks are more likely than whites to cope with stress through unhealthy eating habits, which essentially shifts this burden to the realm of physical health. This argument would simultaneously explain the race paradox in mental health and the physical health disadvantage among African Americans in that blacks are less distressed than whites but experience worse physical health outcomes because they engage in unhealthy behaviors to cope with distress. While this idea is innovative, future work must test this idea empirically.

In sum, future research would strongly benefit from identifying the resilience mechanisms that explain why blacks demonstrate better mental health outcomes than whites. Without doing so, it is unclear whether the race paradox objectively exists or whether it is a function of other mechanisms such as cultural bias in measurement tools or race differences in coping mechanisms.

Table 2.1. Descriptive and Bivariate Statistics of Demographic and Family Characteristics by Race, 2001-2003 National Survey of American Life (n=4,367)[a,b,c]

	Whites (n=586)		Blacks (n=3,781)		Total (n=4,367)	
	N	% (or SE)	N	% (or SE)	N	% (or SE)
DEMOGRAPHICS						
Male	96	44.1	567	41.9	1,572	43.2
Mean age*	45.6	(1.68)	41.9	(0.52)	43.4	(0.72)
Marital status						
Married or cohabiting*	308	52.5	1,573	41.6	2,013	46.1
Divorced/separated/widowed	127	21.7	696	18.4	865	19.8
Coupled**	68	11.6	870	23.0	795	18.2
Never married	83	14.2	643	17.0	690	15.8
Favorable self-rated health[d]	488	83.2	3,010	79.6	3,542	81.1
Household structure						
# of children <18[e]**	0.55	(0.08)	0.84	(0.03)	0.72	-0.03
# of adults[e]*	1.88	(0.04)	2.01	(0.03)	1.95	-0.03
Region						
Northeast	138	23.5	639	16.9	856	19.6
Midwest***	42	7.2	654	17.3	572	13.1
South	309	52.8	2,121	56.1	2,389	54.7
West+	97	16.6	367	9.7	550	12.6
Education***						
Less than high school**	87	14.8	911	24.1	882	20.2
High school graduate**	170	29.0	1,410	37.3	1,476	33.8
Some college	144	24.6	911	24.1	1,061	24.3
College graduate or more***	185	31.6	548	14.5	948	21.7
Total household income [e,f]**	46,778	(3,367)	36,551	(1345)	40,834	(1,706)
MENTAL HEALTH OUTCOMES						
DSM disorders (12m prevalence)						
Any mood disorder	49	8.4	302	8.0	358	8.2
Any anxiety disorder	84	14.3	495	13.1	594	13.6
Any mood or anxiety disorder+	114	19.4	643	17.0	786	18.0
Mean CESD-12 depressive symptoms, (0/low-3/high)***	0.74	(0.04)	0.57	(0.02)	0.64	(0.02)
Self-rated mental health+						
Excellent**	128	21.9	1,172	31.0	1,183	27.1
Very good**	248	42.4	1,320	34.9	1,664	38.1
Good	152	25.9	858	22.7	1,052	24.1
Poor/Fair	57	9.8	431	11.4	467	10.7

Table 2.1 (continued)

	Whites (n=586)		Blacks (n=3,781)		Total (n=4,367)	
	N	% (or SD)	N	% (or SD)	N	% (or SD)
Tangible support received						
Not too often/never/never needed help/no family	255	43.6	1,592	42.1	1,865	42.7
Fairly often	154	26.3	1,002	26.5	1,153	26.4
Very often	177	30.2	1,187	31.4	1,349	30.9
Tangible support given**						
Not too often/never/never needed help/no family*	147	25.0	718	19.0	939	21.5
Fairly often	216	36.8	1,289	34.1	1,537	35.2
Very often*	223	38.1	1,773	46.9	1,887	43.2
Perceived tangible support (# could help out if needed)**						
0-5 family members*	285	48.6	2,068	54.7	2,275	52.1
6-10 family members	175	29.8	1,062	28.1	3,109	71.2
>10 family members*	126	21.5	650	17.2	830	19.0
Freq. of family interaction						
Rarely+	24	4.1	261	6.9	249	5.7
About monthly	98	16.7	563	14.9	681	15.6
About weekly***	227	38.8	1,070	28.3	1,428	32.7
Nearly everyday*	237	40.4	1,887	49.9	2,009	46.0
Closeness to family						
Not too close/not close at all	36	6.1	257	6.8	284	6.5
Fairly close	137	23.4	817	21.6	978	22.4
Very close	413	70.4	2,703	71.5	3,105	71.1
Emotional support (1/low-3/high)[d]	2.35	(0.04)	2.31	(0.02)	2.32	(0.02)
Emotional strain (1/low-3/high)[d]***	1.17	(0.01)	1.31	(0.01)	1.25	(0.01)
N	4,367					

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size is based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367), Multiple imputation was used for cases missing values on other measures. Data are adjusted for multiple imputation and complex survey design.

[b] Asterisks represent bivariate race differences (both overall and separately for each category, where appropriate).

[c] "Favorable" refers to excellent, very good, or good physical health (vs. fair or poor).

[d] Total raw household income is displayed. Started logarithms (+$1,000) were used in subsequent analyses.

Table 2.2. Results from Multivariate Binary Logistic Regression Models (Any DSM Mood Disorder, Any DSM Mood or Anxiety DSM Disorder), Ordinary Least Squares Regression Models (CESD-12 Depressive Symptoms), and Ordinal Logistic Regression Models (Self-Rated Mental Health), 2001-2003 National Survey of American Life (n=4,367)[a]

	Any DSM Mood or Anxiety Disorder		CES-D Depressive Symptoms		Self-Rated Mental Health	
	OR	95% CI	B	S.E.	OR	95% CI
Black	0.67*	(0.49, 0.92)	-0.24***	0.04	0.75*	(0.56, 0.99)
Male	0.64*	(0.42, 0.98)	-0.03	0.03	0.69***	(0.57, 0.83)
Age	0.98**	(0.97, 0.99)	-0.005**	0.001	1.01	(1.00, 1.01)
Marital status *(ref=married/ cohabiting)*						
Div/sep/wid	1.49+	(0.97, 2.30)	-0.01	0.04	1.26	(0.87, 1.81)
Coupled	1.28+	(0.98, 1.68)	0.04	0.04	1.10	(0.90, 1.35)
Never married	1.02	(0.60, 1.72)	0.01	0.04	1.26	(0.93, 1.73)
Favorable self-rated health[b]	0.32***	(0.23, 0.46)	-0.30***	0.03	0.19***	(0.15, 0.25)
Household structure						
# of children <18	1.05	(0.92, 1.20)	-0.0003	0.01	0.95	(0.84, 1.08)
# of adults	0.92	(0.70, 1.08)	0.00	0.02	1.00	(0.85, 1.17)
Region *(ref=South)*						
Northeast	1.46*	(1.01, 2.11)	0.08	0.05	1.23+	(0.97, 1.55)
Midwest	1.46*	(1.00, 2.14)	0.05+	0.03	1.17	(0.92, 1.49)
West	0.88	(0.56, 1.39)	-0.07*	0.03	1.05	(0.62, 1.78)
Education *(ref=college grad)*						
< high school	1.11	(0.72, 1.73)	0.18***	0.05	1.49*	(1.10, 2.02)
High school graduate	1.10	(0.71, 1.70)	0.06	0.04	1.04	(0.78, 1.40)
Some college	0.89	(0.61, 1.28)	0.03	0.04	0.96	(0.77, 1.19)
Total household income (started log, +$1,000)	0.85+	(0.71, 1.02)	-0.07***	0.02	1.03	(0.84, 1.28)
Adjusted R^2						

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] Self-rated physical health was measured using a dummy variable for excellent/very good/good (1) vs. fair/poor (0).

Table 2.3. Summary of Qualifying Potential Mediators for Family Relationships, 2001-2003 National Survey of American Life (n=4,367)[a]

	Any DSM Mood/Anxiety Disorder		CES-D Depressive Symptoms		Self-Rated Mental Health	
	Step 2	Step 3	Step 2	Step 3	Step 2	Step 3
Tangible support received from family	N.S.		N.S.		N.S.	
Not too often/ never/never needed/have no family	N.S.	N.S.	N.S.	N.S.	N.S.	*
Fairly often	N.S.	*	N.S.	N.S.	N.S.	+
Very often	N.S.	(ref)	N.S.	(ref)	N.S.	(ref)
Tangible support given to family	**		**		**	
Not too often/ never/never needed/have no family	+	**N.S.**	+	**N.S.**	+	N.S.
Fairly often	**N.S.**	**	**N.S.**	+	N.S.	N.S.
Very often	*	**(ref)**	*	**(ref)**	*	(ref)
Tangible support received*given to family *(ref=equal, high)*						
Equal giving/receiving (some)	**N.S.**	***	**N.S.**	*	**N.S.**	**N.S.**
Equal giving/receiving (rare)	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**
You help more	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	*
Family helps more	+	**N.S.**	+	*	+	**N.S.**
Perceived tangible support (# family members could help out)[d]	+		+		+	
0-5 family members	+	*	+	***	+	**
6-10 family members	**N.S.**	**	**N.S.**	**N.S.**	**N.S.**	+
More than 10 family members	+	**(ref)**	+	**(ref)**	+	**(ref)**
Closeness to family	N.S.		N.S.		N.S.	
Not too close/not close at all	N.S.	**	N.S.	***	N.S.	***
Fairly close	N.S.	*	N.S.	***	N.S.	***
Very close	N.S.	(ref)	N.S.	(ref)	N.S.	(ref)
Freq. of family interaction	+		+		+	
Rarely	N.S.	N.S.	**N.S.**	*	**N.S.**	**
About monthly	N.S.	N.S.	**N.S.**	***	**N.S.**	*
About weekly	**	N.S.	**	**N.S.**	**	**N.S.**
Nearly every day	*	(ref)	*	**(ref)**	*	**(ref)**
Emotional support (1/low-3/high)[d]	N.S.	N.S.	N.S.	***	N.S.	***
Emotional strain (1/low-3/high)[d]	***	***	***	***	***	***
Family support*strain	N.S.	N.S.	N.S.	*	N.S.	N.S.

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Steps based on Baron & Kenny's (1986) causal steps approach. Step 1 tests whether race predicts the mental health outcomes. Step 2 tests whether race predicts the various social tie measures. Step 3 tests whether the various social ties predict mental health. Each step is net of all controls.

Table 2.4A. Odds Ratios from Mediation Models for Any DSM Mood or Anxiety Disorder and Family Relationships, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Tangible Support Given (Family)	Balanced Tangible Support (Family)	Perceived Tangible Support (Family)	Family Strain	All
Black	0.67*	0.67*	0.66**	0.65*	0.60**	0.59**
Tangible support given *(ref=very often)*						
Not too often		1.03				0.96
Fairly often		0.82*				0.90
Balanced tangible support *(ref: equal, high)*						
Equal giving/receiving (some)			0.60***			0.71
Equal giving/receiving (rare)			0.79			0.91
You help more			0.93			1.10
Family helps more			1.15			1.40
Perceived tangible support *(ref=more than 10)*						
0-5 family members				1.54*		1.34
6-10 family members				1.75**		1.77**
Emotional strain from family (1/low-3/high)[d]					2.45***	2.47***

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education and total household income).

Table 2.4B. Unstandardized Regression Coefficients from Mediation Models for CES-D Depressive Symptoms and Family Relationships, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Tangible Support Given (Family)	Balanced Tangible Support (Family)	Perceived Tangible Support (Family)	Freq. of Family Interaction	Family Strain	All
Black	-0.24***	-0.24***	-0.24***	-0.25***	-0.24***	-0.26***	-0.26***
Tangible support given *(ref=very often)*							
Not too often		0.02					-0.02
Fairly often		0.02					0.02
Balanced tangible support *(ref: equal, high)*							
Equal giving/receiving (some)			-0.06*				-0.06
Equal giving/receiving (rare)			-0.02				-0.04
You help more			-0.05				-0.03
Family helps more			0.20*				0.15+
Perceived tangible support *(ref= more than 10)*							
0-5 family members				0.14***			0.09*
6-10 family members				-0.001			-0.01**
Freq. of family interaction *(ref=nearly every day)*							
Rarely					0.16*		0.13+
About monthly					0.17***		0.15**
About weekly					0.03		0.03
Emotional strain from family (1/low-3/high)[d]						0.23***	0.21***

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education and total household income).

Table 2.4C. Odds Ratios from Mediation Models for Self-Rated Mental Health (Ordinal Logistic Regression) and Family Relationships, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Balanced Tangible Support (Family)	Perceived Tangible Support (Family)	Freq. of Family Interaction	Family Strain	All
Black	0.75*	0.75*	0.73*	0.75+	0.72*	0.71*
Balanced tangible support *(ref: equal, high)*						
Equal giving/receiving (some)		1.11				1.16
Equal giving/receiving (rare)		1.18				1.11
You help more		1.37*				1.36+
Family helps more		1.56				1.50
Perceived tangible support (ref=>10)						
0-5 family members			0.85			1.43*
6-10 family members			0.71			1.31+
Freq. of family interaction *(ref=nearly every day)*						
Rarely				1.85**		1.67**
About monthly				1.37*		1.22+
About weekly				1.09		1.04
Emotional strain from family (1/low-3/high)[d]					1.69***	1.70***

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education, total household income).

Appendix 2A. Correlation Matrix for Family Relationships, 2001-2003 National Survey of American Life[a,b,c]

	Tangible Support Received (Family)	Tangible Support Given (Family)	Perceived Tangible Support (Family)	Freq. of Family Interaction	Subjective Family Closeness	Family Support	Family Strain
Tangible Support Received (Family)	1.00						
Tangible Support Given (Family)	0.44***	1.00					
Perceived Tangible Support (Family)	0.25***	0.14***	1.00				
Freq. of Family Interaction	0.24***	0.25***	0.25***	1.00			
Subjective Family Closeness	0.30***	0.21***	0.33***	0.36***	1.00		
Family Support	0.40***	0.23***	0.34***	0.35***	0.57***	1.00	
Family Strain	-0.03	0.15***	-0.14***	-0.01***	-0.20***	-0.17***	1.00
N	4,362	4,360	4,313	4,361	4,360	4,360	4,361
MEAN	1.88	2.24	2.58	3.24	2.63	2.31	1.29
SD	0.84	0.77	0.82	0.91	0.61	0.63	0.50

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Values in the table represent Pearson's r correlation coefficients. Sample size (based on whites and U.S.-born blacks with complete data on all variables) varies between n=4,271 and n=4,367.

Appendix 2B: Patterns of Missing Data for Whites and U.S.-born Blacks, 2001-2003 National Survey of American Life

	Among all Whites and U.S.-born Blacks (n=4,834)			Among Whites and U.S.-born Blacks With Complete Data on Mental Health Outcomes (n=4,367)		
	# Valid Cases	Missing Cases	% Missing	# Valid Cases	Missing Cases	% Missing
Outcomes						
Any DSM mood disorder	4,834	0	0.0%	4,367	0	0.0%
Any DSM anxiety disorder	4,834	0	0.0%	4,367	0	0.0%
Any DSM mood or anxiety disorder	4,834	0	0.0%	4,367	0	0.0%
CES-D depressive symptoms	4,381	453	9.4%	4,367	0	0.0%
Self-Rated Mental Health	4,673	161	3.3%	4,365	2	0.0%
Demographics						
Race	4,834	0	0.0%	4,367	0	0.0%
Gender	4,834	0	0.0%	4,367	0	0.0%
Age	4,834	0	0.0%	4,367	0	0.0%
Marital Status	4,824	10	0.2%	4,367	0	0.0%
Self-Rated Physical Health	4,675	159	3.3%	4,367	0	0.0%
# of Children in Household	4,834	0	0.0%	4,367	0	0.0%
# of Adults in Household	4,834	0	0.0%	4,367	0	0.0%
Region	4,834	0	0.0%	4,367	0	0.0%
Education	4,834	0	0.0%	4,367	0	0.0%
Household Income	4,834	0	0.0%	4,367	0	0.0%
Family Relationships						
Tangible Support Received	4,816	18	0.4%	4,362	5	0.1%
Tangible Support Given	4,814	20	0.4%	4,360	7	0.2%
Perceived Tangible Support	4,760	74	1.5%	4,313	54	1.2%
Freq. of Interaction	4,814	20	0.4%	4,361	6	0.1%
Subjective Closeness	4,812	22	0.5%	4,360	7	0.2%
Support	4,812	22	0.5%	4,360	7	0.2%
Strain	4,813	21	0.4%	4,361	6	0.1%

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CHAPTER 3 - RELATIONSHIPS OF CHOICE:

CAN FRIENDSHIPS OR FICTIVE KINSHIPS

EXPLAIN THE RACE PARADOX IN MENTAL HEALTH?

The overwhelming majority of research in the field has found that blacks typically enjoy better mental health outcomes than whites. By far, the strongest and most consistent association has been found for race differences in lifetime and 12-month psychiatric disorders. For example, data from the 1980-1983 Epidemiologic Catchment Area study (Zhang and Snowden 1999), the 1990-1992 National Comorbidity Survey (Kessler, McGonagle, Zhao, et al. 1994; Breslau, Kendler, Su, et al. 2005), the 2001-2003 National Comorbidity Survey Replication (Breslau, Aguilar-Gaxiola, Kendler, et al. 2006), and the 2001-2003 National Survey of American Life (Williams, Gonzalez, Neighbors, et al. 2007) all found that blacks have lower rates than whites for the vast majority of psychiatric disorders.

Although less consistent conclusions have been found for psychological distress (Vega and Rumbaut 1991; Williams, Yu, Jackson, et al. 1997; Bratter and Eschbach 2005) and psychological well-being (Williams et al. 1997; Ryff, Keyes, and Hughes 2003), the bulk of the evidence finds the blacks have better mental health outcomes than whites. Collectively, these findings are referred to as "the race paradox in mental health" because they are counterintuitive based on blacks' historically lower social and economic standing and greater exposure to discrimination (relative to whites) in the United States.

SOCIAL SUPPORT AND STRAIN

Countless studies have found that social relationships are associated with beneficial mental health outcomes (e.g., Bertera 2005; Kawachi and Berkman 2001). Social causation and social selection are two primary models for explaining these associations (Turner 1999). The social causation model proposes that positive social relationships cause better mental health outcomes for two reasons. First, they fulfill a fundamental human need for attachment to others. Social relationships also facilitate the exchange of various aspects of social support. Social causation theory has two different strands. The direct influence argument posits that social support directly affects health outcomes (even in the absence of acute or chronic stress) while the buffering argument proposes that the quality of social relationships operates as a coping mechanism to help individuals in times of stress through the provision of emotional and/or instrumental (i.e., tangible) support. However, there is general consensus within the field that both mechanisms can operate either alone or in concert (Turner 1999).

Countering the idea that social relationships cause mental health outcomes, the social selection model is a classic example of reverse causation. Social selection proposes that mental health can structure the quantity and quality of social relationships. The positive association between quality of social ties and mental health is because those who are mentally ill are less likely than those of sound mental health to secure and maintain quality social relationships. It is equally plausible that those exhibiting mental health problems may receive more support than those who are not experiencing symptoms. Finally, the overall body of evidence suggests that perceived levels of support have a stronger effect on mental health outcomes than objective characteristics such as network size and structure (Wethington and Kessler 1986; Turner 1999).

Past literature has overwhelmingly paid attention to the positive aspects of social relationships. Nonetheless, interest in the negative characteristics of social relationships has grown substantially in recent years. Some scholars have found that both emotional support and emotional strain exert independent influences on health (Gray and Keith 2003; Bertera 2005), while others have concluded that the health-damaging effects of emotional strain exceeded the health-enhancing effects of emotional support, primarily among married couples (Lincoln 2000; Rook 2001; Newsom, Masami, Morgan, et al. 2003; Newsom, Rook, Nishishiba, et al. 2005). As a whole, past work suggests the importance of assessing both perceived and objective support in addition to the positive and negative characteristics of social relationships.

FRIENDSHIPS AND FICTIVE KINSHIP: RELATIONSHIPS OF CHOICE

Relative to family relationships, friendships and fictive kinships receive relatively little attention in the literature but they are important to consider for two reasons. First, they both exemplify what past research calls "intentional families" (Muraco 2006), a concept often used to explain the formation of social relationships among gays and lesbians (Oswald 2002). Some have suggested that social relationships of choice offer more benefits than family relationships because they are voluntary, more likely to be created among like-minded individuals, and can be exited with less censure than family relationships (Rawlins, 2004; Blieszner 2009; Zettel-Watson and Rook 2009). Therefore, the negative, distressing aspects of these relationships can be avoided more readily than is the case with family relationships. This characteristic which may therefore enhance the mental health benefits of these types of social relationships, relative to family

relationships. Second, fictive kin relationships are more prevalent among blacks than whites (Chatters, Taylor, and Jayakody 1994), which highlights this relationship as a potential mediator of the race paradox in mental health.

There are conflicting viewpoints regarding the association between friendships and family relationships. Some suggest a competing relationship such that more frequent family contact is inversely associated with less frequency contact with friends (and vice versa). Others suggest a more harmonious and compensatory relationship between family relationships and friendships, such that family members are more likely to provide instrumental and financial support and friends are more likely to provide emotional support or fulfill leisurely pursuits (Taylor and Chatters, 1986; Chatters, Jackson, and Taylor 1997; Zettel-Watson and Rook 2009).

A cluster analysis using data from adults aged 60 and older in the Americans' Changing Lives Study found the highest levels of depressive symptoms among those in restricted family-only networks and the fewest depressive symptoms among those in more diverse networks consisting of both family and friends (Fiori, Antonucci, and Cortina 2006), consistent with earlier findings (Litwin 2001). These findings are also consistent with theoretical work suggesting that friendships are less stressful than family relationships because they are relationships of choice and flexible arrangements that can be entered and exited as members choose. Because friends also tend to share similar values, they can rely on each other for emotional support and assistance when experiencing conflict in other relationships, which are generally family-based.

A similar study examined the role of kin and non-kin networks for the provision of informal emotional support among a subsample of NSBA respondents who reported

having a serious personal problem (Taylor, Hardison, and Chatters 1997). The use of non-kin helpers (friend, neighbor, and co-worker) was more common among those who were currently unmarried (vs. currently married), those with less frequent contact with their family, those with less education, those who live in the Northeast (relative to the South), those with an interpersonal problem (vs. physical health problem), and those who reported having a best friend. These findings are consonant with the hierarchical compensatory model, which suggests that people first seek support from family (i.e., spouse and children) and will turn to friends when family support is not available (Cantor 1979). This phenomenon is paramount to consider when examining race differences in support because blacks are far less likely than whites to become and remain married (U.S. Census Bureau 2004), which would suggest their higher likelihood of engaging in non-family support networks, relative to whites. Indeed, past research finds that blacks are more likely than whites to report a non-spousal confidant (Kiecolt, Hughes, and Keith 2008).

Ellison (1990) found that none of the friendship measures (number of friends, frequency of contact with friends, and the presence of the best friend) were significant predictors of life satisfaction among NSBA blacks in multivariate models. However, all three of these measures showed slight positive associations with personal happiness. In another NSBA analysis, only one significant friendship measure emerged; number of friends was positively associated with personal happiness (Taylor, Chatters, Hardison et al. 2001). Overall, the results from NSBA data find friendships to be an important predictor of mental health among blacks, but not as predictive as family relationships.

However, to the best of my knowledge, no past research has investigated race differences in patterns of friend interaction and support.

Fictive Kin

Fictive kin are individuals who are not related to others either through blood or marriage but who are nevertheless regarded as kin members. These relationships are a hybrid of two commonly studied social relationships - family relationships and friendships – that lie on a continuum between both relationships in terms of obligation, emotional rewards, and permanence. Incorporating fictive kin into a family network widens not only the range of individuals available to help but also the diversity of the types of support available. An analysis of the demographic correlates of having any fictive kinship relationship conducted using NSBA data found that almost 2/3 of the sample had initiated a fictive kin relationship (Chatters et al. 1994). These findings are consistent with Stack (1974/1983), who also found strong fictive relationships among black families in The Flats. Moreover, the odds of fictive kin relationships were higher among women, younger adults, those with higher education, and those who lived in the south (vs. the Northeast) (Chatters et al.1994).

METHODS

I used nationally representative, secondary data from the 2001-2003 National Survey of American Life (NSAL), a cross-sectional survey conducted by the University of Michigan Program for Research on Black Americans. The NSAL is one of three studies that comprise the Collaborative Psychiatric Epidemiology Surveys funded by the

National Institute of Mental Health. Building on the strengths of NSBA, NSAL was designed to explore racial and ethnic differences in mental disorders, psychological distress, and informal and formal service use as well as a variety of presumed risk and protective factors (Heeringa, Wagner, Torres, et al. 2004).

The core sample of the NSAL was based on a multi-stage national probability sample of African-American households (with at least one Black adult aged 18 and older who did not self-identify as Afro-Caribbean) in the 48 contiguous states of the United States. The four stage sampling process included a primary stage sampling of US Metropolitan Statistical Areas (MSAs) and counties, a second stage sampling of area segments, a third stage sampling of housing units within the selected area segments, and finally, random selection of eligible respondents from the sample housing units.

A unique feature of the NSAL (versus the other CPES surveys) was that African Americans and Afro-Caribbeans were oversampled within area segments. English-speaking respondents were drawn from Census blocks that had African American populations of at least 10%, based on the 1990 Census. After identifying a sample housing unit, the interviewer conducted a short screening questionnaire with a knowledgeable adult to determine whether the household met the eligibility criteria of the study. If so, a respondent was randomly selected to complete the study interview.

Data were primarily collected using face-to-face interviews via computer-assisted instruments. Post-stratification weights were used to adjust the sample to the demographic characteristics of the U.S. population. The overall response rate was 72%. The high response rate can be partially attributed to the fact that NSAL interviewers were matched to the race/ethnicity of the respondents.

OUTCOMES

I considered three mental health outcomes. The first outcome was based on diagnostic categories from the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). I examined a composite measure of any DSM mood disorder (major depressive disorder with hierarchy;[5] major depressive episode; dysthymia; dysthymia with hierarchy; mania; hypomania; bipolar I; bipolar II; or bipolar sub-threshold) or any DSM anxiety disorder (generalized anxiety disorder; generalized anxiety disorder with hierarchy; panic attack; panic disorder; social phobia; agoraphobia without panic disorder; agoraphobia with panic disorder) in the past 12 months.[6] A similar approach was used by Kiecolt, Hughes, and Keith (2008), who examined any DSM substance use disorder and any DSM disorder among whites and blacks in the 1990-1992 National Comorbidity Survey. Because of small sample sizes in some of the less common disorders, a respondent was categorized as having any disorder ("1") if they met the criteria for any of the disorders of these disorders and coded as "0" if they did not meet the criteria for any disorders.

To complement to the clinical psychiatric disorder indicator, I used two outcomes that tap common indicators of distress. Depressive symptoms were measured using the 12-item version of the Center for Epidemiologic Studies for Depression (CES-D) scale, which asked respondents how often in the past week they experienced the following symptoms: felt depressed; had crying spells; felt hopeful about the future; felt [I] was just

[5] The "hierarchy" rule requires that the symptoms not occur during a higher-order diagnosis. For example, to meet the criteria for generalized anxiety disorder with hierarchy, symptoms must not occur during a depressive episode or another mood disorder, which are considered higher-order diagnoses. The goal of this definition is to avoid dual diagnosis for those conditions whose symptoms tend to overlap.

[6] The following disorders were not considered because they were only asked of African Americans: substance use/abuse disorders, post-traumatic stress disorder, all eating disorders, conduct disorder, and ADHD.

as good as other people; was happy; enjoyed life; had trouble keeping [my] mind on what [I] was doing; [my] sleep was restless; people were unfriendly; felt people disliked [me]; felt everything [I] did was an effort; and could not get "going." There were four potential response categories for each item, including 0=rarely/none of the time/less than one day; 1=some/little of the time/1-2 days; 2=occasionally/moderate amount of time; and 3=most/all of the time/5-7 days. I reverse-coded four of these scale items (felt helpful about the future, felt just as good as other people, was happy, and enjoyed life) so that higher values corresponded with more frequent depressive symptoms. I subsequently created a scale of depressive symptoms based on the average of the answered items, resulting in a scale ranging from 0/low through 3/high. The reliability for the depressive symptom scale was 0.77. Finally, self-rated mental health was initially measured using five categories for excellent, very good, good, fair, and poor. Because of small cell sizes, I collapsed "poor" and "fair" into one category for "poor/fair" and coded this variable so that higher values indicated less favorable self-rated mental health.

INDEPENDENT VARIABLES

Race was originally measured using four categories for African American, Afro-Caribbean, non-Hispanic white, and Hispanic/Latino. For the purposes of this project, I focused only on those who self-identified as African American (n=3,570), Afro-Caribbean but born in the United States (n=373), and non-Hispanic white (n=891). I excluded Afro-Caribbeans who were born outside the U.S. (n=1,065) due to the unique experiences of immigration and acculturation. I also excluded Hispanics/Latinos due to their small sample size (n=183) and because the largest and most consistent paradoxes in

mental health are found between blacks and whites. Age was measured in years and gender was measured using a dummy variable for male.

Potential Mediators: Friendships and Fictive Kin Relationships

In order to explain the race paradox in mental health, I considered five potential mediators for friendships and two potential mediators for fictive kin. I selected this group of mediators based on the work by House and colleagues (1988), which proposes that social support operates primarily as a mediating mechanism on health.

I first considered three measures of tangible support for friendships. Tangible support received was measured using the question, "How often do your friends help you out?" and included categories for very often, fairly often, not too often, and never. There were two voluntary categories for "never needed help" and "I have no friends." Tangible support given was measured using the question, "How often do you help out your friends?," and used the same five original categories. I collapsed both of these measures into three categories for very often, fairly often, and not too often/never/never needed help/have no friends. The inclusion of those with no friends into the lowest support category (n=108) is consistent with Sarkisian's approach (2007). In addition to examining the main effects of the provision and receipt of tangible support among friends, I calculated four interaction terms for support given*support received, using the reference category of "very often" for both measures. I refer to this measure as balanced tangible support.

To complement the tangible support measures, I included one measure of emotional support for friendships. Subjective closeness was measured using the survey

question, "How close do you feel towards your friends?" and included categories for very close, fairly close, not too close, and not close at all. I collapsed the latter two categories into "not too close/not close at all" and reverse-coded the variable so that higher values indicated higher levels of subjective closeness. The fifth and final potential mediator for friendships was frequency of interaction, measured using the survey question, "How often do you see, write, or talk on the telephone with your friends?" This measure included categories for nearly every day (1), at least once a week (2), a few times a month (3), at least once a month (4), a few times a year (5), hardly ever (6), or never (7). I collapsed this variable into four categories for rare interaction (a few times a year, hardly ever, or never), monthly interaction (a few times a month or at least once a month), weekly interaction (at least once a week), and daily interaction (nearly every day). I controlled for frequency of interaction because blacks have more frequent interaction with members of their social networks than whites (Ajrouch, Antonucci, and Janevic 2001) and because frequency of contact is generally positively associated with mental health (Lin and Peek 1999).

In addition to the five potential mediators for friendships, I considered two measures for fictive kin. Number of fictive kin was measured using an open-ended survey question for, "How many people are close to your family who are not really blood or marriage related but who are treated just like a relative?" I recoded this measure into categories for having no fictive kin, 1-5 fictive kin, 6-10 fictive kin, and more than 10 fictive kin. Tangible support received from fictive kin was measured with the survey question, "How often [does that person/do they] help you out?" and initially included four categories for very often, fairly often, not too often, never, and a voluntary category for

never needed help. I recoded this measure into three categories for not too often/never/never needed help, fairly often, and very often. Those who reported having no fictive kin were coded into the category for not too often/never/never needed help.

Other Controls

I controlled for marital status because of its documented protective effect on mental health (Waite 1995; Waite and Gallagher 2000) and because blacks are less likely than whites to be married (U.S. Census Bureau 2004). Moreover, blacks are more likely to have poor marital quality than whites (Broman 1993; Goodwin 2003; Broman 2005). Marital status was originally measured using three categories for married/cohabiting, divorced/separated/widowed, or never married. It was not possible to disaggregate the married/cohabiting category without using the restricted NSAL data. I added an additional category for "partnered" for those who were either never married or formerly married (i.e., divorced, separated, or widowed) but reported a current romantic involvement. Therefore, I used the following categories for marital status: married/cohabiting, divorced/separated/widowed, never married, or partnered. I chose this operationalization in light of recent studies that show that the formation of new marital or cohabiting unions either partially attenuates (Willits, Benzeval, and Stansfeld 2004) or completely eliminates (Blekesaune 2008) the association between prior partnership dissolution and higher psychological distress.

Self-rated health was initially measured on a five-point scale for excellent, very good, good, fair, or poor. I subsequently recoded this measure into a dummy variable for "favorable physical health," with "1" indicating excellent, very good, or good health and

"0" indicating fair or poor health. It was important to control for physical health because of its strong correlation with mental health (Schnittker 2005) and because blacks have worse physical health than whites (Read and Gorman 2006; Williams 2005). Number of children living in the household (aged 17 and younger) and number of adults living in the household were measured continuously and top-coded at six. I included this measure due to past findings that parents generally had significantly more depressive symptoms than non-parents (Evenson and Simon 2005) and because blacks historically display higher fertility rates than whites (Centers for Disease Control and Prevention 2009).

It was important to include measures of social class because high SES is strongly associated with mental health (Eaton and Muntaner 1999; Yu and Williams 1999) and because blacks have lower socioeconomic status on average than whites (Census 2009). Education was measured using four categories for less than high school, high school graduate, some college, and college graduate or more. Household income was originally measured in dollars and top-coded at $200,000; I subsequently transformed this variable using a started logarithm (+$1,000) to reduce skew. Region was measured using categories for Northeast, Midwest, West, and South. Consistent with the approach used by Roschelle (1997), I included region as a covariate in recognition of past research finding stronger feelings of filial responsibility among families in the South, relative to other regions (Burr and Mutchler 1999).

ANALYTIC STRATEGY

The first step of the analysis was to run descriptive and bivariate statistics to describe the analytic sample. To assess potential mediators, I followed the detailed

causal steps approach outlined in Baron and Kenny's classic paper (1986). Four criteria must be satisfied for a variable to qualify as a potential mediator. First, the key predictor (race) should predict the outcome (mental health), net of all controls. This step tests the race paradox in mental health. Second, the key predictor (race) should predict the potential mediator (friendships/fictive kin), net of all controls. Third, the potential mediator (friendships/fictive kin) should predict the outcome (mental health), net of all controls. After meeting these criteria, the mediator should be entered into the full regression model and either completely or partially explain the association between the predictor (race) and the outcome (mental health).

I considered five potential mediators for friendships: 1) tangible support received; 2) tangible support given; 3) balanced tangible support (interaction terms for tangible support received* tangible support given); 4) subjective closeness; and 5) frequency of interaction. A correlation matrix of these measures can be found in Appendix 3A. I found moderate correlations between the friendship support measures. The highest correlation was found for tangible support given and received (r=0.69). However, all variance inflation factors were below 2.5 and all tolerance values exceeded 0.40; based on standard criteria, these correlations did not create any multicollinearity issues (Allison 1999). Race was the key predictor in all mediation analyses.

To assess the first criterion that the key independent variable predict the outcome, I estimated multivariate binary logistic regression models (predicting any DSM mood/anxiety disorder), a multivariate ordinary least squares (OLS) regression model predicting depressive symptoms, and an ordinal logistic regression model predicting self-rated mental health. All coefficients in this stage represent the predictive power of race

(1=non-Hispanic black, 0=non-Hispanic white) on mental health, net of all controls. To assess the second criterion that the key predictor (race) predict the potential mediator, I estimated the following set of models: 1) multivariate ordinal logistic regression models predicting receipt of tangible support from friends/fictive kin, provision of tangible support to friends/fictive kin, subjective closeness to friends/fictive kin, frequency of interaction among friends/fictive kin, and number of fictive kin; and 2) one multivariate multinomial logistic regression model predicting balanced tangible support among friends/fictive kin. The coefficients in this stage represent the predictive power of race on the potential mediators, net of all controls. To assess the third criterion that the potential mediator predict the outcome, I conducted multivariate binary logistic regression predicting any mood/anxiety disorder, multivariate OLS regression predicting frequency of depressive symptoms, and multivariate ordinal logistic regression predicting self-rated mental health. The coefficients in this stage represent the predictive power of friendships and fictive kin relationships on mental health, net of all controls.

The final step of the analysis plan tested each of the potential mediators in full models, both independently and simultaneously. I conducted multivariate binary logistic regression models to predict the odds of any mood/disorder in the past 12 months. I also conducted multivariate ordinary least squares regression models to predict frequency of CES-D symptoms in the past 30 days and multivariate ordinary logistic regression models to test self-rated mental health. In addition to testing race differences, all multivariate models include controls for gender, age, marital status, self-rated physical health, household structure (number of adults and number of children aged 17 and younger), region, and SES (education, total household income). All analyses adjusted for

the complex sampling design using the provided sampling weights (which included post-stratification adjustments) and the survey estimation procedures in Stata 11.0 (StataCorp 2009).

NSAL initially consisted of 4,834 non-Hispanic whites and blacks. However, 3.3% of cases (n=161) were missing data for self-rated mental health, and 9.4% of cases (n=453) were missing data for CES-D depressive symptoms. There were no missing cases for any DSM mood/anxiety disorder. Excluding cases listwise would have eliminated 224 potential cases (5% of the eligible sample); therefore, I conducted multiple imputation procedures using ICE commands in Stata 11.0 to impute missing values on all covariates.[7] Notably, I did not impute missing values for any of the mental health outcomes; cases were excluded if they were missing data on any outcome. Therefore, the final analytic sample consisted of 4,367 NSAL participants (586 whites and 3,781 blacks) with complete data on all outcome measures. More detailed information on missing data patterns can be found in Appendix 3A. For all analyses, I adjusted for the complex sampling design using the survey estimation procedures in Stata 11.0 (StataCorp 2009).

RESULTS

Table 3.1 displays the unweighted demographic characteristics of the analytic sample. I used inferential statistics (chi-square and independent sample *t*-tests) to test for bivariate race differences, both on the overall variable and separately for each category of the variable, where appropriate. Roughly 43% of respondents were men, with no race

[7] The following variables had no missing values and were therefore not imputed: race, gender, age, household structure, region, education, and income.

differences found. This is important because black men are generally underrepresented in data collection efforts. The mean age of the sample was 43, though blacks were roughly four years younger than whites ($p<.05$). Relative to whites, fewer blacks were married/cohabiting but significantly higher proportions of blacks were coupled. Roughly 81% of the sample reported being in favorable self-rated health, with no race differences found for this measure of health status. African Americans reported significantly more children under age 18 ($p<.01$) and more adults ($p<.05$) in the household. In terms of geographic location, blacks were more likely to live in the Midwest ($p<.001$) while whites were slightly more likely to live in the West ($p<.10$). Whites were considerably more educated than blacks; for example, whites (32%) were more than twice as likely as blacks (15%) to have a college degree ($p<.001$). Likewise, whites had significantly higher average household income than blacks ($46,778 vs. $36,551, respectively, $p<.01$).

I assessed the comparability of the NSAL analytic sample (unadjusted) and the U.S. population on three key sociodemographic measures - marital status (U.S. Census Bureau 2004), educational attainment (U.S. Census Bureau 2009), and income (U.S. Census Bureau 2005). Compared to the proportion of those married in the NSAL and the Census, similar proportions of white men (58% and 60%, respectively), black men (43% vs. 40%, respectively) and black women (30% and 29%, respectively) were currently married. Larger departures were found among white women in NSAL relative to the Census (43% vs. 55%, respectively). It is important to note, however, that the NSAL collapsed categories for married and cohabiting and so it was impossible to disaggregate this category without access to the restricted data.

The socioeconomic status of both whites and blacks in NSAL was lower than Census estimates. For example, 91% of whites in the Census earned at least a high school diploma, compared to 83% of whites in NSAL. Roughly 82% of blacks in the Census earned at least a high school diploma, compared to 75% of NSAL participants. Similarly, mean household income among NSAL respondents was lower than national estimates. On average, white NSAL respondents had total household incomes of $43,650, compared to Census estimates of $60,478. The average household income of black NSAL respondents was also lower than national estimates ($32,897 vs. $39,877, respectively). The relatively low socioeconomic standing of NSAL respondents, as compared to Census estimates, can be explained by the sample design of NSAL, which only drew respondents from Census tracks with at least 10% African American populations.

Table 3.1 also displays descriptive statistics of the mental health outcomes, including bivariate tests of race differences. Approximately 8% of the sample was classified as having any mood disorder, 14% was classified as having any anxiety disorder, and 18% had any mood or anxiety disorder. Although there were no significant race differences on the two separate measures for any mood disorder and any anxiety disorder, blacks were slightly less likely to have had any mood or anxiety disorder in the past 12 months ($p<.10$). Blacks had significantly fewer depressive symptoms in the past 30 days than whites ($p<.001$) and were significantly more likely than whites to report excellent self-rated mental health (31% vs. 22%, respectively; $p<.001$). The bivariate patterns for the mental health outcomes were consistent with the race paradox in mental health.

Friendship and Fictive Kin Characteristics

A summary of univariate/bivariate statistics for friendship and fictive kin relationship characteristics are also displayed in Table 3.1. Whites typically received more frequent tangible support from their friends than blacks. For example, 37% of whites and 28% of blacks reported receiving help from their friends fairly often ($p<.01$). More than half of blacks (53%) and 37% of whites either reported having no friends or received help from their friends rarely ($p<.01$). Similar patterns were found for tangible support given to friends. Almost one-third of whites (33%) and 40% of blacks reported providing help rarely, while 45% of whites and 35% of blacks reported providing help fairly often. Race differences in the frequency of friend interaction were found among the lowest support group; 8% of whites and 14% of blacks reported interacting with their friends rarely. Finally, there was only a slight race difference found for subjective closeness, indicating that blacks reported slightly lower subjective closeness to their friends than whites.

Race differences in fictive kin relationships were also found. As expected, whites were significantly less likely than blacks to report having fictive kin. For example, 17% of whites and 9% of blacks reported having no fictive kin. However, blacks were less likely than whites to report receiving help from fictive kin fairly often (29% vs. 35%, $p<.01$), instead showing higher relative proportions of rare support receipt than whites (51% vs. 47%, $p<.05$).

Testing the Race Paradox in Mental Health

Table 3.2 displays coefficients from multivariate logistic regression models predicting any DSM mood/anxiety disorder in the past 12 months, mean CESD-12 depressive symptoms in the past 30 days, and self-rated mental health. In addition to race, all models control for gender, age, marital status, self-rated health, household structure (number of children under 18 and number of adults currently living in the household), region, and SES (education and total household income).

As the first set of columns shows, relative to whites, blacks had 33% lower odds of being diagnosed with any DSM mood or anxiety disorder ($p<.05$). Men had 36% lower odds of having any mood/anxiety disorder than women ($p<.05$); and each additional year of age was associated with a 2% reduction in the odds of any mood/anxiety disorder ($p<.01$). Marital status was marginally predictive of any mood or anxiety disorder; compared to those who were married or cohabiting, those who had experienced marital disruption (OR=1.49, $p<.10$) and those who were coupled (OR=1.28, $p<.10$) had slightly higher odds of any mood or anxiety disorder ($p<.10$). Those who reported favorable physical health had 68% lower odds of any mood/anxiety diagnosis ($p<.001$). Household structure did not significantly predict any DSM mood/anxiety disorder. Those who lived in either the Northeast or the Midwest had 46% higher odds of any mood or anxiety disorder, relative to those who lived in the South ($p<.05$ for both). Although education did not reach statistical significance, increasing household income was associated with slightly lower odds of any DSM mood or disorder ($p<.10$). The race differences found for any mood/anxiety disorder replicate past research showing lower rates of DSM mental disorder among blacks in both the 1990-1992 National Comorbidity

Study (Breslau et al., 2005; Kessler et al., 1994), its 2000-2003 replication (Breslau et al., 2006), and the 2001-2003 National Survey of American Life (Williams et al., 2007).

Contrary to past research (George and Lynch 2003; Gore and Aseltine 2003; Mossakowski 2008), blacks scored significantly lower than whites on the CES-D depressive symptom scale (B=-0.24; $p<.001$). These conflicting findings may reflect NSAL's use of the shortened 12-item CES-D scale. Although the 12-item version used in NSAL included both interpersonal relations items (which are more commonly reported by blacks), it included less than half of the somatic symptoms from the complete 20-item scale, items which are more commonly endorsed among blacks (Iwata, Turner, and Lloyd 2002). Increasing age ($p<.001$) and favorable physical health ($p<.001$) were each strongly associated with less frequent depressive symptoms. Neither measure of household structure significantly predicted CES-D depressive symptoms. Relative to living in the South, living in the Midwest was associated with slightly more frequent depressive symptoms while living in the West was associated with significantly fewer depressive symptoms ($p<.10$). Those with less than a high school education had significantly more depressive symptoms than those with a college degree ($p<.001$) and increasing income was associated with significantly fewer depressive symptoms ($p<.001$). Neither gender nor marital status were significant predictors of depressive symptoms.

Consistent with the race paradox in mental health, I found a protective association (favoring blacks) between race and self-rated mental health. Blacks had 34% higher odds of reporting a better mental health rating than whites ($p<.05$). To the best of my knowledge, this is the first study assessing race differences in self-rated mental health.

Men had 45% higher odds of reporting a better mental health rating than women ($p<.001$), while those who reported favorable physical health had five times higher odds of reporting a better mental health rating than those with fair or good physical health ($p<.001$). Those with less than a high school education had 33% lower odds of reporting a better mental health category than those with a college degree. Age, marital status, household structure, region, and income were not significant predictors of self-rated mental health.

In terms of general patterns across the four mental health outcomes, the following general patterns were observed: 1) men had significantly lower odds of any mood/anxiety disorder and higher odds of better self-rated mental health than women; 2) increasing age was associated with significantly lower odds of all outcomes, with the exception of self-rated mental health; 3) marital status was a weak predictor of any mood/anxiety disorder only; 4) favorable self-rated physical health was strongly and consistently associated with better mental health status; 5) neither measure of household structure significantly predicted any of the mental health outcomes; 6) region was a significant predictor of any DSM mood/anxiety and a weak predictor of depressive symptoms and self-rated mental health; 7) educational attainment was significantly associated with depressive symptoms and self-rated mental health; and 8) household income significantly predicted depressive symptoms and weakly predicted any DSM mood/anxiety disorder. Overall, the multivariate analysis replicated past findings regarding the race paradox in mental health.

MEDIATION ANALYSES

Following the first stage of Baron and Kenny's (1986) the causal steps approach, controlling for all covariates, race significantly predicted any mood/anxiety disorder, depressive symptoms, and self-rated mental health (see Table 2.2). Table 2.3 shows a summary of potential qualifying mediators for family relationships. Net of all controls, step 2 tested the predictive power of race on family relationships and Step 3 tested whether family relationships significantly predicted mental health. After completing the analyses for these steps, three friendship measures (tangible support received, balanced tangible support, and frequency of friend interaction) and one fictive kin measure (number of fictive kin) qualified as potential mediators for any DSM mood/anxiety disorder. Frequency of friend interaction was the only qualifying potential mediator for depressive symptoms. Four potential mediators emerged for friendship and self-rated mental health (tangible support received, tangible support given, balanced tangible support, frequency of friend interaction). Number of fictive kin also emerged as a potential mediator for self-rated mental health.

The final step of the mediation analysis was to enter the potential mediating variable into a multivariate regression model with the full set of controls. I performed this step first for each potential mediator individually and then with all indicators simultaneously. Table 3.4A displays the results from mediation models for any DSM mood/anxiety disorder in the past 12 months. There were four potential mediators for this outcome (tangible support received from friends, balanced tangible support from friends, frequency of friend interaction, and number of fictive kin). In the baseline model, blacks had 33% lower odds of disorder than whites, evidence supporting the race paradox in mental health. Entering tangible support received from friends did not change

the race paradox in mental health; in this step, blacks had 36% lower odds of any mood/anxiety disorder than whites ($p<.01$). The same pattern was found for balanced tangible support, frequency of friend interaction, and number of fictive kin. The inclusion of each of these potential mediators (independently and jointly) failed to explain the race paradox in any DSM mood/anxiety disorder. The mediation results for CES-D depressive symptoms are displayed in Table 3.4B. In the baseline model, blacks scored 0.24 lower than whites on the scale. Including frequency of friend interaction did not appreciably change the magnitude nor statistical significance of the race paradox in mental health.

The mediation results for self-rated mental health can be found in Table 3.4C. The following five variables emerged as potential mediators for this outcome: tangible support given to friends, tangible support given to friends, balanced tangible support among friends, frequency of friend interaction, and number of fictive kin. In the initial model (excluding friendship and fictive kin relationships), blacks had 25% lower odds than whites of reporting a worse mental health category ($p<.05$). Subsequent models that included tangible support received, tangible support given, balanced tangible support, and frequency of friend interaction did nothing to change the race paradox in mental health. The inclusion of number of fictive kin reduced the race paradox to marginal significance; however, this measure accounted for less than 3% of the association between race and self-rated mental health.[8] Finally, in the final model, the race paradox in depressive symptoms persisted even after the inclusion of these five mediators simultaneously.

[8] The percent explained by a potential mediator was calculated by dividing the race coefficient from the full model by the race coefficient for the baseline model and subtracting this value from 1 (i.e., 1 – (0.77/0.75)) = 0.027.

DISCUSSION

This paper began from the premise of understanding whether the quantity and quality of friendships and fictive kin relationships can explain the race paradox in mental health. I first replicated past research on the race paradox, finding fewer depressive symptoms and lower odds of any mood/anxiety disorder and poor self-rated mental health among blacks, relative to whites. Next, I explored the potential for multiple aspects of friendships and fictive kin relationships in explaining this paradox. Bivariate results found that relative to whites, blacks received and provided less tangible support to friends, interacted with friends less frequently, and reported slightly lower levels of subjective closeness to friends. Although blacks were more likely than whites to report any fictive kin, whites reported higher levels of tangible support received from fictive kin.

I found that neither the five aspects of friendships nor the two aspects of fictive kin relationships could explain why blacks had fewer depressive symptoms, better self-rated mental health, and lower rates of any mood/anxiety disorder in the past 12 months, relative to whites. These findings are consistent with a previous analysis that found that the quality of friendships - using measures for emotional support, emotional strain, and frequency of interaction - could not explain why blacks had similar or lower levels of psychological distress and psychiatric disorder (Kiecolt et al. 2008). Although the present analysis used primarily tangible measures of support, I reached the same conclusions, lending more credibility to these findings.

This analysis is limited by a few factors. First, NSAL only had data on two measures of fictive kin relationships. While there were more friendship measures, only

one was based on emotional support. However, as mentioned above, past research found that blacks have lower levels of friendship support than whites; moreover, they reported similar levels of friendship strain. These findings suggest that the inclusion of emotional support measures, had they been available, would have done little to explain the race paradox in mental health. Finally, as with all cross-sectional approaches, reverse causation is a potential concern. It is therefore impossible to determine temporal ordering of friendships and mental health definitively.

If neither family relationships nor relationships of choice can explain the race paradox in mental health, what can? It is plausible that blacks possess other resilience mechanisms that I did not consider here. In the following chapter, I assess whether the quality of social ties with church members can explain the race paradox in mental health. Countering the idea that resilience explains the race paradox in mental health, some scholars have attributed the paradox to the idea that measurement tools used are culturally biased. Most past researchers in this regard have assessed depressive symptoms with the CES-D scale, with some finding that blacks are more likely than whites to endorse the somatic symptoms (e.g., poor appetite, everything is an effort; Iwata et al. 2002), while others have indicated that blacks are more likely endorse interpersonal items (e.g., people were unfriendly to me; Cole 2000; Lee unpublished manuscript; Rosenfield and Smith 2008). Conversely, whites are more likely than blacks to endorse mood symptoms such as feeling lonely or sad (Iwata et al. 2002). Therefore, given the multiple versions of the CES-D scale used in the literature (9-item, 12-item, 15-item), the proportion of items represented on these scales could either refute or support the race paradox in mental health.

Jackson and Knight (2006) suggest another explanation for the race paradox in mental health. They have proposed that blacks are more likely than whites to cope with stress through unhealthy eating habits, which essentially shifts this burden to the realm of physical health. This argument would simultaneously explain the race paradox in mental health and the physical health disadvantage among African Americans in that blacks are less distressed than whites but experience worse physical health outcomes because they engage in unhealthy behaviors to cope with distress. While this idea is innovative, future work must test this idea empirically.

Given recent research finding shrinking friendship networks among Americans (McPherson, Lovin, and Smith 2004), it is imperative that future research look elsewhere for other resilience mechanisms to explain why blacks demonstrate better mental health outcomes than whites. This work would determine whether the race paradox is an objective fact or an artifact of cultural bias in measurement tools.

Table 3.1. Descriptive and Bivariate Statistics of Demographic, Friendship, and Fictive Kin Characteristics by Race, 2001-2003 National Survey of American Life (n=4,367)[a,b,c]

	Whites (n=586)		Blacks (n=3,781)		Total (n=4,367)	
	N	% (or SE)	N	% (or SE)	N	% (or SE)
DEMOGRAPHICS						
Male	96	44.1	567	41.9	1,572	43.2
Mean age*	45.6	(1.68)	41.9	(0.52)	43.4	(0.72)
Marital status						
Married or cohabiting*	308	52.5	1,573	41.6	2,013	46.1
Divorced/separated/widowed	127	21.7	696	18.4	865	19.8
Coupled**	68	11.6	870	23.0	795	18.2
Never married	83	14.2	643	17.0	690	15.8
Favorable self-rated health[d]	488	83.2	3,010	79.6	3,542	81.1
Household structure						
# of children <18[e]**	0.55	(0.08)	0.84	(0.03)	0.72	-0.03
# of adults[e]*	1.88	(0.04)	2.01	(0.03)	1.95	-0.03
Region						
Northeast	138	23.5	639	16.9	856	19.6
Midwest***	42	7.2	654	17.3	572	13.1
South	309	52.8	2,121	56.1	2,389	54.7
West+	97	16.6	367	9.7	550	12.6
Education***						
Less than high school**	87	14.8	911	24.1	882	20.2
High school graduate**	170	29.0	1,410	37.3	1,476	33.8
Some college	144	24.6	911	24.1	1,061	24.3
College graduate or more***	185	31.6	548	14.5	948	21.7
Total household income [e,f]**	46,778	(3,367)	36,551	(1345)	40,834	(1,706)
DSM disorders (12m prevalence)						
Any mood disorder	49	8.4	302	8.0	358	8.2
Any anxiety disorder	84	14.3	495	13.1	594	13.6
Any mood or anxiety disorder+	114	19.4	643	17.0	786	18.0
Mean CESD-12 depressive symptoms, 30 days (0/low-3/high)***	0.74	(0.04)	0.57	(0.02)	0.64	(0.02)
Self-rated mental health+						
Excellent**	128	21.9	1,172	31.0	1,183	27.1
Very good**	248	42.4	1,320	34.9	1,664	38.1
Good	152	25.9	858	22.7	1,052	24.1
Poor/Fair	57	9.8	431	11.4	467	10.7

Table 3.1 (continued)						
	Whites (n=586)		Blacks (n=3,781)		Total (n=4,367)	
	N	% (or SD)	N	% (or SD)	N	% (or SD)
FRIENDSHIPS						
Tangible support received from friends*						
Not too often/never/never needed help/have no friends*	253	43.2	2,015	53.3	2,144	49.1
Fairly often**	219	37.4	1,074	28.4	1,406	32.2
Very often	114	19.4	692	18.3	821	18.8
Tangible support given to friends						
Not too often/never/never needed help/have no friends**	190	32.5	1,505	39.8	1,607	36.8
Fairly often***	264	45.1	1,316	34.8	1,707	39.1
Very often	131	22.4	960	25.4	1,057	24.2
Frequency of interaction with friends						
Rarely*	48	8.2	518	13.7	498	11.4
About monthly	100	17.0	628	16.6	734	16.8
About weekly	202	34.4	1,123	29.7	1,380	31.6
Nearly everyday	237	40.5	1,512	40.0	1,756	40.2
Closeness to friends+						
Not too close/not close at all	64	11.0	484	12.8	528	12.1
Fairly close	237	40.4	1,596	42.2	1,808	41.4
Very close	284	48.5	1,701	45.0	2,031	46.5

Table 3.1 (continued)

	Whites (n=586)		Blacks (n=3,781)		Total (n=4,367)	
	N	% (or SD)	N	% (or SD)	N	% (or SD)
FICTIVE KIN RELATIONSHIPS						
# of fictive kin**						
0 fictive kin***	101	17.2	344	9.1	546	12.5
1-5 fictive kin	286	48.8	1,936	51.2	2,201	50.4
6-10 fictive kin	113	19.2	851	22.5	921	21.1
More than 10 fictive kin	84	14.4	650	17.2	699	16.0
Tangible support received from fictive kin						
Not too often/never/never needed help*	275	47.0	1,940	51.3	2,162	49.5
Fairly often**	200	34.1	1,085	28.7	1,354	31.0
Very often	110	18.8	756	20.0	852	19.5
N	4,367					

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size is based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367), Multiple imputation was used for cases missing values on other measures. Data are adjusted for multiple imputation and complex survey design.

[b] Asterisks represent bivariate race differences (both overall and separately for each category, where appropriate).

[c] "Favorable" refers to excellent, very good, or good physical health (vs. fair or poor).

[d] Total raw household income is displayed. Started logarithms (+$1,000) were used in subsequent analyses.

Table 3.2. Results from Multivariate Binary Logistic Regression Models (Any DSM Mood Disorder, Any DSM Mood or Anxiety DSM Disorder), Ordinary Least Squares Regression Models (CESD-12 Depressive Symptoms), and Ordinal Logistic Regression Models (Self-Rated Mental Health), 2001-2003 National Survey of American Life (n=4,367)[a]

	Any DSM Mood or Anxiety Disorder		CES-D Depressive Symptoms		Self-Rated Mental Health	
	OR	95% CI	B	S.E.	OR	95% CI
Black	0.67*	(0.49, 0.92)	-0.24***	0.04	0.75*	(0.56, 0.99)
Male	0.64*	(0.42, 0.98)	-0.03	0.03	0.69***	(0.57, 0.83)
Age	0.98**	(0.97, 0.99)	-0.005**	0.001	1.01	(1.00, 1.01)
Marital status *(ref=married/ cohabiting)*						
Div/sep/wid	1.49+	(0.97, 2.30)	-0.01	0.04	1.26	(0.87, 1.81)
Coupled	1.28+	(0.98, 1.68)	0.04	0.04	1.10	(0.90, 1.35)
Never married	1.02	(0.60, 1.72)	0.01	0.04	1.26	(0.93, 1.73)
Favorable self-rated health[b]	0.32***	(0.23, 0.46)	-0.30***	0.03	0.19***	(0.15, 0.25)
Household structure						
# of children <18	1.05	(0.92, 1.20)	-0.0003	0.01	0.95	(0.84, 1.08)
# of adults	0.92	(0.70, 1.08)	0.00	0.02	1.00	(0.85, 1.17)
Region *(ref=South)*						
Northeast	1.46*	(1.01, 2.11)	0.08	0.05	1.23+	(0.97, 1.55)
Midwest	1.46*	(1.00, 2.14)	0.05+	0.03	1.17	(0.92, 1.49)
West	0.88	(0.56, 1.39)	-0.07*	0.03	1.05	(0.62, 1.78)
Education *(ref=college grad)*						
< high school	1.11	(0.72, 1.73)	0.18***	0.05	1.49*	(1.10, 2.02)
High school graduate	1.10	(0.71, 1.70)	0.06	0.04	1.04	(0.78, 1.40)
Some college	0.89	(0.61, 1.28)	0.03	0.04	0.96	(0.77, 1.19)
Total household income (started log, +$1,000)	0.85+	(0.71, 1.02)	-0.07***	0.02	1.03	(0.84, 1.28)
Adjusted R^2						

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] Self-rated physical health was measured using a dummy variable for excellent/very good/good (1) vs. fair/poor (0).

Table 3.3. Summary of Qualifying Potential Mediators for Friendships and Fictive Kin Relationships, 2001-2003 National Survey of American Life (n=4,367)[a,b,c,d]

	Any DSM Mood/Anxiety Disorder		CES-D Depressive Symptoms		Self-Rated Mental Health	
	Step 2	Step 3	Step 2	Step 3	Step 2	Step 3
FRIENDSHIPS						
Tangible support received from friends	**		**		**	
Not too often/never/never needed/have no friends	***	+	***	N.S.	***	+
Fairly often	**	**N.S.**	**	N.S.	**	**N.S.**
Very often	**N.S.**	**(ref)**	N.S.	(ref)	**N.S.**	**(ref)**
Tangible support given to friends						
Not too often/ never/never needed/have no friends	***	N.S.	***	N.S.	***	+
Fairly often	**	N.S.	**	N.S.	**	**N.S.**
Very often	N.S.	(ref)	N.S.	(ref)	**N.S.**	**(ref)**
Balanced tangible support from friends						
Equal giving/receiving (some)	**	*	**	N.S.	**	**N.S.**
Equal giving/receiving (rare)	***	**N.S.**	***	N.S.	***	+
You help more	**N.S.**	**N.S.**	N.S.	N.S.	**N.S.**	**N.S.**
Family helps more	**N.S.**	**N.S.**	N.S.	N.S.	**N.S.**	**N.S.**
Closeness to friends	N.S.		N.S.		N.S.	
Not too close/not close at all	N.S.	***	N.S.	***	N.S.	***
Fairly close	N.S.	N.S.	N.S.	**	N.S.	***
Very close	N.S.	(ref)	N.S.	(ref)	N.S.	(ref)
Freq. of friend interaction	+		+		+	
Rarely	*	**	*	***	*	***
About monthly	**N.S.**	**	**N.S.**	**	**N.S.**	**N.S.**
About weekly	**N.S.**	**N.S.**	**N.S.**	+	**N.S.**	**N.S.**
Nearly every day	**N.S.**	**(ref)**	**N.S.**	**(ref)**	**N.S.**	**(ref)**
FICTIVE KINSHIPS						
Number of fictive kin	**		**		**	
None	***	**(ref)**	***	(ref)	***	**(ref)**
1-5 fictive kin	**N.S.**	+	N.S.	N.S.	**N.S.**	**N.S.**
6-10 fictive kin	+	*	+	N.S.	+	+
More than 10 fictive kin	**N.S.**	+	N.S.	N.S.	**N.S.**	***
Freq. of tangible support received	**		**		**	
Not too often/never/never needed help/have no fictive kin	***	N.S.	***	N.S.	***	N.S.
Fairly often	***	N.S.	***	N.S.	***	N.S.
Very often	N.S.	(ref)	N.S.	(ref)	N.S.	(ref)

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Steps based on Baron & Kenny's (1986) causal steps approach. Step 1 tests whether race predicts the mental health outcomes. Step 2 tests whether race predicts the various social tie measures. Step 3 tests whether the various social ties predict mental health. Each step is net of all controls.

Table 3.4A. Odds Ratios from Mediation Models for Any DSM Mood or Anxiety Disorder, Friendships, and Fictive Kin, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Tangible Support Received (Friends)	Balanced Tangible Support (Friends)	Freq. of Friend Interaction	Number of Fictive Kin	All
Black	0.67*	0.64**	0.63**	0.66*	0.70*	0.65*
Tangible support received from friends *(ref=very often)*						
Not too often		1.45+				1.61+
Fairly often		1.03				1.82*
Balanced tangible support from friends *(ref: equal,*						
Equal giving/receiving (some)			0.68*			0.44*
Equal giving/receiving (rare)			1.09			0.65+
You help more			1.33			0.88
Family helps more			2.48			1.49
Freq. of friend interaction (ref=almost daily)						
Rarely				1.78**		1.48*
About monthly				1.88**		1.80**
About weekly				1.29		1.22
Number of fictive kin						
1-5 fictive kin					0.62+	0.64+
6-10 fictive kin					0.55*	0.60*
>10 fictive kin					0.62+	0.66

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education and total household income).

Table 3.4B. Unstandardized Regression Coefficients from Mediation Models for CES-D Depressive Symptoms, Friendships, and Fictive Kin, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Freq. of Friend Interaction
Black	-0.24***	-0.25***
Freq. of friend interaction *(ref=almost daily)*		
Rarely		0.19***
About monthly		0.12**
About weekly		0.06+

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education and total household income).

Table 3.4C. Odds Ratios from Ordinal Logistic Regression Mediation Models for Self-Rated Mental Health, Friendships, and Fictive Kin, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Tangible Support Received (Friends)	Tangible Support Given (Friends)	Balanced Tangible Support (Friends)	Freq. of Friend Interaction	# of Fictive Kin	All
Black	0.75*	0.72*	0.73*	0.72*	0.73*	0.77+	0.75*
Tangible support received from friends *(ref=very often)*							
Not too often		1.21+					0.97
Fairly often		0.93					1.15
Tangible support given to friends *(ref=very often)*							
Not too often			1.30+				1.04
Fairly often			1.05				2.00
Balanced tangible support from friends *(ref: equal,*							
Equal giving/receiving (some)				0.88			0.39*
Equal giving/receiving (rare)				1.24+			1.13
You help more				1.21			0.62
Family helps more				1.30			1.08
Freq. of friend interaction *(ref=almost daily)*							
Rarely					1.67***		1.41*
About monthly					1.19		1.06
About weekly					0.97		0.92
Number of fictive kin *(ref=0 fictive kin)*							
1-5 fictive kin						0.74	0.81
6-10 fictive kin						0.70+	0.77
More than 10 fictive kin						0.45***	0.50**

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education and total household income).

Appendix 3A. Correlation Matrix for Friendships and Fictive Kin Relationships , 2001-2003 National Survey of American Life[a,b,c]

	Tangible Support Received (Friends)	Tangible Support Given (Friends)	Freq. of Friend Interaction	Subjective Closeness to Friends	# of Fictive Kin	Tangible Support Received (Fictive Kin)
Tangible Support Received (Friends)	1.00					
Tangible Support Given (Friends)	0.69***	1.00				
Freq. of Friend Interaction	0.37***	0.35***	1.00			
Subjective Closeness to Friends	0.42***	0.35***	0.44***	1.00		
# of Fictive Kin	0.10***	0.13***	0.11***	0.18***	1.00	
Tangible Support Received (Fictive Kin)	0.46***	0.42***	0.22***	0.28***	0.12***	1.00
N	4,278	4,278	4,365	4,275	4,272	4,271
MEAN	1.67	1.87	3.01	2.33	6.72	1.68
SD	0.77	0.79	1.04	6.95	6.82	0.78

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Values in the table represent Pearson's r correlation coefficients. Sample size (based on whites and U.S.-born blacks with complete data on all variables) varies between n=4,186 and n=4,367.

Appendix 3B: Patterns of Missing Data for Whites and U.S.-born Blacks, 2001-2003 National Survey of American Life

	Among all Whites and U.S.-born Blacks (n=4,834)			Among Whites and U.S.-born Blacks With Complete Data on Mental Health Outcomes (n=4,367)		
	# Valid Cases	Missing Cases	% Missing	# Valid Cases	Missing Cases	% Missing
Outcomes						
Any DSM mood disorder	4,834	0	0.0%	4,367	0	0.0%
Any DSM anxiety disorder	4,834	0	0.0%	4,367	0	0.0%
Any DSM mood or anxiety disorder	4,834	0	0.0%	4,367	0	0.0%
CES-D depressive symptoms	4,381	453	9.4%	4,367	0	0.0%
Self-Rated Mental Health	4,673	161	3.3%	4,365	2	0.0%
Demographics						
Race	4,834	0	0.0%	4,367	0	0.0%
Gender	4,834	0	0.0%	4,367	0	0.0%
Age	4,834	0	0.0%	4,367	0	0.0%
Marital Status	4,824	10	0.2%	4,367	0	0.0%
Self-Rated Physical Health	4,675	159	3.3%	4,367	0	0.0%
# of Children in Household	4,834	0	0.0%	4,367	0	0.0%
# of Adults in Household	4,834	0	0.0%	4,367	0	0.0%
Region	4,834	0	0.0%	4,367	0	0.0%
Education	4,834	0	0.0%	4,367	0	0.0%
Household Income	4,834	0	0.0%	4,367	0	0.0%
Friendships						
Tangible Support Received	4,724	110	2.3%	4,278	89	2.0%
Tangible Support Given	4,724	110	2.3%	4,278	89	2.0%
Freq. of Interaction	4,817	17	0.4%	4,365	2	0.0%
Subjective Closeness	4,721	113	2.3%	4,275	92	2.1%
Fictive Kin Relationships						
#of Fictive Kin	4,706	128	2.6%	4,272	95	2.2%
Tangible Support Received	4,705	129	2.7%	4,271	96	2.2%

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CHAPTER 4 - CHURCH RELATIONSHIPS AND THE RACE PARADOX IN MENTAL HEALTH

One of the most unexpected findings in past research is that African Americans generally exhibit better mental health outcomes than whites. Although this association is most consistently found for psychiatric disorders (Zhang and Snowden 1999; Kessler, McGonagle, Zhao, et al. 1994; Breslau, Kendler, Su, et al. 2005; Breslau, Aguilar-Gaxiola, Kendler, et al. 2006; Williams et al. 2007), similar but less consistent findings for the race paradox in mental health have been yielded for psychological distress (Vega and Rumbaut 1991; Williams, Yu, Jackson, et al. 1997; Bratter and Eschbach 2005) and psychological well-being (Williams et al. 1997; Ryff, Keyes, and Hughes 2003). Taken together, these findings can be referred to as the "race paradox in mental health" because they are counterintuitive; blacks historically have lower social and economic standing and greater exposure to discrimination than whites in the United States.

Some scholars have proposed that the unexpected finding that blacks have better mental health than whites can be explained by blacks' higher levels of religiosity. For example, past research overwhelmingly finds that African Americans have more extensive religious involvement than whites, on measures including but not limited to attendance at services, frequency of prayer, and expressed commitment to higher beings (Chatters, Taylor, Bullard, et al. 2009; Taylor, Chatters, Jayakody, et al.1996). While considerably less research has been conducted on church-based social support, it appears that blacks also benefit more than whites in this regard. For example, a nationally representative study of 1500 elderly Americans (Krause 2002a) found that blacks had higher scores than whites on three-item scales of congregational cohesiveness (e.g., most

people in my congregation tend to have the same outlook on life), spiritual support (e.g., how often does someone in your congregation help you to lead a better religious life), and emotional support form church members (e.g., how often does someone in your congregation talk with you about your private problems and concerns). A similar study using the same data found that blacks scored higher than whites on seven of eight items measuring church-based social support from church members, including measures for church embeddedness, relationships with church members, and relationships with clergy (Krause 2002b). Receipt of spiritual support from church members was the only measure for which no race differences were found.

To the best of my knowledge, no past research has explicitly tested whether the quantity/quality of church-based relationships can explain the race paradox in mental health. In the context of this project, there are two compelling reasons to expect that church-based relationships might explain the race paradox. First, as outlined above, African Americans have stronger religious involvement than whites, regardless of the operationalization used (Taylor et al. 1996; Chatters et al. 2009). More frequent church attendance, for example, would provide blacks with relatively more opportunities to develop church-based relationships than whites. Second, there is some emerging evidence that African Americans acquire stronger physical health benefits from religious involvement than whites (Krause 2002a). Other evidence has identified unique aspects of religion that are associated with better life satisfaction among older African Americans but not whites (Krause 2004). While these studies did not directly examine neither church-based relationships nor study mental health outcomes, the findings are suggestive of the idea that different church-based social support (one aspect of religious

involvement) might enhance mental health more among blacks than whites. Taken together, these patterns provide a strong rationale to highlight the role of religiosity as a resilience mechanism that might explain why blacks have better mental health than whites.

THE CONCEPT OF SOCIAL SUPPORT

Social support has been defined as "the positive, potentially health promoting or stress-buffering aspects of relationships such as instrumental aid, emotional caring or concern, and information" (House, Umberson, and Landis 1988:302). Numerous studies have found that high-quality social relationships are associated with beneficial mental health outcomes (e.g., Bertera 2005; Kawachi and Berman 2001). Social causation and social selection are the two primary models to explain social support (Turner 1999). The social causation model posits that positive social relationships cause better mental health outcomes both because they fulfill a fundamental human need for attachment to others and because they facilitate the exchange of social support. Social causation theory has two different strands. The direct influence argument suggests that social support directly affects health outcomes, even in the absence of acute or chronic life stress. Conversely, the buffering argument suggests that the quantity and quality of social ties serve as a coping mechanism to help individuals in times of stress, whether through providing emotional or instrumental (i.e., practical) support. However, most scholars agree that both mechanisms can operate either alone or in concert (Turner 1999).

Countering the social causation model, the social selection model proposes that psychological distress activates the provision of social support from others. In other

words, rather than social relationships serving as the cause of mental health outcomes, mental health can structure the quantity and quality of social relationships. For example, the positive association between quality of social ties and mental health may be because those who are mentally ill are less likely than those of sound mental health to secure and maintain quality social relationships. On the other hand, they could garner the highest levels of support due to their mental health problems. Furthermore, the overall body of evidence suggests that perceived levels of support have a stronger effect on mental health outcomes than objective characteristics such as network size and structure (Wethington and Kessler 1986; Turner 1999).

In addition to the positive aspects of social ties, interest in the negative characteristics of social relationships has grown in recent years. Some have suggested that both emotional support and emotional strain exert independent influences on health (Gray and Keith 2003; Bertera 2005), while others find that the health-damaging effects of emotional strain exceeded the health-enhancing effects of emotional support (Lincoln 2000; Rook 2001; Newsom, Masami, Morgan, et al. 2003; Newsom et al. 2005). Taken together, these findings suggest the need for research to assess both perceived and objective support in addition to indicators for positive and negative characteristics of social relationships.

Interrelations Between Social Support Indicators

Social support is known to be multi-faceted, encompassing dimensions such as instrumental, emotional, informational, financial, and regulatory (e.g., health-monitoring). Using data from a nationally representative study of elderly adults, Liang

and colleagues (2001) determined that social support (using a composite measure of tangible, informational, and emotional support) has both indirect and direct effects on depressive symptoms. For example, the receipt of support directly increased depressive symptoms, perhaps due to feelings of being a burden to the provider of support. However, support receipt also indirectly reduced symptoms through the mechanism of anticipated support, leading to a weaker total effect on depressive symptoms. These findings underscore the idea that support measures can have positive and negative effects on mental health outcomes, based on the inclusion of other support measures. Second, although providing support did not directly affect depressive symptoms, it indirectly affected depressive symptoms because of its association with negative interaction. Finally, the inclusion of anticipated support also strengthened the association between negative interaction and depressive symptoms.

Neither the provision nor the receipt of support is universally salubrious to mental health; either one can have positive or negative effects on individuals. For example, those who provide support may derive psychological benefits from helping others; conversely, they may experience psychological strain if they provide support too often or to too many individuals. Receiving support from others may enhance well-being through feelings of being cared for but support receipt may also lead to psychological distress if the recipient feels guilty for receiving help. Overall, the driving factor regarding whether the provision of support is health-enhancing or health-deteriorating may be the level to which the recipient can reciprocate the support. Early research on social exchange theory proposed that individuals seek to receive as much as possible from social relationships, suggesting that providing support may not moderate the association between support

receipt and mental health outcomes (e.g., Becker 1974). Equity theory suggests that individuals would be happiest in social relationships characterized by equal levels of giving and receiving support (e.g., Homans 1958).

Empirical research has yielded mixed findings for these theories. Equity theory has been supported by research done within three self-help populations. Maton (1988) found that within three self-help populations, bidirectional supporters (those who both gave and received support frequently) had better well-being than those who were not involved in support change, or those who only received or only provided (unidirectional supporters). Likewise, in a church setting, Maton (1987) found that bidirectional supporters had greater life satisfaction than those who only gave or only received support. Subsequent work (Liang, Krause, and Bennett 2001) found evidence against more common theories of social exchange and equity. Although this analysis did not specifically assess those who received and provided support frequently, they found that individuals who receive more support than they provide had more frequent depressive symptoms than those who underbenefit from support exchange. Liang and colleagues (2001) instead found support for the theory of esteem enhancement; overbenefiting from support exchange resulted in increased distress while underbenefiting was associated with lower distress. As a whole, this body of work strongly underscores the importance of considering multiple measures of support in addition to both the individual and joint effects of support receipt/provision.

Health Benefits of Church-Based Social Support

The field of medical sociology has primarily studied religiosity as a coping mechanism that individuals use to deal with a wide range of psychosocial stressors. Religiosity is a multi-dimensional construct, encompassing various factors such as organized participation in religious activities (e.g., church membership, attendance at religious services), private participation in religious activities (e.g., devotional practices such as reading religious texts), and subjective feelings of religiosity (e.g., felt closeness to divine figures and religious principles, self-ratings of spirituality and religiosity). Despite the various operationalizations used, exhaustive reviews of the literature find strong protective associations between religious involvement and physical and mental health outcomes in both longitudinal and cross-sectional analyses (Chatters 2000; Koenig, McCullough, and Larson 2001).

Although less equivocal than findings for secular-based (non-religious) social support across multiple social relationships, research suggests that church-based social ties offer various health-enhancing effects. Analyses of Medicare data found that anticipated support from church members (the belief that assistance will be available if needed) improved self-rated health ratings among elderly adults over three years (Krause 2006a). The same data found that church-based emotional support increased self-rated health over three years; however, this effect was only found among elderly men, not elderly women (Krause 2002a). Past research has also found that church-based social support has a less favorable effect on health outcomes. For example, the provision of support to church members (measured using a seven-item scale of emotional and tangible support) has been found to slightly decrease self-rated health among the elderly over three years (Krause 2006a). Past research also finds that the receipt of church-based

emotional support increases three-year mortality risk but the provision of emotional support to church members had no effect on mortality (Krause 2006b).

A review of the literature (Ellison and Levin 1998) suggests that church-based relationships may exact relatively strongly mental health benefits than secular-based support. People who share religious beliefs - whether they belong to the same congregation or not - are more likely to share religious values (e.g., empathy, aid to the vulnerable) and are also more likely to participate together in "meaning work," or philosophical consideration of one's life experiences in larger philosophical contexts. An innovative study directly tested the relative stress-buffering effects of church-based and secular-based emotional support on self-rated physical health among the elderly who attend church at least three times per year (Krause 2006c). The findings indicated that church-based emotional support (but not secular emotional support) significantly buffered against the detrimental effects of financial strain on self-rated physical health. Importantly, further analyses based on three-way interactions found that this buffering effect operates solely among elderly blacks (not elderly whites), suggesting a unique advantage of church-based emotional support among this group. These findings suggest that although secular support has received the bulk of attention in the literature, church-based social support might offer unique advantages to some individuals, above and beyond those afforded by secular support. It is important to note, however, that virtually all past research has focused on church-based support among the elderly, with less consideration to adults at earlier life course stages.

In terms of mental health, data from the General Social Survey (GSS) suggest that having higher proportions of friends in one's church is associated with fewer depressive

symptoms among adults aged 50 and older only (Krause and Wulff 2005a). A four-item scale of church-based social support has also been linked with fewer depressive symptoms among adults in the GSS, both directly and indirectly through its effect on religious coping (e.g., "looking to God for strength and support"; Nooney and Woodrum 2002). Importantly, Taylor and colleagues (2001) found that receiving support from church members was not a significant predictor of happiness or life satisfaction among blacks in the NSBA.

Like past findings for secular support, social strain from church members undermines health while church-based support has a minimal physical health benefit. For example, Krause and Wulff (2005b) found that negative interaction with church members was associated with lower satisfaction with health, although emotional support from church members was not associated with satisfaction with health (measured using a survey question for, "How satisfied are you with your health?"). Similar results have been found in a nationwide panel of Presbyterian churches; negative interaction with church members increased psychological distress over two years (Ellison, Zhang, Krause, et al. 2009).

METHODS

I used nationally representative, secondary data from the 2001-2003 National Survey of American Life (NSAL), a cross-sectional survey conducted by the University of Michigan Program for Research on Black Americans. The NSAL is one of three studies that comprise the Collaborative Psychiatric Epidemiology Surveys funded by the National Institute of Mental Health. Building on the strengths of NSBA, NSAL was

designed to explore racial and ethnic differences in mental disorders, psychological distress, and informal and formal service use as well as a variety of presumed risk and protective factors (Heeringa et al. 2004).

The core sample of the NSAL was based on a multi-stage national probability sample of African-American households (with at least one Black adult aged 18 and older who did not self-identify as Afro-Caribbean) in the 48 contiguous states of the United States. The four stage sampling process included a primary stage sampling of US Metropolitan Statistical Areas (MSAs) and counties, a second stage sampling of area segments, a third stage sampling of housing units within the selected area segments, and finally, random selection of eligible respondents from the sample housing units. A unique feature of the NSAL (versus the other CPES surveys) was that African Americans and Afro-Caribbeans were oversampled within area segments. English-speaking respondents were drawn from Census blocks that had African American populations of at least 10%, based on the 1990 Census.

After identifying a sample housing unit, the interviewer conducted a short screening questionnaire with a knowledgeable adult to determine whether the household met the eligibility criteria of the study. If so, a respondent was randomly selected to complete the study interview. Data were primarily collected using face-to-face interviews via computer-assisted instruments. Post-stratification weights were used to adjust the sample to the demographic characteristics of the U.S. population. The overall response rate was 72%. The high response rate can be partially attributed to the fact that NSAL interviewers were matched to the race/ethnicity of the respondents.

OUTCOMES

I considered three mental health outcomes. The first outcome was based on diagnostic categories from the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). I examined a composite measure of any DSM mood disorder (major depressive disorder with hierarchy;[9] major depressive episode; dysthymia; dysthymia with hierarchy; mania; hypomania; bipolar I; bipolar II; or bipolar sub-threshold) or any DSM anxiety disorder (generalized anxiety disorder; generalized anxiety disorder with hierarchy; panic attack; panic disorder; social phobia; agoraphobia without panic disorder; agoraphobia with panic disorder) in the past 12 months.[10] A similar approach was used by Kiecolt, Hughes, and Keith (2008), who examined any DSM substance use disorder and any DSM disorder among whites and blacks in the 1990-1992 National Comorbidity Survey. Because of small sample sizes in some of the less common disorders, a respondent was categorized as having any disorder ("1") if they met the criteria for any of the disorders of these disorders and coded as "0" if they did not meet the criteria for any disorders.

To complement to the clinical psychiatric disorder indicator, I used two outcomes that tap common indicators of distress. Depressive symptoms were measured using the 12-item version of the Center for Epidemiologic Studies for Depression (CES-D) scale, which asked respondents how often in the past week they experienced the following symptoms: felt depressed; had crying spells; felt hopeful about the future; felt [I] was just

[9] The "hierarchy" rule requires that the symptoms not occur during a higher-order diagnosis. For example, to meet the criteria for generalized anxiety disorder with hierarchy, symptoms must not occur during a depressive episode or another mood disorder, which are considered higher-order diagnoses. The goal of this definition is to avoid dual diagnosis for those conditions whose symptoms tend to overlap.

[10] The following disorders were not considered because they were only asked of African Americans: substance use/abuse disorders, post-traumatic stress disorder, all eating disorders, conduct disorder, and ADHD.

as good as other people; was happy; enjoyed life; had trouble keeping [my] mind on what [I] was doing; [my] sleep was restless; people were unfriendly; felt people disliked [me]; felt everything [I] did was an effort; and could not get "going." There were four potential response categories for each item, including 0=rarely/none of the time/less than one day; 1=some/little of the time/1-2 days; 2=occasionally/moderate amount of time; and 3=most/all of the time/5-7 days. I reverse-coded four of these scale items (felt helpful about the future, felt just as good as other people, was happy, and enjoyed life) so that higher values corresponded with more frequent depressive symptoms. I subsequently created a scale of depressive symptoms based on the average of the answered items, resulting in a scale ranging from 0/low through 3/high. The reliability for the depressive symptom scale was 0.77. Finally, self-rated mental health was initially measured using five categories for excellent, very good, good, fair, and poor. Because of small cell sizes, I collapsed "poor" and "fair" into one category for "poor/fair" and coded this variable so that higher values indicated less favorable self-rated mental health.

INDEPENDENT VARIABLES

Race was originally measured using four categories for African American, Afro-Caribbean, non-Hispanic white, and Hispanic/Latino. For the purposes of this project, I focused only on those who self-identified as African American (n=3,570), Afro-Caribbean but born in the United States (n=373), and non-Hispanic white (n=891). I excluded Afro-Caribbeans who were born outside the U.S. (n=1,065) due to the unique experiences of immigration and acculturation. I also excluded Hispanics/Latinos due to

their small sample size (n=183) and because the largest and most consistent paradoxes in mental health are found between blacks and whites.

Potential Mediators: Church-Based Relationships

I considered four different measures of tangible (e.g., instrumental) church-based support. Tangible support received from church members was measured using the survey question, "How often do people in your church (place of worship) help you out?" and consisted of four categories for very often, fairly often, not too often, never and a voluntary category for never needed help. I recoded this variable into three categories for very often, fairly often, not too often/never/never needed help and a separate category for isolates. These respondents (n=1,147) either reported that they had not attended services since age 18 (other than weddings or funerals) or that they attend church less than twice per year. These respondents were initially skipped out of the remaining survey section on church relationships; to retain them in the analysis and assess the effect of having no church-based social support, I coded them as a separate category for each potential mediator.

Tangible support given to church members was originally measured using the same categories; I used the same recoding strategy for this variable. Based on these two measures, I also calculated a series of interaction terms representing balanced tangible support, using "did not attend services" as the reference category for each variable. Perceived tangible support from church members was based on an open-ended survey question for, "How many people in your church (place of worship) would help you out if you needed help?" Respondents provided a range from 0 to at least 97 church members;

I recoded this variable into category for more than 10 church members, 6-10 church members, 1-5 church members, 0 church members, or does not attend services.

To complement these tangible support measures, I also considered four measures of emotional support. Subjective closeness was based on the question, "How close are you to the people in your church?" and included four categories for very close, fairly close, not too close, and not close at all. I collapsed the last two categories and created a separate category for those who did not attend services. Emotional support was based on a three-item index including questions asking how often people in your church: make [you] feel loved and cared for, listen to [you] talk about [your] private problems and concerns, and express interest and concern in [your] well-being. The inter-item reliability for the emotional support index was 0.81, displaying high internal consistency that is similar to those found in different samples (0.85 in Krause 2002b; 0.78 in Krause 2006b). Emotional strain was based on a three-item index including questions asking how often people church members: make too many demands on [you], criticize [you] and the things [you] do, and try to take advantage of [you]. The inter-item reliability for the emotional strain index was .63. All index questions were measured on a four-point Likert scale with response categories for very often, fairly often, not too often, and never. I collapsed not too often and never into one category and included those who did not attend services into this category. I recoded as needed so that higher values on the scale reflected higher levels of emotional support and emotional strain.

I created two separate composite measures of emotional support and emotional strain from church members based on the mean score of the answered questions. In addition to assessing the independent influences of both emotional support and emotional

strain from church members, I calculated a single interaction term for emotional support*emotional strain to determine the extent to which the mental health benefits of religious support are undermined by varying levels of strain.

Frequency of interaction with church members was measured using the survey question, "How often do you see, write, or talk on the telephone with members of your church (place of worship)?" and originally included six categories for nearly every day, at least once a week, a few times a month, at least once a month, a few times a year, and never. I collapsed this variable into four categories for nearly every day, about weekly (at least once a week), about monthly (at least once a month or a few times a month), rarely (a few times a year or never), or did not attend services. I reverse-coded this measure such that higher values corresponded to more frequent interaction with church members. It is important to note that I excluded denominational affiliation because my focus is on the quality and quantity of relationships with church members, regardless of respondents' specific faith affiliation. Preliminary analyses found that, relative to Baptists, Catholics and those with no religion reported significantly lower levels of emotional support than Baptists, while there were no differences in support between Baptists, other Protestants, and those of no religion (e.g., Atheist, Agnostic). Interestingly, Baptists reported significantly higher levels of church strain than Catholics, those of no religion, and other Protestants; no differences in emotional strain were found between Baptists and those of other religion.

A correlation matrix (Appendix 4A) found moderate positive correlations among the church relations measures. The lowest correlation was r=0.10 for tangible support received and church strain, and r=0.10 for the correlation between church strain and

church support. The highest correlation found was for church support and subjective church closeness (r=0.68). Despite the moderate correlations, all variance inflation factors were below 2.5 and all tolerance values exceeded 0.40. Therefore, based on standard criteria, these correlations did not create any multicollinearity issues (Allison, 1999). Race was the key predictor in all mediation analyses.

Other Controls

I controlled for marital status because of its documented protective effect on mental health (Waite 1995; Waite and Gallagher 2000) and because blacks are less likely than whites to be married (U.S. Census Bureau 2004). Moreover, blacks are more likely to have poor marital quality than whites (Broman 1993; Goodwin 2003; Broman 2005). Marital status was originally measured using three categories for married/cohabiting, divorced/separated/widowed, or never married. It was not possible to disaggregate the married/cohabiting category without using the restricted NSAL data. I added an additional category for "partnered" for those who were either never married or formerly married (i.e., divorced, separated, or widowed) but reported a current romantic involvement. Therefore, I used the following categories for marital status: married/cohabiting, divorced/separated/widowed, never married, or partnered. I chose this operationalization in light of recent studies that show that the formation of new marital or cohabiting unions either partially attenuates (Willits, Benzeval, and Stansfeld 2004) or completely eliminates (Blekesaune 2008) the association between prior partnership dissolution and higher psychological distress.

Self-rated health was initially measured on a five-point scale for excellent, very good, good, fair, or poor. I subsequently recoded this measure into a dummy variable for

"favorable physical health," with "1" indicating excellent, very good, or good health and "0" indicating fair or poor health. It was important to control for physical health because of its strong correlation with mental health (Schnittker 2005) and because blacks have worse physical health than whites (Read and Gorman 2006; Williams 2005). Number of children living in the household (aged 17 and younger) and number of adults living in the household were measured continuously and top-coded at six. I included this measure due to past findings that parents generally had significantly more depressive symptoms than non-parents (Evenson and Simon 2005) and because blacks historically display higher fertility rates than whites (Centers for Disease Control and Prevention 2009).

It was important to include measures of social class because high SES is strongly associated with mental health (Eaton and Muntaner, 1999; Yu and Williams 1999) and because blacks have lower socioeconomic status on average than whites (U.S. Census Bureau 2009). Education was measured using four categories for less than high school, high school graduate, some college, and college graduate or more. Household income was originally measured in dollars and top-coded at $200,000; I subsequently transformed this variable using a started logarithm (+$1,000) to reduce skew. Region was measured using categories for Northeast, Midwest, West, and South. Consistent with the approach used by Roschelle (1997), I included region as a covariate in recognition of past research finding stronger feelings of filial responsibility among families in the South, relative to other regions (Burr and Mutchler 1999). Age was measured in years and gender was measured using a dummy variable for male.

ANALYTIC STRATEGY

In this study, I seek to determine whether the quality of relationships with church members can explain the race paradox in mental health. To this end, I first conducted descriptive and bivariate statistics to describe the analytic sample. To assess potential mediators, I followed Baron and Kenny's (1986) causal steps approach. Four criteria must be satisfied for a variable to qualify as a potential mediator. First, the key predictor (race) should predict the outcome (mental health), accounting for all control variables. In this step, I estimated multivariate binary logistic regression models predicting any DSM mood disorder and any DSM anxiety disorder, a multivariate ordinary least squares regression model predicting depressive symptoms, and an ordinal logistic regression model predicting self-rated mental health. All coefficients in this stage represent the predictive power of race on mental health, net of all controls - in other words, a direct test of the race paradox.

Second, the key predictor (race) should predict each potential mediator (church relationships), accounting for all control variables. At this stage, I estimated the following set of models: 1) multivariate ordinal logistic regression models predicting receipt of tangible support, provision of tangible support, perceived tangible support, subjective closeness, and frequency of interaction; 2) one multivariate multinomial logistic regression model predicting balanced tangible support; and 3) multivariate OLS regression models predicting emotional support, emotional strain, and the interaction of emotional support*emotional strain. The coefficients in this stage test whether blacks have more supportive relationships with church members than whites, net of all controls.

Third, the potential mediator (church relationships) should predict the outcome (mental health), accounting for all control variables. After meeting these criteria, the

potential mediator should be entered into the full regression model and either completely or partially explain the association between the predictor and the outcome. In this step, I conducted multivariate ordinal logistic regression predicting self-rated mental health, multivariate binary logistic regression predicting any DSM mood/anxiety disorder, and multivariate OLS regression predicting frequency of depressive symptoms. The coefficients in this stage tested the effect of supportive church relationships on mental health, net of all controls.

The final step of the analysis plan was to test each potential mediator in full multivariate models. I considered four mental health outcomes in the final analysis: any DSM mood disorder, any DSM anxiety disorder, frequency of depressive symptoms, and self-rated mental health. I conducted multivariate binary logistic regression models to predict the odds of any DSM mood/disorder in the past 12 months. I conducted multivariate ordinary least squares regression models to predict frequency of CES-D symptoms in the past 30 days and multivariate ordinary logistic regression models to test self-rated mental health. I entered each potential mediator into the models individually and then simultaneously, based on past findings that the analysis of social exchanges will be biased unless they also account for negative interaction and anticipated support (Liang et al. 2001). In addition to testing race differences, all multivariate models controlled for gender, age, marital status, self-rated physical health, household structure (number of adults and number of children aged 17 and younger), region, and SES (education, total household income).

I considered nine potential mediators for church relationships: 1) tangible support received; 2) tangible support given; 3) balanced tangible support (interaction terms for

instrumental support received* instrumental support given); 4) emotional support received; 5) emotional strain received; 6) an interaction term for emotional support*emotional strain; 7) perceived tangible support; 8) closeness; and 9) frequency of interaction. Race was the key predictor in all mediation analyses.

NSAL initially consisted of 4,834 non-Hispanic whites and blacks. However, 3.3% of cases (n=161) were missing data for self-rated mental health, and 9.4% of cases (n=453) were missing data for CES-D depressive symptoms. There were no missing cases for any DSM mood/anxiety disorder. Excluding cases listwise would have eliminated 224 potential cases (5% of the eligible sample); therefore, I conducted multiple imputation procedures using ICE commands in Stata 11.0 to impute missing values on all covariates.[11] Notably, I did not impute missing values for any of the mental health outcomes; cases were excluded if they were missing data on any outcome. Therefore, the final analytic sample consisted of 4,367 NSAL participants (586 whites and 3,781 blacks) with complete data on all outcome measures. More detailed patterns of missing data can be found in Appendix 4A. For all analyses, I adjusted for the complex sampling design using the survey estimation procedures in Stata 11.0 (StataCorp 2009).

RESULTS

Description of Sample

Table 4.1 presents the unweighted demographic characteristics of the analytic sample. I used inferential statistics (chi-square and independent sample *t*-tests) to test for bivariate race differences, both on the overall variable and separately for each category of

[11] The following variables had no missing values and were therefore not imputed: race, gender, age, household structure, region, education, and income.

the variable, where appropriate. Roughly 43% of respondents were men, with no race differences found. This is important because black men are generally underrepresented in data collection efforts. The mean age of the sample was 43, though blacks were roughly four years younger than whites ($p<.05$). Relative to whites, fewer blacks were married/cohabiting but significantly higher proportions of blacks were coupled. Roughly 81% of the sample reported being in favorable self-rated health, with no race differences found for this measure of health status. African Americans reported significantly more children under age 18 ($p<.01$) and more adults ($p<.05$) in the household. In terms of geographic location, blacks were more likely to live in the Midwest ($p<.001$) while whites were slightly more likely to live in the West ($p<.10$). Whites were considerably more educated than blacks; for example, whites (32%) were more than twice as likely as blacks (15%) to have a college degree ($p<.001$). Likewise, whites had significantly higher average household income than blacks ($46,778 vs. $36,551, respectively, $p<.01$).

I assessed the comparability of the NSAL analytic sample (unadjusted) and the U.S. population on three key sociodemographic measures - marital status (U.S. Census Bureau 2004), educational attainment (U.S. Census Bureau 2009), and income (U.S. Census Bureau 2005). Compared to the proportion of those married in the NSAL and the Census, similar proportions of white men (58% and 60%, respectively), black men (43% vs. 40%, respectively) and black women (30% and 29%, respectively) were currently married. Larger departures were found among white women in NSAL relative to the Census (43% vs. 55%, respectively). It is important to note, however, that the NSAL collapsed categories for married and cohabiting and so it was impossible to disaggregate this category without access to the restricted data.

The socioeconomic status of both whites and blacks in NSAL was lower than Census estimates. For example, 91% of whites in the Census earned at least a high school diploma, compared to 83% of whites in NSAL. Roughly 82% of blacks in the Census earned at least a high school diploma, compared to 75% of NSAL participants. Similarly, mean household income among NSAL respondents was lower than national estimates. On average, white NSAL respondents had total household incomes of $43,650, compared to Census estimates of $60,478. The average household income of black NSAL respondents was also lower than national estimates ($32,897 vs. $39,877, respectively). The relatively low socioeconomic standing of NSAL respondents, as compared to Census estimates, can be explained by the sample design of NSAL, which only drew respondents from Census tracks with at least 10% African American populations.

Table 4.1 also displays descriptive statistics of the mental health outcomes, including bivariate tests of race differences. Approximately 8% of the sample was classified as having any mood disorder, 14% was classified as having any anxiety disorder, and 18% had any mood or anxiety disorder. Although there were no significant race differences on the two separate measures for any mood disorder and any anxiety disorder, blacks were slightly less likely to have had any mood or anxiety disorder in the past 12 months ($p<.10$). Blacks had significantly fewer depressive symptoms in the past 30 days than whites ($p<.001$) and were significantly more likely than whites to report excellent self-rated mental health (31% vs. 22%, respectively; $p<.001$). The bivariate patterns for the mental health outcomes were consistent with the race paradox in mental health.

Table 4.1 also displays descriptive statistics for church relationships, including bivariate tests of significance for potential race differences (both for the overall measure and the individual categories on the measure, where appropriate). Significant black-white race differences were found for tangible support from church members. Importantly, 28% of whites reported either not attending services since age 18 or attending less than twice per year, compared to only 18% of blacks ($p<.001$). Almost 14% of blacks (compared to 8% of whites) reported receiving tangible help very often ($p<.001$). Similar patterns were found for the provision of tangible support to church members. Almost twice as many blacks as whites reported giving help to church members very often (18% vs. 10%, respectively, $p<.001$). Blacks reported significantly higher levels of perceived support from church members than whites. For example, 13% of whites and 19% of blacks reported having between six and 10 church members that could help out, if needed ($p<.01$). More blacks than whites reported interacting with their church members on a monthly basis (13% vs. 20%, $p<.05$).

Strong bivariate race differences were also found for the emotional measures. Blacks were significantly more likely than whites to report feeling very close to church members (28% vs. 18%, $p<.001$) and reported higher levels of emotional support than whites ($p<.001$). Surprisingly, blacks also reported significantly higher levels of emotional strain from church members than whites ($p<.001$).

Testing the Race Paradox in Mental Health

Table 4.2 displays coefficients from multivariate logistic regression models predicting any DSM mood/anxiety disorder in the past 12 months, mean CESD-12

depressive symptoms in the past 30 days, and self-rated mental health. In addition to race, all models control for gender, age, marital status, self-rated health, household structure (number of children under 18 and number of adults currently living in the household), region, and SES (education and total household income).

As the first set of columns shows, relative to whites, blacks had 33% lower odds of being diagnosed with any DSM mood or anxiety disorder ($p<.05$). Men had 36% lower odds of having any mood/anxiety disorder than women ($p<.05$); and each additional year of age was associated with a 2% reduction in the odds of any mood/anxiety disorder ($p<.01$). Marital status was marginally predictive of any mood or anxiety disorder; compared to those who were married or cohabiting, those who had experienced marital disruption (OR=1.49, $p<.10$) and those who were coupled (OR=1.28, $p<.10$) had slightly higher odds of any mood or anxiety disorder ($p<.10$). Those who reported favorable physical health had 68% lower odds of any mood/anxiety diagnosis ($p<.001$). Household structure did not significantly predict any DSM mood/anxiety disorder. Those who lived in either the Northeast or the Midwest had 46% higher odds of any mood or anxiety disorder, relative to those who lived in the South ($p<.05$ for both). Although education did not reach statistical significance, increasing household income was associated with slightly lower odds of any DSM mood or disorder ($p<.10$). The race differences found for any mood/anxiety disorder replicate past research showing lower rates of DSM mental disorder among blacks in both the 1990-1992 National Comorbidity Study (Kessler et al. 1994; Breslau et al. 2005), its 2000-2003 replication (Breslau et al. 2006), and the 2001-2003 National Survey of American Life (Williams et al. 2007).

Contrary to past research (George and Lynch 2003; Gore and Aseltine 2003; Mossakowski 2008), blacks scored significantly lower than whites on the CES-D depressive symptom scale (B=-0.24; $p<.001$). These conflicting findings may reflect NSAL's use of the shortened 12-item CES-D scale. Although the 12-item version used in NSAL included both interpersonal relations items (which are more commonly reported by blacks), it included less than half of the somatic symptoms from the complete 20-item scale, items which are more commonly endorsed among blacks (Iwata et al. 2002). Increasing age ($p<.001$) and favorable physical health ($p<.001$) were each strongly associated with less frequent depressive symptoms. Neither measure of household structure significantly predicted CES-D depressive symptoms. Relative to living in the South, living in the Midwest was associated with slightly more frequent depressive symptoms while living in the West was associated with significantly fewer depressive symptoms ($p<.10$). Those with less than a high school education had significantly more depressive symptoms than those with a college degree ($p<.001$) and increasing income was associated with significantly fewer depressive symptoms ($p<.001$). Neither gender nor marital status were significant predictors of depressive symptoms.

Consistent with the race paradox in mental health, I found a protective association (favoring blacks) between race and self-rated mental health. Blacks had 34% higher odds of reporting a better mental health rating than whites ($p<.05$). To the best of my knowledge, this is the first study assessing race differences in self-rated mental health. Men had 45% higher odds of reporting a better mental health rating than women ($p<.001$), while those who reported favorable physical health had five times higher odds of reporting a better mental health rating than those with fair or good physical health

($p<.001$). Those with less than a high school education had 33% lower odds of reporting a better mental health category than those with a college degree. Age, marital status, household structure, region, and income were not significant predictors of self-rated mental health.

In terms of general patterns across the four mental health outcomes, the following general patterns were observed: 1) men had significantly lower odds of any mood/anxiety disorder and higher odds of better self-rated mental health than women; 2) increasing age was associated with significantly lower odds of all outcomes, with the exception of self-rated mental health; 3) marital status was a weak predictor of any mood/anxiety disorder only; 4) favorable self-rated physical health was strongly and consistently associated with better mental health status; 5) neither measure of household structure significantly predicted any of the mental health outcomes; 6) region was a significant predictor of any DSM mood/anxiety and a weak predictor of depressive symptoms and self-rated mental health; 7) educational attainment was significantly associated with depressive symptoms and self-rated mental health; and 8) household income significantly predicted depressive symptoms and weakly predicted any DSM mood/anxiety disorder. Overall, the multivariate analysis replicated past findings regarding the race paradox in mental health.

MEDIATION ANALYSES

Table 4.3 summarizes the qualifying potential mediators for church relationships, based on the Baron and Kenny (1986) criteria. The following seven potential mediators emerged for any DSM mood or anxiety disorder in the past 12 months: tangible support received from church members, tangible support given to church members, balanced

tangible support, perceived tangible support, frequency of church interaction, subjective closeness to church members, and church support. The following six measures qualified as potential mediators for the frequency of CES-D depressive symptoms in the past 30 days: tangible support received from church members, balanced instrumental support among church members, frequency of church interaction, subjective closeness to church members, and emotional strain from church members. Finally, with the exception of tangible support received from church members, frequency of church interaction, and church support*strain, all measures qualified as potential mediators for self-rated mental health.

Tables 4.4A through 4.4C display results from the mediation analyses for any DSM mood disorder, CES-D depressive symptoms, and self-rated health based on social relationships with church members, respectively. Based on the baseline model in Table 4.4A, blacks initially had 33% lower odds of any DSM mood or anxiety disorder in the past 12 months, relative to whites ($p<.05$). To avoid problems with estimating a model with so many correlated measures, I estimated each tangible support measure individually and then jointly. I followed the same strategy for frequency of interaction and all emotional support measures. None of the tangible support measures (support received, support given, balanced support, perceived support) appreciably changed neither the magnitude nor the statistical association for the race paradox in any DSM mood/anxiety disorder. Likewise, neither frequency of interaction nor the two emotional support measures (closeness, church support) could explain the race paradox in any mood/anxiety disorder.

The mediation results for CES-D depressive symptoms can be found in Table 4.4B. In the initial model (excluding any potential mediators for relationships with church members), blacks scored an average of 0.24 points lower than whites on the depressive symptom scale, which ranged from 0/low-3/high. The inclusion of balanced tangible support, subjective closeness to church members, frequency of church interaction, subjective church closeness, church strain, and four potential mediators simultaneously did little to change either the magnitude or the statistical significance of this association between race and depressive symptoms.

The results for mediation models for self-rated mental health can be found in Table 4.4C. This outcome had seven potential mediators. In the initial model, blacks had 25% lower odds of reporting a worse self-rated mental health category than whites ($p<.05$). The inclusion of tangible support given to church members and balanced tangible support reduced the race paradox to marginal significance but each measure accounted for only 4% of the association between race and self-rated mental health, a very modest effect. The inclusion of perceived support and all three tangible support measures simultaneously did not change the race paradox on this measure.

The next set of mediation models for self-rated mental health focused on emotional measures. The inclusion of subjective church closeness and church support reduced the race paradox to marginal significance but accounted for only 1-2% of the association between race and self-rated mental health. Neither church strain nor the inclusion of all emotional measures simultaneously appreciably changed the race paradox in self-rated mental health.

DISCUSSION

The race paradox in mental health refers to the unexpected finding that blacks experience better mental health than whites, despite having greater exposure to psychosocial stressors such as poverty and discrimination. The present results replicate past research showing better mental health status among blacks than whites (e.g., Breslau et al. 2005; Breslau et al. 2006). Consistent with past research (Krause 2002a; Krause 2002b), bivariate results showed that blacks had higher levels of church-based social support than whites; specifically, I found that blacks were more likely to both give and receive instrumental support from church members frequently, have frequent interaction with church members, report stronger feelings of closeness to church members, and higher levels of church-based emotional support. On the other hand, blacks ranked lower than whites on two measures of church-based social support; they reported having slightly fewer church members that could help them out when needed and higher levels of church-based emotional strain.

Overall, mediation analyses found that the race paradox in the three mental health outcomes could not be explained by church-based relationships. The race paradox in self-rated mental health was partially explained by instrumental support given to coreligionists, balanced instrumental support, subjective closeness to coreligionists, frequency of church interaction, and church-based emotional support. However, it is paramount to note that the magnitude of these effects is modest at best, accounting for between 1-5% of the race paradox on these measures. Finally, none of the four potential mediators for depressive symptoms (balanced support, subjective closeness, frequency of church interaction, and church strain) could explain the race paradox on this measure.

This analysis has important limitations to consider. Although NSAL contained measures for both the provision and receipt of tangible support (and the receipt of emotional support), it did not include any measures for the provision of emotional support. However, given past research finding that providing emotional support to church members decreases self-rated physical health (Krause 2006a), it is unlikely that this measure would have explained the race paradox in mental health. Second, as is the case with all cross-sectional approaches, reverse causation is a potential concern. For example, it may be possible that distress either triggers the receipt of social support from others or limits the development/maintenance of social relationships for those with mental health problems. Moreover, more severe mental health problems could limit one's participation in organizational-based religion.

Although family and religious-based social relationships have been the predominant explanation for the race paradox, two other explanations have been put forth. First, some scholars have attributed the race paradox in mental health to the culturally grounded nature of the scale that is used. Past research in this regard has assessed depressive symptoms with the CES-D scale, with some finding that blacks are more likely than whites to endorse the somatic symptoms such as poor appetite or everything is an effort (Iwata et al. 2002), while others have found that blacks are more likely endorse interpersonal items (e.g., people were unfriendly to me; Cole 2000; Lee, unpublished manuscript; Rosenfield and Smith 2008). Conversely, whites are more likely than blacks to endorse mood symptoms such as feeling lonely or sad (Iwata et al. 2002). Therefore, given the multiple versions of the CES-D scale used in the literature

(9-item, 12-item, 15-item), the proportion of items represented on these scales could either refute or support the race paradox in mental health.

Jackson and Knight (2006) suggest another explanation for the race paradox in mental health, proposing that blacks are more likely than whites to cope with stress through unhealthy eating habits. This presumed tendency essentially shifts the psychosocial burden to the realm of physical health. This argument would simultaneously explain the race paradox in mental health and the physical health disadvantage among African Americans in that blacks are less distressed than whites but experience worse physical health outcomes because they engage in unhealthy behaviors to cope with distress. While this idea is innovative, future work must test this idea empirically

In sum, future research would strongly benefit from identifying the resilience mechanisms that explain why blacks demonstrate better mental health outcomes than whites. Without doing so, it is unclear whether the race paradox objectively exists or whether it is a function of other mechanisms such as cultural bias in measurement tools or race differences in coping mechanisms.

Table 4.1. Descriptive and Bivariate Statistics of Demographics and Church Relationships by Race, 2001-2003 National Survey of American Life (n=4,367)[a,b,c]

	Whites (n=586)		Blacks (n=3,781)		Total (n=4,367)	
	N (or mean)	% (or SE)	N (or mean)	% (or SE)	N (or mean)	% (or SE)
DEMOGRAPHICS						
Male	96	44.1	567	41.9	1,572	43.2
Mean age*	45.6	(1.68)	41.9	(0.52)	43.4	(0.72)
Marital status						
Married or cohabiting*	308	52.5	1,573	41.6	2,013	46.1
Divorced/separated/widowed	127	21.7	696	18.4	865	19.8
Coupled**	68	11.6	870	23.0	795	18.2
Never married	83	14.2	643	17.0	690	15.8
Favorable self-rated health[d]	488	83.2	3,010	79.6	3,542	81.1
Household structure						
# of children <18[e]**	0.55	(0.08)	0.84	(0.03)	0.72	-0.03
# of adults[e]*	1.88	(0.04)	2.01	(0.03)	1.95	-0.03
Region						
Northeast	138	23.5	639	16.9	856	19.6
Midwest***	42	7.2	654	17.3	572	13.1
South	309	52.8	2,121	56.1	2,389	54.7
West+	97	16.6	367	9.7	550	12.6
Education***						
Less than high school**	87	14.8	911	24.1	882	20.2
High school graduate**	170	29.0	1,410	37.3	1,476	33.8
Some college	144	24.6	911	24.1	1,061	24.3
College graduate or more***	185	31.6	548	14.5	948	21.7
Total household income [e,f]**	46,778	(3,367)	36,551	(1345)	40,834	(1,706)
DSM disorders (12m prevalence)						
Any mood disorder	49	8.4	302	8.0	358	8.2
Any anxiety disorder	84	14.3	495	13.1	594	13.6
Any mood or anxiety disorder+	114	19.4	643	17.0	786	18.0
Mean CESD-12 depressive symptoms, 30 days (0/low-3/high)***	0.74	(0.04)	0.57	(0.02)	0.64	(0.02)
Self-rated mental health+						
Excellent**	128	21.9	1,172	31.0	1,183	27.1
Very good**	248	42.4	1,320	34.9	1,664	38.1
Good	152	25.9	858	22.7	1,052	24.1
Poor/Fair	57	9.8	431	11.4	467	10.7

Table 4.1 (cont'd)	Whites (n=586)		Blacks (n=3,781)		Total (n=4,367)	
	N (or mean)	% (or SE)	N (or mean)	% (or SE)	N (or mean)	% (or SE)
CHURCH RELATIONSHIPS						
Tangible support received*						
services***	166	28.3	696	18.4	983	22.5
Rarely*	253	43.2	1,943	51.4	2,092	47.9
Fairly often*	122	20.8	628	16.6	804	18.4
Very often***	46	7.8	518	13.7	489	11.2
Tangible support given***						
services***	166	28.3	696	18.4	983	22.5
Rarely	229	39.0	1,441	38.1	1,681	38.5
Fairly often	135	23.1	960	25.4	1,066	24.4
Very often**	56	9.6	684	18.1	638	14.6
Perceived tangible support (# church members could help out)[d]						
Does not attend services***	171	29.1	726	19.2	1,018	23.3
0 church members	35	5.9	223	5.9	258	5.9
1-5 church members***	103	17.6	1,032	27.3	1,013	23.2
6-10 church members**	73	12.5	707	18.7	703	16.1
> 10 church members	205	34.9	1,093	28.9	1,371	31.4
Frequency of church interaction**						
Does not attend services***	165	28.2	696	18.4	983	22.5
Rarely	162	27.6	1,006	26.6	1,179	27.0
About monthly*	75	12.8	749	19.8	734	16.8
At least weekly	96	16.4	726	19.2	786	18.0
Nearly every day	88	15.0	609	16.1	681	15.6
Closeness to church members***						
Does not attend services***	166	28.3	696	18.4	983	22.5
Not close*	161	27.5	813	21.5	1,052	24.1
Fairly close+	152	26.0	1,199	31.7	1,280	29.3
Very close***	107	18.2	1,074	28.4	1,052	24.1
3/high)[d]**	1.76	(0.05)	1.91	(0.02)	1.85	(0.02)
Emotional strain (1/low-3/high)[d]***	1.05	(0.01)	1.12	(0.01)	1.09	(0.01)

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size is based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367), Multiple imputation was used for cases missing values on other measures. Values are adjusted for complex survey design.

[c] Independent sample t-tests were conducted for continuous and ordinal variables. Chi-square tests were conducted for categorical variables (both overall and for each category individually).

Table 4.2. Results from Multivariate Binary Logistic Regression Models (Any DSM Mood Disorder, Any DSM Mood or Anxiety DSM Disorder), Ordinary Least Squares Regression Models (CESD-12 Depressive Symptoms), and Ordinal Logistic Regression Models (Self-Rated Mental Health), 2001-2003 National Survey of American Life (n=4,367)[a]

	Any DSM Mood or Anxiety Disorder		CES-D Depressive Symptoms		Self-Rated Mental Health	
	OR	95% CI	B	S.E.	OR	95% CI
Black	0.67*	(0.49, 0.92)	-0.24***	0.04	0.75*	(0.56, 0.99)
Male	0.64*	(0.42, 0.98)	-0.03	0.03	0.69***	(0.57, 0.83)
Age	0.98**	(0.97, 0.99)	-0.005**	0.001	1.01	(1.00, 1.01)
Marital status *(ref=married/ cohabiting)*						
Div/sep/wid	1.49+	(0.97, 2.30)	-0.01	0.04	1.26	(0.87, 1.81)
Coupled	1.28+	(0.98, 1.68)	0.04	0.04	1.10	(0.90, 1.35)
Never married	1.02	(0.60, 1.72)	0.01	0.04	1.26	(0.93, 1.73)
Favorable self-rated health[b]	0.32***	(0.23, 0.46)	-0.30***	0.03	0.19***	(0.15, 0.25)
Household structure						
# of children <18	1.05	(0.92, 1.20)	-0.0003	0.01	0.95	(0.84, 1.08)
# of adults	0.92	(0.70, 1.08)	0.00	0.02	1.00	(0.85, 1.17)
Region *(ref=South)*						
Northeast	1.46*	(1.01, 2.11)	0.08	0.05	1.23+	(0.97, 1.55)
Midwest	1.46*	(1.00, 2.14)	0.05+	0.03	1.17	(0.92, 1.49)
West	0.88	(0.56, 1.39)	-0.07*	0.03	1.05	(0.62, 1.78)
Education *(ref=college grad)*						
< high school	1.11	(0.72, 1.73)	0.18***	0.05	1.49*	(1.10, 2.02)
High school graduate	1.10	(0.71, 1.70)	0.06	0.04	1.04	(0.78, 1.40)
Some college	0.89	(0.61, 1.28)	0.03	0.04	0.96	(0.77, 1.19)
Total household income (started log, +$1,000)	0.85+	(0.71, 1.02)	-0.07***	0.02	1.03	(0.84, 1.28)
Adjusted R^2						

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] Self-rated physical health was measured using a dummy variable for excellent/very good/good (1) vs. fair/poor (0).

Table 4.3. Summary of Qualifying Potential Mediators for Church Relationships, 2001-2003 National Survey of American Life (n=4,367)[a,b,c,d]

	Any DSM Mood or Anxiety		CES-D Depressive Symptoms		Self-Rated Mental Health	
	Step 2	Step 3	Step 2	Step 3	Step 2	Step 3
Tangible Support Received	**		**		**	
Does not attend services	***	**(ref)**	***	**(ref)**	***	(ref)
Rarely	**	***	**	+	**	N.S.
Fairly often	**	*	**	**N.S.**	**	N.S.
Very often	***	+	***	**N.S.**	***	N.S.
Tangible Support Given	*		*		*	
Does not attend services	***	**(ref)**	***	(ref)	***	**(ref)**
Rarely	**N.S.**	**	N.S.	N.S.	**N.S.**	**N.S.**
Fairly often	**N.S.**	**	N.S.	N.S.	**N.S.**	**N.S.**
Very often	***	+	***	N.S.	***	*
Balanced tangible support from church members *(ref=equal, high)*						
Reciprocal, frequent (lot/lot)	*	**N.S.**	*	**N.S.**	*	*
Church helps you more (lot/some)	*	+	*	**N.S.**	*	**N.S.**
Church helps you more (lot/rare)	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**N.S.**	**
You help church more (some/lot)	*	*	*	**N.S.**	*	**N.S.**
Reciprocal, occasional (some/some)	+	*	+	**N.S.**	+	**N.S.**
Church helps you more (some/rare)	**	**N.S.**	**	*	**	+
You help church more (rare/lot)	***	**N.S.**	***	**N.S.**	***	**N.S.**
Reciprocal rare support (rare/rare)	**	+	**	**N.S.**	**	**N.S.**
You help church more (rare/some)	**N.S.**	**	**N.S.**	**N.S.**	**N.S.**	**N.S.**
Perceived tangible support[d]	**N.S.**		N.S.		**N.S.**	
Does not atend services	***	**(ref)**	***	(ref)	***	**(ref)**
0 church members	**N.S.**	*	N.S.	N.S.	**N.S.**	**N.S.**
1-5 church members	***	**N.S.**	***	N.S.	***	+
6-10 church members	**	*	**	N.S.	**	**N.S.**
> 10 church members	+	***	+	N.S.	+	**N.S.**

Table 4.3 (cont'd). Summary of Qualifying Potential Mediators for Church Relationships, 2001-2003 National Survey of American Life (n=4,367)[a,b,c,d]

	Any DSM Mood or Anxiety Disorder		CES-D Depressive Symptoms		Self-Rated Mental Health	
Frequency of church interaction	***		***		***	
Does not attend services	***	**(ref)**	***	**(ref)**	***	(ref)
Rarely	**N.S.**	**	**N.S.**	**N.S.**	N.S.	N.S.
About monthly	*	*	*	**N.S.**	*	N.S.
About weekly	+	*	+	**N.S.**	+	N.S.
About daily	**N.S.**	*	**N.S.**	*	N.S.	N.S.
Subjective closeness to church members	***		***		***	
Does not attend services	***	(ref)	***	**(ref)**	***	(ref)
Not too close/not close at all	+	**	+	**N.S.**	+	N.S.
Fairly close	**	*	**	**N.S.**	**	N.S.
Very close	**	*	**	*	**	*
Emotional support (1/low-3/high)[d]	***	*	***	N.S.	***	*
Emotional strain (1/low-3/high)[d]	***	N.S.	***	***	***	+
Church support*strain	***	N.S.	***	N.S.	***	N.S.

$+ p < .10$; $* p < .05$; $** p < .01$; $*** p < .001$

[a] Steps based on Baron & Kenny's (1986) causal steps approach. Step 2 tests whether race predicts the various social tie measures, net of all controls. Step 3 tests whether the various social ties predict mental health, net of all controls.

Table 4.4A. Odds Ratios from Mediation Models for Any Mood or Anxiety Disorder and Church Relationships (Tangible Support), 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Tangible Support Received (Church)	Tangible Support Given (Church)	Balanced Tangible Support (Church)	Perceived Tangible Support (Church)	All Tangible Support Measures
Black	0.67*	0.70*	0.70*	0.70*	0.68*	0.67*
Tangible support received from church *(ref=does not attend services)*						
Rarely		0.62***				
Fairly often		0.62*				
Very often		0.70+				
Tangible support given to church *(ref=does not attend services)*						
Rarely			0.63**			
Fairly often			0.61**			
Very often			0.67+			
Balanced tangible support from church members *(ref=equal, high)*						
Reciprocal, frequent (lot/lot)				0.73		
Church helps you more (lot/some)				0.45+		
Church helps you more (lot/rare)				0.96		
You help church more (some/lot)				0.38*		
Reciprocal, occasional (some/some)				0.62*		
Church helps you more (some/rare)				0.78		
You help church more (rare/lot)				0.75		
Reciprocal rare support (rare/rare)				0.64+		
You help church more (rare/some)				0.60**		
Perceived tangible support[d] *(ref=does not attend services)*						
0 church members					0.55*	
1-5 church members					0.82	
6-10 church members					0.65*	
More than 10 church members					0.55***	

*+ p < .10; * p < .05; ** p < .01; *** p <.001*

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education, total household income).

Table 4.4A (cont'd). Odds Ratios from Mediation Models for Any Mood or Anxiety Disorder and Church Relationships (Interaction and Emotional Support), 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Freq. of Church Interaction	Subjective Church Closeness	Church Support	All Interaction and Emotional Support Measures
Black	0.67*	0.70*	0.70*	0.69*	
Freq. of church interaction *(ref=does not attend services)*					
Rarely		0.64**			
About monthly		0.64*			
About weekly		0.64*			
About daily		0.58*			
Subjective church closeness *(ref=does not attend services)*					
Not too close/not close at all			0.60**		
Fairly close			0.68*		
Very close			0.61*		
Emotional support (1/low-3/high)				0.80*	

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education, total household income).

Table 4.4B. Unstandardized Regression Coefficients from Mediation Models for Mean CES-D Depressive Symptoms and Church Relationships, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Tangible Support Received	Balanced Tangible Support	Freq. of Church Interaction	Subjective Closeness	Church Strain	All
Black	-0.24***	0.24***	-0.24***	-0.24***	-0.24***	-0.24***	-0.24***
Tangible support received *(ref=does not attend services)*							
Rarely		-0.05+					
Fairly often		-0.004					
Very often		0.02					
Balanced tangible support from							
Reciprocal, frequent (lot/lot)			0.00				
Church helps you more (lot/some)			0.02				
Church helps you more (lot/rare)			0.12				
You help church more (some/lot)			0.04				
Reciprocal, occasional			-0.06				
Church helps you more (some/rare)			0.14*				
You help church more (rare/lot)			-0.05				
Reciprocal rare support			-0.03				
You help church more (rare/some)			-0.05				
Freq. of church interaction *(ref=does not attend services)*							
Rarely				-0.01			
About monthly				-0.004			
About weekly				-0.02			
Nearly every day				-0.09*			
Subjective church closeness *(ref=voes not attend services)*							
Not too close/not close at all					-0.01		
Fairly close					-0.01		
Very close					-0.07*		
Emotional strain (1/low-3/high)[d]						0.20***	

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes (n=4,367).

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education, total household income).

Table 4.4C. Odds Ratios from Mediation Models for Self-Rated Mental Health (Ordinal Logistic Regression) and Tangible Church-Based Social Support, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Tangible Support Given (Church)	Balanced Tangible Support (Church)	Perceived Tangible Support (Church)	All Tangible Support Measures
Black	0.75*	0.78+	0.77+	0.73*	0.72*
Tangible support given to church members *(ref=does not attend services)*					
Rarely					
Fairly often		1.57***			3.37***
Very often		1.26			1.32
Balanced tangible support from church members *(ref=equal, high)*					
Reciprocal, frequent (lot/lot)			0.68*		0.93
Church helps you more (lot/some)			0.91		0.38***
Church helps you more (lot/rare)			2.52**		0.87
You help church more (some/lot)			0.77		0.52*
Reciprocal, occasional (some/some)			0.92		
Church helps you more (some/rare)			1.50+		
You help church more (rare/lot)			-0.79		
Reciprocal rare support (rare/rare)			0.91		
You help church more (rare/some)			1.14		
Perceived tangible support (# church members could help out, *ref=does not attend services*)[d]					
0 church members				1.18	1.44*
1-5 church members				1.29+	1.24
6-10 church members				1.01	1.16
More than 10 church members				0.87	

Table 4.4C (cont'd). Odds Ratios from Mediation Models for Self-Rated Mental Health (Ordinal Logistic Regression) and Emotional Church-Based Social Support, 2001-2003 National Survey of American Life (n=4,367)[a,b]

	Initial Model	Subjective Church Closeness	Church Support	Church Strain	All Emotional Measures
Black	0.75*	0.77+	0.76+	0.74*	0.76*
Subjective church closeness *(ref=does not attend services)*					
Not too close/not close at all		1.23			1.30
Fairly close		1.10			1.23
Very close		0.74*			0.85
Emotional support (1/low-3/high)[d]			0.85*		
				1.27+	0.87
Emotional strain (1/low-3/high)[d]					1.39+

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Sample size based on whites and U.S.-born blacks with complete data on all mental health outcomes

[b] All models control for gender, age, marital status, self-rated health, household structure (# children and # adults in the household), region, and SES (education, total household income).

Appendix 4A. Correlation Matrix for Church Relationships, 2001-2003 National Survey of American Life [a,b,c]

	Tangible Support Received	Tangible Support Given	Perceived Tangible Support	Freq. of Church Interaction	Subjective Church Closeness	Church Support	Church Strain
Tangible Support Received	1.00						
Tangible Support Given	0.56***	1.00					
Perceived Tangible Support	0.38***	0.47***	1.00				
Freq. of Church Interaction	0.38***	0.52***	0.54***	1.00			
Subjective Church Closeness	0.46***	0.57***	0.60***	0.63***	1.00		
Church Support	0.49***	0.52***	0.64***	0.57***	0.68***	1.00	
Church Strain	0.10***	0.22***	0.07***	0.14***	0.15***	0.10***	1.00
N	4,357	4,358	4,158	4,365	4,357	4,352	4,353
MEAN	1.42	1.59	2.53	1.91	1.87	1.90	1.11
SD	0.70	0.77	1.16	0.90	0.82	0.71	0.31

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Values in the table represent Pearson's r correlation coefficients. Sample size (based on whites and U.S.-born blacks with complete data on all variables varies between n=4,271 and n=4,367.

Appendix 4B: Patterns of Missing Data for Whites and U.S.-born Blacks, 2001-2003 National Survey of American Life (n=4,834)

	Among all Whites and U.S.-born Blacks (n=4,834)			Among Whites and U.S.-born Blacks With Complete Data on Mental Health Outcomes (n=4,367)		
	# Valid Cases	Missing Cases	% Missing	# Valid Cases	Missing Cases	% Missing
Outcomes						
Any DSM mood disorder	4,834	0	0.0%	4,367	0	0.0%
Any DSM anxiety disorder	4,834	0	0.0%	4,367	0	0.0%
Any DSM mood or anxiety disorder	4,834	0	0.0%	4,367	0	0.0%
CES-D depressive symptoms	4,381	453	9.4%	4,367	0	0.0%
Self-Rated Mental Health	4,673	161	3.3%	4,365	2	0.0%
Demographics						
Race	4,834	0	0.0%	4,367	0	0.0%
Gender	4,834	0	0.0%	4,367	0	0.0%
Age	4,834	0	0.0%	4,367	0	0.0%
Marital Status	4,824	10	0.2%	4,367	0	0.0%
Self-Rated Physical Health	4,675	159	3.3%	4,367	0	0.0%
# of Children in Household	4,834	0	0.0%	4,367	0	0.0%
# of Adults in Household	4,834	0	0.0%	4,367	0	0.0%
Region	4,834	0	0.0%	4,367	0	0.0%
Education	4,834	0	0.0%	4,367	0	0.0%
Household Income	4,834	0	0.0%	4,367	0	0.0%
Church Relationships						
Tangible Support Received	4,822	12	0.2%	4,357	10	0.2%
Tangible Support Given	4,822	12	0.2%	4,358	9	0.2%
Perceived Tangible Support	4,596	238	4.9%	4,158	209	4.8%
Freq. of Interaction	4,831	3	0.1%	4,365	2	0.0%
Subjective Closeness	4,821	13	0.3%	4,357	10	0.2%
Support	4,815	19	0.4%	4,352	15	0.3%
Strain	4,816	18	0.4%	4,353	14	0.3%

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CHAPTER 5 -

DISCUSSION AND CONCLUSION

In this project, I sought to resolve one of the most consistent yet counterintuitive associations found within the sociology of mental health - the finding that blacks, despite their relatively low social and economic standing in the United States - generally have better mental health outcomes than whites. I started by replicating past research on the race paradox in mental health, finding that blacks had significantly lower odds than whites of meeting the criteria for any DSM mood or anxiety disorder in the past 12 months, significantly fewer depressive symptoms in the past 30 days, and better self-rated mental health than whites. My overarching goal in this dissertation was to heed the call of scholars to identify "social and psychological factors that may account for race differences in health and well-being outcomes" (Lincoln, Chatters, and Taylor 2003: 391). To that end, I sought to understand whether the quality or quantity of four different social relationships (family, friends, fictive kin, church members) could explain the unexpected finding that blacks have better mental health than whites.

A key strength of this study was the use of multiple measures of mental health outcomes. I purposely selected varied outcomes (both statistically and conceptually) and found consistent evidence of the race paradox in mental health. For example, I used what is considered the "gold standard" in psychiatric epidemiological research - 12-month clinical diagnosis categories based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). To complement these standard diagnostic criteria, I examined two more general indicators of mental health. The use of depressive symptom scales is common in past research on race differences in mental health (e.g., George and Lynch

2003). To the best of my knowledge, no past research has examined race differences in self-rated mental health, although there is an emerging body of literature on self-rated mental health in the psychiatric and public health fields (e.g., Hoff, Bruce, Kasl, et al. 1997; Myint et al. 2006; Fleishman and Zuvekas 2007). I found the same results despite these conceptual differences, lending strength and credibility to the findings.

Structure of Dissertation and Key Findings

The most common attribution for the race paradox in past literature is that blacks have stronger social networks that shield them against the chronic psychosocial stress that is common among socially disadvantaged groups. I first considered the role of families because it is the most commonly cited attribution for the race paradox in past literature. Many have argued that the historical legacy of slavery gave rise to alternate forms of family arrangements, most notably, families that were centered more around blood ties than marital unions. If the term "family" is conceptualized as relationships with individuals related by blood, this mechanism would have strong potential to explain the race paradox in mental health.

Therefore, in Chapter 2, I examine whether nine different aspects of family relationships can explain the race paradox in mental health. At the bivariate level, I found that blacks had stronger family relationships than whites on two measures (more frequent tangible support given and family interaction) and whites had stronger family relationships on three measures (higher perceived tangible support and lower emotional strain). There were no significant race differences in terms of tangible support received, subjective closeness to family, or emotional support. In multivariate models, these

measures performed as expected; higher levels of support were associated with better mental health, while strain was associated with worse mental health. Despite these findings, none of the qualifying mediators could explain the race paradox in mental health.

After considering the role of family relationships, I next assessed the potential for friendships and fictive kin relationships to explain the relatively better mental health status of blacks. It can be argued that because marriage rates are consistently lower among blacks than whites (and because marital quality is also lower among blacks), blacks have weaker family ties and instead rely more on friendships and fictive kin relationships. In other words, because blacks are less embedded in marriage-centered networks, their social support systems may be comprised more of friends and fictive kin. This is consistent with the hierarchical compensatory model, which states that individuals have a rank-order preference in terms of who they'd like to receive support from, starting with kin (families) and then moving on to other non-kin sources of support such as friends and neighbors (Cantor 1979).

Given these findings, in Chapter 3, I considered five aspects of friendships and two aspects of fictive kin relationships. In the bivariate analysis, I found that whites had stronger friendships than blacks on two measures (higher tangible support received and more frequent interaction), while there were no race differences on tangible support given to friends and subjective closeness to friends. Surprisingly, whites had significantly strongly fictive kin relationships on one measure (total number of fictive kin) and there were no race differences in terms of frequency of tangible support received from fictive kin. While each of these friendship and fictive kin measures were significantly related to

the mental health outcomes, none of them (either individually or collectively) could explain why blacks had lower odds of any mood/anxiety disorder, fewer depressive symptoms, or higher self-rated mental health.

Finally, in Chapter 4, I considered whether church-based relationships could explain the race paradox in mental health. Blacks are far more likely than whites to both to attend church regularly and exercise private aspects of religion (Taylor, Chatters, Jayakody, et al. 1996; Chatters, Taylor, Bullard, et al. 2009). Church-based social relationships are but one aspect of religiosity but like friends and fictive kin, they also represent another voluntary network. The key distinction is that, unlike friends and fictive kin especially, church members are more likely to have a shared value system, notably the ability to engage with another person in "meaning work" (Ellison and Levin 1998). Indeed, past research finds that church support actually yields more benefits than secular support both in terms of physical health (Krause 2002; Krause, 2006) and life satisfaction (Krause 2004).

Although church-based relationships could be considered voluntary, I considered it separately given past arguments that the black church - because of its normative nature in many black communities - could be considered an "semi-voluntary institution" (Ellison and Sherkat 1995). Unlike family and voluntary social relationships (Chapters 2 and 3, respectively), I found strong bivariate race differences in church relationships. Compared to whites, blacks received tangible support more frequently from church members, gave tangible support more frequently, had significantly higher levels of perceived tangible support, more frequent church interaction, more subjective closeness to church members, more emotional support, and higher emotional strain. In short, blacks had more quality

relationships with church members on six of the seven indicators considered. However, none of these relationship aspects could explain the race paradox on any of the three outcomes considered.

The present study was similar to another recently published paper examining the role of various social integration measures (i.e., kin, friends, spouse/partner, confidant) in explaining black-white differences in mental health (Kiecolt, Hughes, and Keith 2008). Using data from 4,498 whites and 666 African Americans the 1990-1992 National Comorbidity Survey, they found that frequency of interaction, church attendance, the presence of a spouse/non-spouse confidant, and perceived supportive and strain from spouse/partners, kin, and friends could not explain blacks' lower psychological distress and lower odds of any DSM disorder or and DSM substance disorder in the past year. An important departure from the Kiecolt, Hughes, and Keith (2008) study is that the present analysis lacked sufficient measures on marital/romantic relationships. In other words, I was unable to test whether the race paradox in mental health could be attributed to higher quality romantic relationships among blacks than whites. However, given that blacks are far less likely than whites to get married (U.S. Census Bureau 2004) and have worse marital quality than whites (Broman 1993; Goodwin 2003; Broman 2005), it is unlikely that these measures would have accounted for the race paradox in mental health.

Despite this limitation, I built upon Kiecolt, Hughes, and Keith's important work (2008) in four ways. First, I use more recent data from a sample with a higher proportion of blacks (n=3,943 in the analytic sample), which increases the generalizability of the findings. Second, while Kiecolt and colleagues (2008) primarily used measures for emotional support/strain and frequency of contact, I included

additional measures for tangible support exchange among family, friends, and church members. Third, their analysis assessed frequency of church attendance (one aspect of organizational religiosity), a proxy measure for the availability of a church-based social network. The present dataset allowed for the use of more direct measures of the quality and quantity of church relationships. Finally, I considered the role of reciprocity in social relationships. In addition to examining both the independent influences of the provision and receipt of support, I examined their interactive effects on the race paradox in mental health.

Limitations

There are three limitations to consider regarding the present analysis. Most importantly, NSAL is based on cross-sectional data, which did not allow me to definitively test temporal ordering. That is, while the underlying logic presumes that the social support measures occurred prior to the mental health outcomes considered, I could not test this definitively. Second, NSAL contained no measures for geographic proximity to various social networks. Although emotional support and strain can be provided over the phone or through various other modes of communication, the lack of this measure has more direct relevance for the tangible support measures considered. Living within driving distance to family, friends, and fictive kin would more easily facilitate the exchange of tangible support and could account for higher levels of tangible support among both blacks and whites. Finally, NSAL contained no measures for the exchange of financial support. However, past research finds that whites are generally more likely than blacks to exchange financial support, and these differences disappeared after

controlling for socioeconomic status (Sarkisian and Gerstel 2004). Therefore, it is unlikely that these measures would have accounted for the race paradox in mental health.

Policy Implications and Directions for Future Research

Despite studying a wide range of indicators over four different relationships, I found that neither the quality nor quantity of social relationships could explain the race paradox in mental health. Therefore, it is important that future research explore other resilience mechanisms to explain the race paradox in mental health. For example, a common belief in the field is that blacks have stronger ethnic identities than whites. While NSAL had a wide breadth of measures regarding the strength of ethnic identity, these questions were only asked of African American and Afro-Caribbean respondents. Because there were not asked of whites, I could not assess the influence of this factor on the race paradox in mental health.

In general, the field should continue the search for other resilience mechanisms (specific to blacks) that could either attenuate or eliminate the race paradox in mental health. In addition, although I found that social relationships did not mediate the race paradox in mental health, it is crucial that future research examine the possibility that the meaning of these social relationships might vary by race. For example, with one exception (church-based relationships), I found that race differences in the quantity/quality of social relationships varied little by race. However, if research finds that family relationships matter more for whites than blacks, it might explain black/white differences in mental health status. It is important to build upon these mediation analyses by testing moderating effects as well.

The theory of self-regulation has recently been proposed as a mechanism to simultaneously explain the widespread race-based disparities in physical health and the race paradox in mental health (Jackson and Knight 2006). This theory suggests that blacks are more likely than whites to cope with distress through engaging in unhealthy behaviors, most notably, the consumption of "comfort foods." The use of comfort foods (that are typically high in sugar and fat) exacerbates physical health disparities because they are strongly associated with chronic conditions such as diabetes and heart disease. Importantly, the tendency to engage in negative health behaviors in order to cope with stressful life circumstances is an adaptive strategy because interrupts the physiological stress response, thus easing distress. In this way, blacks are thought to avoid the harmful mental health consequences of stressors, which results in seemingly better mental health status (relative to whites). This coping strategy, however, succeeds in exacerbating race-based physical health disparities. While this is an intriguing theory, empirical data supporting this theory are strongly needed.

This project is based on the notion that the race paradox is mental health is objectively true - that is, that blacks truly have better mental health outcomes than whites despite being exposed to a wider range of chronic stressors in the United States. One overlooked factor is the role of measurement. Brown, Sellers, Brown, and Jackson (1999) propose that differential item interpretation is one the way in which race differences in mental health status may be biased. For example, some have suggested that blacks are more likely to respond to distress through somatic (bodily) symptoms, while whites are more likely to exhibit distress through affective (mood) symptoms (Iwata, Turner, and Lloyd 2002). To the extent that mental health instruments are biased

in either direction, it could distort estimates of race differences in mental health. These findings are similar to past research on gender differences in mental health, which found that women are more likely to react to stressors through internalizing symptoms such as anxiety, while men are more likely to display externalizing symptoms such as substance abuse and violence (Kessler 1998). It is crucial that future research use both sets of indicators to obtain a more comprehensive picture of race differences in mental health status. Likewise, it is equally important to explore other differential manifestations of distress that might bias race-mental health measurement.

In terms of practice implications, the present results imply that mental health professionals should avoid the common assumption that blacks enjoy larger and more supportive family networks than whites. Practitioners should be attentive to both the positive and negative aspects of social relationships (in addition to the interaction of these factors), regardless of the race of the patient. Moreover, above and beyond awareness of the amount/frequency of social support exchange, it is paramount to understand patients' attribution of these processes. For example, if a patient gives twice as much support as they receive but they have a giving nature, it may be less detrimental to their mental health than if they expect reciprocity. Likewise, if a patient places a higher value on family relationships, family strain may be especially harmful to their mental health. It is currently unclear whether there are systematic race biases in either of these cases. However, the role of clinical interviewing skills in this context is essential to providing the highest levels of quality mental health services possible, regardless of race.

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