

ABSTRACT

OLABODE-DADA, OLUSOLA M. The Religious Involvement of African American Men and Its Relationship to Health Behaviors. (Under the direction of Craig C. Brookins.)

African American men have a high prevalence and mortality rate for various diseases such as heart disease and cancer and it is important to begin to identify ways to address these health disparities (Office of Minority Health & Health Disparities, 2008). Religious involvement is found to be positively associated with health-promoting behaviors (Chitwood, Weiss, & Leukefeld, 2008; George, Ellison, & Larson, 2002; Gillum, 2006; Gillum, 2005; Hill, Burdette, Ellison, & Musick, 2006; Hill, Ellison, Burdette, & Musick., 2007; Merrill & Thygeson, 2001; Nagel & Sgoutas-Emch, 2007; Roff et al., 2005; Schlundt et al., 2008; Wallace & Forman, 1998) but very few studies have targeted African American men. Through two embedded papers, the present study addresses whether religious involvement relates to health behaviors for African American men, using data from the National Survey of American Life: Coping With Stress in the 21st Century (NSAL) (Jackson et al., 2007). The first paper examined the bivariate relationships between three dimensions of religious involvement (i.e., organizational, non-organizational and subjective), social connection with church members (i.e., social network characteristics, tangible and emotional social support) and health behaviors (i.e., physical activity, substance use and behavioral counseling for substance use) of African American men who attended (n = 893) and did not attend church services (n = 272) more than once a year. The second paper investigated whether the social connection with church member acts as mediators between religious involvement and health behaviors. Results indicated that religious involvement, the social connection with church members and the health behaviors of African American men were positively related to one another. When mediation was tested, one indicator of tangible social support (i.e., frequency

you help church members) and emotional social support acted as mediators to completely explain the relationships between organizational and physical activity. Furthermore, the same indicator of tangible social support and social network characteristics acted as mediators to partially explain the relationship between non-organizational religious involvement and physical activity. These findings would suggest that religious involvement such as service attendance or reading religious material is related to an increase in physical activity for African American men that attended church services more than once a year. Furthermore, the help that is provided to and feeling cared for by church members may be an asset to African American men and such social connection with church members should be explored in more depth among this population. The implications of this study are discussed in more detail.

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The Religious Involvement of African American Men and Its Relationship to Health
Behaviors

by
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DEDICATION

I dedicate this dissertation to my grandmother, Modupe Olufunmilayo Dada, who helped me remember what I love.

BIOGRAPHY

Olusola (Shola) M. Olabode-Dada was born in Chicago, IL to Sandra Dickerson and Oluwole Olabode-Dada. In high school, Shola was guided by the idea that she wanted to work with people and study the mind. This led her to major in Psychology at Lake Forest College in Lake Forest, IL where she obtained her Bachelor of Arts degree. After graduation, Shola continued her pursuits in Psychology and serendipitously came upon a position at DePaul University in the field of Community Psychology. This is where she gained the research experience and learned the value of collaborating with the community to address the needs that they identify as important. Exposure to such a community-driven field of study motivated Shola to obtain her Masters of Science in a Community Psychology program at North Carolina State University in Raleigh. While living in Raleigh, NC, Shola began volunteering at the Full Frame Documentary Film Festival and was intrigued by the use of film to create behavior change. Her passion for film grew into a research interest that continues to guide and influences her career path. Shola's current interests include entertainment education, media literacy and health communication. She also has an interest in the use of community-based participatory research to address public health issues and HIV/AIDS related attitudes and behaviors among African Americans.

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CHAPTER 1

Introduction

Health disparities are quite prevalent across racial and ethnic groups within the United States and the research shows that African Americans have the highest death rates for heart disease, cancer and diabetes (Office of Minority Health & Health Disparities, 2008). The poor health outcomes for African American men, in particular, have been even more alarming. “In 2004, African American men were 1.4 times as likely to have new cases of prostate cancer [and], in 2005, were 2.4 times as likely to die from prostate cancer, as compared to non-Hispanic white men” (The Office of Minority Health [OMH], 2009). Furthermore, in 2005, African American men were 30% more likely to die from heart disease than their non-Hispanic white counterparts (OMH). The statistics for African American men’s health also indicate that they have the highest rates of hypertension in the world, have higher mortality rates for obesity than any other racial group, and are 1.7 times more likely to develop diabetes than white men (Moser, Green, Weber, & Doyle, 2005). African American men not only have a higher mortality rate, in general, but they are dying of preventable and treatable conditions that could easily be influenced by one’s health behaviors (Mahalik, Burns, & Syzdek, 2007). For that reason, it would be imperative to examine what is necessary to increase positive health behaviors among this population. In order to address some of these health disparities, researchers have begun to partner with churches in African American communities.

Religious involvement is prevalent among African Americans (Lincoln & Mamiya, 1990) and Black churches have often played a significant role in addressing community challenges such as the health of their members. Research from the National Survey of Black Americans (NSBA) shows that 70% of the 2,107 African American participants attended religious services at least a few times a month and two-thirds claim membership in a church (Ellison, Hummer, Cormier, & Rogers, 2000; Taylor, Chatters, & Levin, 2004). Based on high levels of involvement and the influence of the church, public health researchers have been led to use this institution as a vehicle to attend to the pertinent health issues plaguing African American communities. There is evidence to suggest that different dimensions of religious involvement are positively correlated with health behaviors (Benjamins & Buck, 2008; Bowie, Ensminger, Robertson, 2006; Chitwood, et al., 2008; Gillum, 2006; Hill, et al., 2006; Hill, et al., 2007; Menagi, Harrell, & June, 2008; Merrill & Thygeson, 2001; Michalak, Trocki, & Bond, 2007; Roff et al., 2005; Schlundt et al., 2008; Steinman, Ferketich, & Sahr, 2008; Wallace & Forman, 1998). However, the majority of the studies do not capture the variation within the African American population. Many of these studies include a small percentage of African Americans but there is very little emphasis on the racial and gender differences that would shed light on the experience of African American men. The deteriorating health of African American men warrant more studies that focus on factors, such as religious involvement, that promote better health behaviors among this population. Furthermore, insights into the mechanisms by which the relationship between religious involvement and health behaviors exist could be applied to interventions to decrease

the disproportionate burden of illness and disease among the African American male population.

Study Significance

The purpose of the present study was to investigate whether religious involvement influences the health behaviors of African American men. It is unclear whether this relationship holds up for African American men partly because fewer of them attend church or are otherwise religiously involved (Chatters, Taylor, & Lincoln, 1999; Taylor, 1988). An additional goal of this study was to examine how African American men's social connection with church members (i.e., social network characteristics, tangible and emotional social support) may mediate the relationship between three dimensions religious involvement and health behaviors (i.e., physical activity, substance use and behavioral counseling for substance use). More specifically, do religiously involved men demonstrate more positive health behaviors, and is the mechanism by which this occurs based on different aspects of the social connection with church members? If researchers are able to pinpoint the factors linking religious involvement to men's health behaviors then it may be possible to replicate that ingredient in other ways outside of the church for men who are neither church members nor religious (George et al., 2002).

Organization of Dissertation

In Chapter Two, the health behaviors experienced by African American men are examined in more detail. Then a review of the literature on the impact of religious involvement on health behaviors and the methodological issues of measuring religious

involvement are discussed. This is followed by the relationship between social support and religious involvement and the impact of social support on health behaviors. Chapter Two ends with a theoretical framework and conceptual model connecting religious involvement, social connection with church members and health behaviors. Chapter Three presents the methodology of the entire study, which is separated into two papers in the chapters to follow. Chapter Four highlights the bivariate relationships among religious involvement, social connection with church members and health behaviors of African American men. Within this chapter, analyses will be conducted on African American men who attended and did not attend church services more than once a year and group differences will be assessed. Chapter Five explores whether the social connection with church member variables act as a mediators between religious involvement and health behaviors among African American men who attended church services more than once a year. Finally, Chapter Six provides a conclusion to the entire study.

CHAPTER 2

Literature Review

Given that this study is framed around the effect of religious involvement on African American men, it is necessary to provide an appropriate definition of the construct. The discussion of religious involvement begins with a broad definition of religion. For many social science researchers, religion is defined as "...a process, the search for significance in ways related to the sacred" (as cited in Chatters, 2000, p. 338). Consequently, the concept of religious involvement is defined as the wide variety of what individuals do and how individuals engage in religion (Chatters). The current chapter presents a more detailed review of the literature as well as empirical studies pertaining to religious involvement, social support and health behaviors. Specifically, the first section of this chapter examines the health behaviors of African American men. The next section of this chapter includes the prevalence of religious involvement among African Americans, gender differences in religious involvement, the impact of religious involvement on health behaviors and methodological issues related to the measurement of religious involvement. Finally, the third section presents information concerning the nature of the social support that men receive or provide, the impact of social support on health behaviors and how religious involvement and social support relate to one another, the theoretical framework and the conceptual model for the study.

Health Behaviors of African American Men

Health behaviors are actions that individuals engage in to influence their health outcomes, which could be impacted positively or negatively (Mahalik et al., 2007). Some research state that modifiable health behaviors such as physical activity, substance use and tobacco use cause 50% of morbidity and mortality (Mahalik et al.). For that reason, health behaviors are important to target because they are activities that have a direct link to the chronic diseases and disabilities that impact our lives, particularly the lives of African American men. National surveys like the Behavioral Risk Factor Surveillance System (BRFSS), the National Health Interview Survey (NHIS), the National Health and Nutrition Examination (NHANES) and the National Surveys on Drug Use and Health (NSDUH) all consist of information regarding the health behaviors or risk factors that people participate in. The Center for Disease Control's National Center for Health Statistics (NCHS) has also kept track of the health trends that have occurred over time as they document the overall health of the United States. This section reviews the health behaviors of African American men, focusing on their physical activity, substance use and tobacco use between the periods of 2001 to 2008.

Physical Activity. The 2001 BRFSS states that African Americans aged 50 and older have a higher prevalence of physical inactivity than Whites but men still had higher estimates of recommended activity than women (Brown, Yore, Ham, & Macera, 2005). Brown et al. did not provide statistics for African American men, specifically, but it was stated that Africans Americans had 1.7 times the odds of being inactive when compared to Whites. When comparing data from the 2003 BRFSS, the 2004 NHIS and the 1999-2004 NHANES,

Whitt-Glover, Taylor, and Heath (2007) reported that a higher proportion of African American men compared to women stated that they engaged in regular physical activity across all datasets. Additionally, those with higher education and income (across all datasets) and those who were employed (only in the BRFSS) reported regular activity. There was a difference between datasets when comparing married men to unmarried men, whereas, more married men reported regular physical activity in the BRFSS and NHIS while the NHANES stated that more unmarried men reported regular physical activity. Overall, these two studies indicated that African American men are obtaining regular physical activity more so than their female counterparts but they are still less active than Whites. More recent data from the NCHS (2010) state that in 2007 51% of African Americans were inactive, 26% did some leisure-time activity and 23% obtained regular leisure-time activity. In other words, African American men may be exercising but the numbers are still low, which could help explain why this population has higher incidence rates of illness and disease.

Cigarette smoking. In 2002-2003, Delva et al. (2005) conducted a study to assess the cigarette smoking among low-income African Americans. Of the 55 African American men sampled, 59.3% of the men were current smokers who had smoked for an average of 9 years with an average of 10.1 cigarettes per day. In 2007, the NCHS (2010) reported that 23.4% of African American men 18 years of age and older considered themselves to be current smokers. This percentage of current smokers remained the same in 2009 (Pleis, Ward & Lucas, 2010). Although the numbers of current cigarette smokers are low among the men,

this health risk behavior is the most preventable cause of death and African Americans are heavily impacted by it (Delva et al., 2005).

Substance use. The NCHS (2010), in 2007, found that 9.5% of African Americans used illicit drugs in the past month, 7.2% used marijuana, 2.2% used nonmedical psychotherapeutic drugs, 39.3% used alcohol, 19.1% participated in binge alcohol use and 4.1% participated in heavy alcohol use. Between 2004-2008, the NSDUH found that, in the past month, 44.3% of American Americans (18 years of age and older) used alcohol, 21.7% engaged in binge alcohol use and 9.5% used an illicit drug (Substance Abuse and Mental Health Services Administration [SAMHSA], 2010). The rates of past month alcohol and binge alcohol use were lower for African Americans than the national averages but the rate of illicit drug use in the past month was higher for African Americans than the national average (SAMHSA). Similarly, African American men had significantly lower rates of past month alcohol use and binge alcohol use than the national average but had significantly higher rates of past month illicit drug use (SAMHSA). This information indicates that there is variation in substance use among African Americans with some rates of use being higher than the national average. Past month illicit drug use is more problematic for African American men than any other form of substance use but it is necessary to reduce the prevalence of all substance use within this group. In order to promote better health behaviors among African American men, additional investigation of protective factors must occur.

Religious Involvement

Religion has a prominent role in American culture and this is shown through the increasing number of congregations present in communities and the widespread practice of different religious traditions and holidays (Pargament & Maton, 2000). The salience of religion is quite visible throughout American society, and while it does provide some indication about people's religious involvement in the United States, racial differences do exist. Research highlighting the racial differences of religious involvement concludes that African Americans show higher levels of religious involvement than Whites, such as higher rates of daily prayer and attendance of religious services (Taylor, Chatters, Jayakody, & Levin, 1996). According to data from the Gallup Poll, African Americans were more likely to be members of a church and attributed greater importance to religion than Whites (Taylor et al.). On the other hand, Chatters et al. (1999) did find gender differences, suggesting that religious involvement is not as prevalent among African American men as it is among the women but mainly in terms of religious service attendance. Such gender differences are prominent within the literature and, consequently, have limited the research of men's religious involvement to be discussed only in terms of how they compare to the religious involvement of women. It is evident that African Americans are one of the more religiously involved groups and stand to greatly benefit from the religion-health connection but more additional studies focusing on the religious involvement of African American men are necessary.

Impact of Religious Involvement on Health Behaviors. Overall, religious involvement has been strongly associated with health-promoting behaviors and an overwhelming amount of literature supports the existence of this relationship (Benjamins & Buck, 2008; Bowie et al., 2006; Chitwood et al., 2008; Gillum, 2006; Hill et al., 2006; Hill et al., 2007; Menagi et al., 2008; Merrill & Thygerson, 2001; Michalak et al., 2007; Roff et al., 2005; Schlundt et al., 2008; Steinman et al., 2008; Wallace & Forman, 1998). The link between religion and health has been explored in relation to different health behaviors (i.e., physical activity, cigarette smoking, alcohol use and illicit drug use) all providing evidence that religious involvement can be beneficial to one's health (Chatters, 2000; Levin, 1994). It is useful to focus on health behaviors because they are more immediately observable and are directly correlated with health outcomes (Gallant & Dorn, 2001; Schlundt et al.; Wallace & Forman). A review of the studies to follow highlights the occurrence of the positive relationship between religious involvement and different health behaviors.

One of the health behaviors of interest in the present study is physical activity. Many studies have found that an increase in religious involvement translates into an increase in physical activity as well (Gillum, 2006; Hill et al., 2006; Hill et al., 2007; Kim & Sobal, 2004; Merrill & Thygerson, 2001; Nagel & Sgoutas-Emch, 2006; Roff et al., 2008; Schlundt et al., 2008; Strawbridge et al, 2001). There is extensive evidence of a positive relationship but some variation exist depending on the dimension of religious involvement and the

intensity of physical activity. For example, Roff et al. examined the relationship between three dimensions of religious involvement (i.e., organizational, non-organizational and intrinsic) and leisure-time physical activity among a mixed sample of participants. The researchers found that only organizational religious involvement was related to leisure-time physical activity. Then again, Hill et al. (2006) found that organizational religious involvement (i.e., church attendance) was associated with walking and strenuous exercise but not moderate exercise.

In addition to physical activity, cigarette smoking has also been shown to have a positive relationship with religious involvement. Gillum (2005) conducted a study that investigated the affect that religious involvement has on cigarette smoking on a national sample of 18,774 participants. The results indicated that men, in particular, who attended church services more frequently, were more likely to never have smoked or to be former smokers. It was concluded that religious involvement was beneficial in reducing initiation and prevalence of cigarette smoking. Koenig (1998) found similar results in a sample of older adults, with over half of them identifying as African American. The study suggested that those who attended church services, prayed and read the Bible were less likely to smoke or had fewer cigarettes than those who were not as religiously involved.

Another health behavior that has been related to religious involvement is substance use (i.e., alcohol and illicit drug use). The examination of alcohol use and religious involvement has been heavily studied (Benjamins & Buck, 2008; Bowie et al., 2006; Chitwood et al., 2008; Edlund et al., 2010; Hill et al., 2006; Hill et al., 2007; Merrill &

Thygerson, 2001; Michalak et al., 2007; Nagel & Sgoutas-Emch, 2006; Steinman et al., 2008; Strawbridge et al., 2001; Wallace & Forman, 1998). On the other hand, the association of illicit drug use and religious involvement has received very little attention. When examining the relationship between different dimensions of religious involvement and substance use, Chitwood et al. conducted a systematic review of relevant studies. They found that organizational and non-organizational religious involvement showed a significant negative correlation with alcohol use while subjective and organizational religious involvement both showed a significant negative correlation with marijuana use. Chitwood et al. concluded that there was little evidence to determine how protective any of the religious involvement dimensions are for illicit drug use aside from the use of marijuana.

The consensus across all of the studies reviewed is that religious involvement is protective of health and is significantly associated with more exercise (Gillum, 2006; Hill et al., 2006; Merrill & Thygerson, 2001; Schlundt et al., 2008; Wallace & Forman, 1998), less smoking (Gillum, 2005; Hill et al.; Roff et al., 2005) and less substance use (Chitwood et al., 2008; Hill et al.). Frequency of church attendance (i.e., organizational religious involvement) was the most commonly used variable to measure religious involvement and it was also a significant predictor of being a non-smoker, smoking fewer cigarettes, more walking, strenuous exercise and lower rates of heavy drinking within various studies (Gillum, 2006; Gillum, 2005; Hill et al.; Merrill & Thygerson; Schlundt et al.). Weekly church attendance was not only shown to establish good health behaviors but to also maintain healthy behaviors already in place (Strawbridge et al., 2001). Even though most of

the studies had a small to moderate percentage of African American participants and an equal number of men to women, there was a lack of information specific to African American men so one cannot gauge how their religious involvement may affect their health behaviors. In one study focusing on the impact of religious involvement on the health status of African American men, Brown and Gary (1994) concluded that church attendance did appear to have the most influence on lifestyle behaviors such as cigarette smoking and drinking alcohol. Such information implies that at least one dimension of religious involvement may encourage healthy behaviors among African American men but more information is needed about the relationship of other religious involvement dimensions with a variety of different health behaviors (e.g., illicit drug use). Additional studies focused on the religious involvement of African American men, in general, are necessary to fill a gap in the literature while also examining how their religious involvement may influence their health behaviors.

Methodological Issues. Based on the information previously presented, it is apparent that a relationship between religious involvement and health behaviors does exist but there has been much variation in how religious involvement is operationalized. Much of the social science research community commonly use church service attendance as the primary indicator of religious involvement while some have conceptualized it as a multidimensional variable and others as a single item (e.g., “How often do you go to church, temple, or religious services?”) (Ellison et al., 2000; Roberts & Davidson, 1984; Taylor et al., 2004). In other words, although heavily studied, there has not been a consensus on the conceptualization of the construct (Ellison et al.; Taylor et al.).

As an alternative, Roberts and Davidson (1984) presented two approaches to religious involvement stemming from the work of Max Weber and Emile Durkheim. The Weberian approach to religious involvement focuses on the personal meaning one places on religion, with particular attention to the subjective component of religion (i.e., personal beliefs, salience of faith to the individual, religious experience, religious knowledge and religious consciousness) (Roberts & Davidson). On the other hand, Durkheim's approach concentrates on the importance of the group in religion and the individual's behavior in relation to belonging (e.g., church attendance, participation in religious activities, friendships within the group and devotional practices) (Roberts & Davidson). Even though these two theories have been presented as independent and distinct from one another, there is also the belief that the subjective and behavioral approaches are dimensions of religious involvement that operationalize the construct more comprehensively (Chatters et al., 1999; Roberts & Davidson; Taylor et al., 2004).

Taylor et al. (2004) proposed a three-dimensional model of religious involvement comprising of organizational, non-organizational and subjective religiosity. Organizational religious participation pertains to behaviors that relate to being in a church, mosque, or other religious setting (e.g., church attendance, membership, participation in auxiliary groups). Non-organizational religious participation refers to behaviors that may occur outside of a religious setting (e.g., private prayer, reading religious material). Lastly, subjective religious participation refers to perceptions and attitudes regarding religion, with emphasis on such things as perceived importance of religion and the role of religious beliefs in daily life

(Taylor et al.). These dimensions seem to tap into the complexity of religious involvement by combining the subjective and behavioral approaches of religious involvement. The two theories, alone, do not provide an adequate measure of an individual's religiosity but together they form a good basis for capturing the intricate nature of the construct (Roberts & Davidson, 1984). Therefore, the current study used the conceptualization of religious involvement created by Taylor et al.

In addition to studying the multidimensional aspects of religious involvement, it is advantageous to consider what it is about religious involvement that positively connects it to different health behaviors. One potential mechanism that has been frequently proposed and studied by others to explain the relationship between religious involvement and health is the receipt of social support (Ferraro & Koch, 1994; George et al., 2002; Olphen et al., 2003; Powell, Shahabi, & Thoresen, 2003). Exploring whether social support provides explanation to the association of religious involvement and health behaviors is critical, particularly in improving the health of African American men.

Social Support

Social support exists in the context of social relationships in which some type of assistance is provided to or received from another. House (as cited in Heaney & Israel, 2002) defines social support as “the functional content of relationships” that can be grouped into four types of supportive behaviors: *emotional support* is classified as an expression of empathy, love, trust and caring toward another; *instrumental support* is the tangible aid and service that is provided to another; *informational support* refers to the advice, suggestions

and information used to address a need; and *appraisal support* pertains to information offered as constructive feedback for self-evaluation. One or more types of support may exist within different relationships, but regardless of the type, social support is an intentional act and meant to be helpful from the sender's perspective (Heaney & Israel). Social support has also been conceptualized to include social network characteristics such as network size and frequency of interaction with network members (George et al. 2002). Regardless of how it has been operationalized, social support still maintains a relationship with religious involvement and health behaviors and has the potential to mediate this relationship.

Relationship between social support and religious involvement. In the past, the Black church has been the sole source of support (e.g., providing food, clothing, money and/or educational and employment opportunities) for the African American community because access to other societal establishments was restricted (Taylor & Chatters, 1988; Taylor, Lincoln, & Chatters, 2005; Walls & Zarit, 1991). The church has fulfilled many roles and served so many purposes that it stands only second to the family as a significant social institution (Taylor & Chatters, 1988). The Black church is similar to the family in that its presence “endures over time and the life course,” considering that many African Americans become affiliated at a young age (Taylor & Chatters, 1988). Furthermore, as members go through different life transitions (e.g., marriage, births and deaths), the church functions as a stable support network (Taylor & Chatters, 1986). Due to this established relationship and the heavy reliance on the Black church for assistance, individuals within the

African American community will seek out support from the church before requesting services from other formal agencies (Walls & Zarit). Research suggests that African Americans do receive informal support from the church, although the types of support and how it supplements other sources of support varies (Chatters, Taylor, Lincoln, & Schroepfer, 2002; Taylor & Chatters, 1986; Taylor & Chatters, 1988; Taylor et al., 2005; Walls & Zarit). The studies that follow detail how the church provides support to its church members (e.g., through emotional and tangible social support), the quality of the relationships and whether church support differs from other sources of support.

Taylor and Chatters (1986) conducted a study that gave evidence to the type of support the church provides to its members as well as the relationship between religious involvement and social support. Using data from African American participants 55 years of age and older, they found that 75% of those who received support from church members reported receiving emotional support, 18.9% reported tangible support, and 5.4% reported total support. The most common type of support received from church members was when respondents were sick (i.e., visiting, companionship and moral support when ill). The results also indicated that church attendance, church membership and perceived importance of the church all had a significant effect on the social support variables. For instance, those who attended church more frequently and who perceived attendance to be important were more likely to report receiving support from church members. The researchers also found that older women and men did not differ in the amount of support they received from church members. Individuals who received support from church members appeared to be more

involved and integrated in the church and such investment of time could create a normative expectation for assistance and reciprocity.

Similarly, Taylor and Chatters (1988) conducted another study but focused on African Americans who were 18 years of age or older. The results remained the same except men were more likely to receive support than women. One suggested explanation of this gender difference was that the men who are in the church hold leadership positions and the status that accompany those positions may be related to an increase of support from church members. Another explanation was that the men are benefiting from the involvement of women in their families.

As Taylor et al. (2005) examined the quality of the relationships among church members, nearly all participants reported that their church network is either very close (40.9%) or fairly close (47.9%) and 59% reported that they had some level of interaction with church members (i.e., 25.6% reporting nearly every day and 33.2% reporting at least once a week). The results also showed that those who reported a high level of closeness with church members reported more frequent interactions and more support from church members. In the same vein, respondents who frequently interacted with church members reported receiving more support as well. The researchers found that closer networks led to an increase in support through an increase in the level of interaction. These correlations suggest that social network characteristics are critical in understanding the dynamics of social support exchanged and the nature of the relationships among those involved in the church.

Upon investigating the social support received from different sources, Chatters et al.

(2002) found that 55.3% of the African American participants (18 years of age or older) reported receiving informal support from both family and church members while only 8.2% of the sample reported receiving support from church members only and 9.6% of the sample reported that they do not receive support from either. Additionally, men were more likely than women to report receiving support from family members only and less likely to report receiving support from church members only compared to receiving from both family and church members. Individuals with high levels of church participation, regardless of gender, were more likely to report receiving support from church members only. It was concluded that church members may serve as an alternative source of support to family but these findings definitely indicate that family support is still significant, especially for African American men.

Finally, Walls & Zarit (1991) also found that perceptions of support from family and church members were distinct among a sample of older African American participants. The results indicated that perceptions of support from family and church members were significantly different for emotional support, tangible support, reliable alliance, opportunity for nurturance and reassurance of worth. Respondents also perceived support from family members to be higher than perceived support from church members for all types of support except social integration. Support from church members was found to be a significant predictor of well-being and those who perceived high support from both family and church members had higher well-being than those who perceived high support from only one source. It was concluded that although support from church members does not replace support from

the family, it does supplement it. The two sources of support cannot be considered mutually exclusive because some family members are church members as well, which is just another example of how much the church is integrated into the lives of African Americans.

All in all, the studies pertaining to the receipt of social support from church members conclude that many African Americans receive some level of church support while support from the family is still relevant and significant. Church-based support has, historically, been a necessity to supplement what the family may already provide and it functions in a similar way (Chatters et al., 2002; Taylor & Chatters, 1986; Taylor & Chatters, 1988; Taylor et al., 2005). As in other support networks, church support is reciprocated depending on who engages in supportive behavior toward others and when network members act as a protective body that accompanies people throughout their lives (Taylor & Chatters, 1986; Taylor & Chatters, 1988). The literature suggests that both sources of support are important but support from the family is distinct from that of church members, particularly for African American men. Men in the African American community may be more likely to rely on the support of the family rather than the church but those men that are involved in the church do report receipt of support from church members. Furthermore, those who are active in the church report church members as their main source of support. It is no surprise that those who attend church more frequently and place more importance on attendance, receive more support from church members, which is why this source of support is essential. The evidence also states that as individuals interact more frequently, they will grow closer and that will increase the amount of support provided. For that reason, it is necessary to further examine closeness and

frequency of interaction between church members. These variables not only have impact on support received but also provide more insight into the relationships that develop within the church. Regardless of whether there is overlap between church and family members, the social support from church members does stand out as well as its potential to influence health, particularly for those who are highly involved in religious institutions.

Relationship between social support and health behaviors. Social support has been shown to be beneficial to one's health behaviors, and consequently, improve health outcomes (Schlundt et al., 2008; Strine, Chapman, Balluz, & Mokdad, 2008). There is extensive evidence to show that social support is strongly related to health behaviors such as physical activity (Cotter & Lachman, 2010; Dowda, Ainsworth, Addy, Saunders, & Riner, 2003; Emmons, Barbeau, Gutheil, Stryker, & Stoddard, 2007; Gallant & Dorn, 2001; Jackson, 2006; McNeill, Wyrwich, Brownson, Clark, & Kreuter, 2006; Sallis, Hovell, Hofstetter, & Barrington, 1992; Strine et al.; Trost, Owen, Bauman, Sallis, & Brown, 2002; Walcott - McQuigg & Prohaska, 2001), cigarette use (Gallant & Dorn; Strine et al.) and substance use (Gallant & Dorn, 2001; Strine et al.). Social support appears to be a major psychosocial variable that has the potential to influence health behaviors for men and women and this is indicated in the following studies.

A number of studies have found that different types of social support positively correlate with physical activity, meaning that high levels of social support was associated with high levels of physical activity (Trost et al., 2002). Emmons et al. (2007) found social network characteristics and social support (i.e., emotional, financial and tangible) to be positively related to physical activity but only social network characteristics stood out as a

significant predictor. Using a national dataset, Strine et al. (2008) found that as social and emotional support decreased, the prevalence of physical inactivity increased. In terms of cigarette smoking and substance use, two studies found that social network characteristics (Gallant & Dorn, 2001) and perceived social support (Jackson, 2006) were more predictive of certain health behaviors (i.e., cigarette smoking, physical activity and alcohol consumption) for women but not for men.

The current evidence points to a favorable association between social support and social network characteristics on health behaviors, but a couple studies suggest that men's health behaviors may not benefit from social support. Findings on the social support that men receive or provide are not discussed without referencing and pointing out how distinct their experiences are from that of women. Based on the literature, it has been found that men are more isolated than women and women receive and provide more support, specifically with regard to emotional social support (Matthews, Stansfeld, & Power, 1999; Vandervoort, 2000). Researchers did find that men reported receiving higher levels of tangible support from the person they identify as close (Fuhrer & Stansfield, 2002) but more investigation of how social support benefits men is needed outside of any comparison to women. Given that there is a positive relationship between social support and various health behaviors, it would be useful to continue to explore the role of social support in men's lives. Though gender differences may exist, it is worthwhile to look within a different setting such as the Black church because the source of support may make a difference, as discussed earlier.

It may be more fitting to focus on the support received from church members rather than other sources of support (e.g., family and friends) in order to examine social support as a

mediator of the relationship between religious involvement and health behaviors (George et al., 2002). Studies that utilize measures of social support from friends and family may not be able to observe an effect due to their inappropriateness (George et al.). For that reason, the current study focuses on the social connection with church members, which encompasses social support and social network characteristics. The nature of the relationship between religious involvement, social connection with church members and health behaviors may be more effectively studied within the context of a theoretical framework.

Theoretical Framework

As of now, there are a number of theories that attempt to explain how people engage in health-related behavior change (e.g., Health Belief Model, Theory of Reasoned Action, Theory of Planned Behavior and the Transtheoretical Model and Stages of Change) but, in terms of the present study, Bandura's (1977a, 1986) Social Cognitive Theory (SCT) will be used. When determining how religious involvement, the social connection with church members and health behaviors relate to one another it is important to consider the person, the environment and the behavior. These three components together make up SCT's reciprocal determinism, which takes into account the context or situation surrounding individual behavior change. Reciprocal determinism describes how it is necessary to examine the interaction between the person, environment and behavior when attempting to explain what prompts and maintains behavior change. What follows is a description of SCT and a detailed explanation of reciprocal determinism as well as how the three components (i.e., the person, environment and behavior) are used in the current study.

Social Cognitive Theory is a comprehensive structure for understanding how humans, their environment and their behaviors interact to create social change (Baranowski, Perry, & Parcel, 2002). Once called the Social Learning Theory, SCT is a dynamic framework that takes into account different personal factors (i.e., cognitive and behavioral) that work together while also relating to the setting in which these factors take place. SCT consists of the following major constructs: environment, situation, behavioral capability, expectations, expectancies, self-control, observational learning, reinforcements, self-efficacy and emotional coping responses. All have the ability to impact health-related behavior based on the way that SCT analyzes behavior through reciprocal determinism.

Reciprocal determinism involves the person, their behavior, the environment in which the behavior takes place and the overall situation. The environment is anything physically external to the person (i.e., people, place and things) that has the potential to affect a person's behavior and the situation is one's perception of their environment along with how they perceive their role in the situation (Baranowski et al., 2002). They all simultaneously interact, influencing one another along the way. Therefore, when a change occurs among the person, their behavior, or the environment, a change is created in all other components and causes a shift in the situation. As the situation shifts, the three components (the person, environment, behavior) are evaluated and adapted in a way that they mirror one another in order to support behavioral change. In this view of behavior change, one specific component does not cause a change in behavior. There are multiple factors that influence behavior while one's behavior also affects those factors. Furthermore, none of the components are considered to be the ultimate cause because the person, environment and one's behavior are

so interdependent that figuring out the specific cause of each is difficult depending on the point in time in which the situation is examined (Bandura, 1978). Consequently, it is difficult to test causality within the framework of reciprocal determinism but one can see how to view the relationships in a model that may operate in such a cyclical manner.

Conceptual Model. In the present study, the targeted variables (i.e., organizational religious involvement, social connection with church members and health behaviors) are suggested to function in a mutually supporting manner as seen in Figure 1. That is, people who are more religiously involved may be motivated to build their social connection with church members. As these connections build in terms of networking and support, church members may begin to engage in health-promoting behaviors. One goal of this study was to examine whether African American men who are religiously involved in the church engage in health-promoting behaviors and if this relationship can be attributed to their social connection with church members.

According to reciprocal determinism, any of the components can be stronger determinants over the others depending on the circumstances (Bandura, 1978). For example, the environment may act as the dominant component that has a greater impact on behavior than cognitive factors related to an individual or prior behavior. One illustration of this is when people are dropped into a deep body of water; regardless of their varied cognitions or previous behaviors, they will all attempt to swim in some way (Bandura). With that said, it is

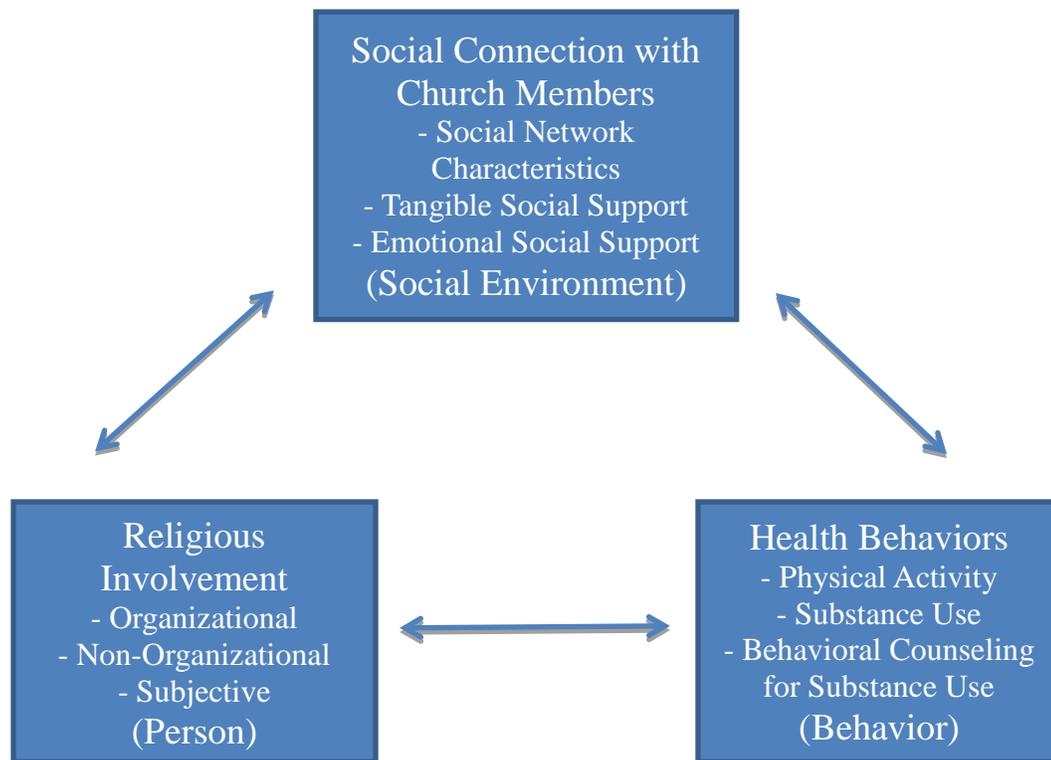


Figure 1. Path-analytic model indicating social connection with church members as the mediator between three dimensions of religious involvement and three health behaviors using the three components of reciprocal determinism.

evident from the literature previously reviewed that the church has a strong presence in the lives of many African Americans and may act as a dominant component.

There have been a few studies to examine social support as a mediator between dimensions of religious involvement and health behaviors such as substance use (Bowie et al., 2006; Edlund et al., 2010; Menagi et al., 2008) and physical activity (Kim & Sobal, 2004). These studies showed religious involvement variables to be associated with the

targeted health behaviors (i.e., physical activity, alcohol use, and illicit drug use) but the investigation of social support as a potential mediator resulted in little to no effect on the relationship (Bowie et al.; Edlund et al.; Menagi et al.; Kim & Sobal). For example, Kim and Sobal sought to examine whether social support mediated the relationship between religion (i.e., behavioral, subjective and functional) and health behaviors (i.e., physical activity and fat intake). Greater prayer (a component of non-organizational religious involvement) was found to be a significant predictor of moderate physical activity in men but social support did not act as a mediator. Although these findings appear to oppose the conceptual model presented, Kim and Sobal's study should be examined with some reservation. The sample was recruited from one county in upstate New York and the majority of the sample for this study was White women, making the results less applicable to a sample of African American men. While religion variables have been associated with health, all religion variables may not fit into a model in which social support mediates its relationship with health behaviors. Kim and Sobal fail to provide a theoretical basis for looking at religion variables aggregately as opposed to how they may individually contribute to the outcomes. The study also used a general social support measure rather than social support received from the church. Finally, with so many religion variables entered into the model at once, it does raise a question as to whether there may be some multicollinearity taking place that could provide inaccurate results about the predictive power of individual variables (e.g., organizational, non-organizational or subjective religious involvement). There was evidence that greater prayer (one aspect of non-organizational religious involvement) predicted moderate physical activity of men but additional research is needed. In order to increase the individual power

of the independent variables, this study focused on organizational, non-organizational and subjective religious involvement separately.

This study of African American men's religious involvement and health behaviors sought to examine the direct relationships between three dimensions of religious involvement (i.e., organizational, non-organizational and subjective), social connection with church members (i.e., social network characteristics and tangible and emotional social support) and health behaviors (i.e., physical activity, substance use and behavioral counseling for substance use). Unlike other studies, this study also uses a theoretical framework, specifically, reciprocal determinism as a guide for comprehensive investigation of how the social connection with church members relate to health behaviors and religious involvement.

Study Research Questions and Hypotheses

The following research questions and hypotheses are used to test bivariate relationships between the variables and the mediation model.

- 1) What are the bivariate relationships between religious involvement and health behaviors for African American men who attended and those who did not attend church services more than once a year?

Hypothesis 1: All three dimensions of religious involvement (organizational, non-organizational, and subjective) will be positively and significantly associated with health behaviors as measured by the Physical Activity Index, Substance Use Index, and the behavioral counseling for substance use item for African American men who attended and those who did not attend church services more than once a year.

2) What are the bivariate relationships between the social connection with church members and health behaviors for African American men who attended church services more than once a year?

Hypothesis 2: The social connection with church member variables (social network characteristics, tangible social support and emotional social support) will be significantly and positively associated with health behaviors as measured by the Physical Activity Index, Substance Use Index, and the behavioral counseling for substance use item for African American men who attended church services more than once a year.

3) What are the bivariate relationships between the social connection with church members and religious involvement for African American men who attended church services more than once a year?

Hypothesis 3: All three dimensions of religious involvement (organizational, non-organizational and subjective) will be significantly and positively associated with the social connection with church member variables (social network characteristics, tangible social support and emotional social support).

4) Is there a difference in non-organizational religious involvement and subjective religious involvement for those who attended and those who did not attend church services more than once a year?

Hypothesis 4a: There will be a significant difference on non-organizational religious involvement for those who attended and those who did not attend church services more than once a year.

Hypothesis 4b: There will be a significant difference on subjective religious involvement for those who attended and those who did not attend church services more than once a year.

- 5) Is there a difference in the health behaviors of those who attended and those who did not attend church services more than once a year?

Hypothesis 5: There will be a significant difference in the health behaviors of those who attended and those who did not attend church services more than once a year.

- 6) Will African American men who report a higher level of religious involvement also report a higher score for health behaviors, when controlling for covariates?

Hypothesis 6: African American men who report a higher level of organizational, non-organizational, and subjective religious involvement will report higher scores for physical activity as measured by the Physical Activity Index and higher scores for substance use as measured by the Substance Use Index, when controlling for covariates.

- 7) Will African American men who report a higher level of religious involvement also report greater levels of social connection with church members (i.e., tangible and emotional social support, and social network characteristics), when controlling for covariates?

Hypothesis 7: African American men who report a higher level of organizational, non-organizational, and subjective religious involvement will report greater levels of social connection with church members (tangible social support, emotional social support and social network characteristics), when controlling for covariates.

- 8) Will social network characteristics, tangible social support and emotional social support (social connection with church members) act as mediating factors independently and in combination to explain the relationship between religious involvement and health behaviors, when controlling for covariates?

Hypothesis 8: Social network characteristics, tangible social support and emotional social support (social connection with church members) will all act as mediators in combination and independently between organizational, non-organizational, and subjective religious involvement and physical activity as measured by the Physical Activity Index and substance use as measured by the Substance Use Index.

CHAPTER 3

Method

This chapter describes the participants, measures, procedures and analysis of the data specific to the research questions and hypotheses previously described. The purpose of the study is to examine how religious involvement relates to health behaviors and the degree to which social connection with church members (social network characteristics, emotional and tangible social support) may serve as mediating variables. The overarching research question is: *What are the relationships between religious involvement, social connection with church members and health behaviors for African American men adjusting for covariates (i.e., health status, age, income, education, work status, marital status, region and religious affiliation)?* Specific research questions pertaining to the relationships among the variables are as follows: 1) *What are the bivariate relationships between religious involvement and health behaviors for African American men who attended and those who did not attend church services more than once a year;* 2) *What are the bivariate relationships between the social connection with church members and health behaviors for African American men who attended church services more than once a year;* 3) *What are the bivariate relationships between the social connection with church members and religious involvement for African American men who attended church services more than once a year;* 4) *Is there a difference between non-organizational religious involvement and subjective religious involvement for those who attended and those who did not attend church services more than once a year;* 5) *Is there a difference in the health behaviors of those who attended and those who did not*

attend church services more than once a year? Finally, the research questions pertaining to the mediation model among African American men who attend religious services more than once a year are as follows: 6) *Will African American men who report a higher level of religious involvement also report a higher score for health behaviors, when controlling for covariates;* 7) *Will African American men who report a higher level of religious involvement also report greater levels of social connection with church members (i.e., social network characteristics, tangible and emotional social support), when controlling for covariates;* 8) *Will social network characteristics, tangible social support and emotional social support (social connection with church members) all act as mediating factors explaining the relationship between religious involvement and health behaviors, when controlling for covariates?* The dataset used for this study was the National Survey of American Life: Coping With Stress in the 21st Century (NSAL) (Jackson et al., 2007). This secondary dataset provides a large enough sample of African American men to make some generalizations about how the variables of interest interact within this population.

Participants

Data was collected from a sample of 3,570 African Americans aged 18 and older that were English-speaking, non-institutionalized and resided in households located in the coterminous 48 states. This survey population included only African American adults who did not identify ancestral ties in the Caribbean (Heeringa et al., 2004). The response rate for African Americans was 70.9% (Heeringa et al.). For the purposes of this study, two samples were drawn: one comprised of all African American men in the sample (n=1,271) and the other comprised of African American men who attended religious services (n=893). There

were a total of 1,148 African American men who attended church services since they were 18 years old but 149 of them only attended services less than once a year. Additionally, there were 106 participants missing data so they were dropped from the analyses. This resulted in a sample size of 893 African American men who attended religious services (i.e., other than for weddings and funerals) more than once a year.

Parent Study Recruitment, Sampling, and Data Collection Instrument

The National Survey of American Life (NSAL): Coping With Stress in the 21st Century dataset was collected by The Program for Research on Black Americans at the University of Michigan's Institute for Social Research from February 2001 to March 2003 (Jackson et al., 2007). Heeringa et al. (2004) states that the NSAL is an integrated national household probability sample survey of 6,199 respondents using a multi-stage sample design. The sample included 3,570 African Americans, 1,006 non-Hispanic Whites and 1,623 Blacks of Caribbean¹ descent with a response rate of 71.5%. The NSAL dataset combined a core national area probability sample of households with a supplemental sample of households in areas that had a high concentration of Afro-Caribbean residents. Although the NSAL study targets non-Hispanic Whites and Afro-Caribbeans for comparative purposes, "the NSAL Core national sample is designed to be optimal for a national study of the African American survey population" (Heeringa et al.).

¹There is a discrepancy between what is reported by Heeringa et al. (2004) and what the dataset shows. The dataset shows that the sample included 3,570 African Americans, 891 non-Hispanic Whites, and 1,438 Blacks of Caribbean descent with 183 individuals classified as "all other Hispanic."

There were four sampling stages: the *primary stage* comprised of sampling the US Metropolitan Statistical Areas (MSAs) and counties; the *second stage* involved the sampling of area segments; the *third stage* was the sampling of the housing units within the area segments; and the *fourth stage* was the random selection of eligible respondents from the housing units (Heeringa et al., 2004). The NSAL core sample comprised of 64 primary stage units, made up of MSAs and non-MSAs (e.g., “single counties or a grouping of geographically contiguous counties with small populations”) (Heeringa et al., p. 222). At the second stage, 456 area segments were nested within those primary stage units. By the third stage of sampling, the NSAL core sample became a stratified probability sample of US households based on two domains defined by the 1990 census proportions of African American households. The first domain incorporated all census block groups with 10% or more African American households reported while the second domain included all census block groups with less than 10% of African American households. Once housing units were identified, trained interviewers made in-person contact with each household to find out the age, gender, race and Hispanic or Caribbean ancestry of each household member. A list was compiled of all household members and those who were eligible to be selected as a NSAL respondent were identified within each household. In order to randomly select a NSAL respondent within each household (one respondent per household), the researchers used an objective procedure developed by Kish (as cited by Heeringa et al.). Finally, face-to-face interviews were conducted in the homes of respondents (approximately 14 percent of the interviews were conducted either partially or entirely by telephone) and recorded on laptop computers (Taylor et al., 2007). As a result of NSAL’s complex sampling design, this

proposed study will use the following special analytical procedures and weighting of variables: sampling error stratum, sampling error cluster, NSAL weight centered for total N of 6082 and NSAL weight population weight.

Measures

The following variables from the NSAL were used for this study: religious involvement (i.e., organizational, non-organizational and subjective religious participation), social connection with church members (i.e., social network characteristics, tangible and emotional social support) and three health behaviors (i.e., physical activity, substance use, and behavioral counseling for substance use). Two health behavior indices were created from items within the NSAL, one pertaining to participants' engagement in physical activity and the other pertaining to substance use. Likert scale variables were treated as continuous. Means, standard deviations and frequency distributions were also computed.

Recoding. All independent variables (i.e., the three dimensions of religious involvement and the three variables representing social connection with church members) were reverse coded for high scores to indicate more engagement in that variable. For example, some of the items within the organizational religious participation measure were originally on a Likert scale of 1-nearly every day to 5-less than once a year but it was reverse coded so that 1 equaled less than once a year and 5 equaled nearly every day. In order to derive scores, the organizational religious involvement and social network characteristics measures were standardized so that all of the items incorporated within those measures were on the same scale. Variables within the health behavior indices (Physical Activity and Substance Use) were recoded for the responses to range from zero to five. As with the

independent variables, higher scores denote more involvement in health-promoting behaviors so the behavioral health counseling for substance use and physical activity items were reverse coded but the cigarette smoking and substance use items were left alone.

Lastly, some variables were transformed into dummy variables (0 and 1) if the variable was categorical or if the histogram of the variable did not appear normally distributed. The levels of dummy variables differed for each variable depending on the number of categories within that variable. Upon analysis, one level was left out for each of the variables that were created into dummy variables. All but two of the covariates used in the analyses were created into dummy variables because they were categorical: health status (five levels, “poor” as the reference group), education (four levels, “16 years or more of education” as the reference group), work status (three levels, “not in labor force” as reference group), marital status (three levels, “never married” as reference group), region (four levels, “west” as the reference group) and religious affiliation (14 levels, “no religion” as the reference group). Subjective religious involvement was recoded into a three level dummy variable (“high” as reference group) because the histogram was not normally distributed.

Religious involvement measures.

Organizational religious participation. Organizational religious participation included frequency of service attendance, number of hours at religious services, church membership, frequency of participation in congregational activities and number of hours per week in other activities at the place of worship (Cronbach’s $\alpha = .55$). The categories and values for frequency of religious service attendance were as follows: attend nearly every day (5), attend at least once a week (4), a few times a month (3), a few times a year (2), less than

once a year (1). The number of hours at religious services on a typical Sunday was measured with the question, "On a typical (Sunday/Saturday) how many hours are you at church or place of worship?" Church membership was measured with the question, "Are you an official member of a church or other place of worship?" Frequency of participation in congregational activities was measured with the question, "Besides regular service, how often do you take part in other activities at your church? Would you say nearly every day (5), at least once a week (4), a few times a month (3), a few times a year (2), or never (1)?" Finally, the number of hours per week in other activities at the place of worship was measured with the question, "Not including religious services, how many hours per week are you at your place of worship?"

Non-organizational religious participation. There were five items that measured non-organizational religious participation: reading religious books or other religious materials, watching religious television programs, listening to religious radio programs on the radio, praying and asking someone to pray for you (Cronbach's $\alpha = .73$). Respondents were asked how often they took part in these activities (i.e., nearly every day, at least once a week, a few times a month, at least once a month, a few times a year, or never), using a 6-point Likert scale for each item (6-nearly every day to 1-never).

Subjective religious participation. Four measures of subjective religious participation were used: (a) importance of religion while growing up, (b) importance of parents taking or sending their children to religious services, (c) overall importance of religion in the respondent's life and (d) respondent's self-rating of religiosity (Cronbach's $\alpha =$

.72). Each item had four categories ranging from 4 (very important or very religious) to 1 (not important at all or not religious at all).

Social network characteristics. Items measuring closeness to and frequency of contact with church members are as follows: (a) “How close are you to the people in your church? Would you say very close, fairly close, not too close, or not close at all;” and (b) “How often do you see, write or talk on the telephone with church members? Would you say nearly every day, at least once a week, a few times a month, at least once a month, a few times a year, hardly ever or never?” For the first item a Likert-scale was used ranging from 4 (very close) to 1 (not close at all) and the second item used a Likert-scale ranging from 6 (nearly every day) to 1 (never).

Social connection with church member measures.

Social support. The social support measure included social support received from the church and comprised of tangible social support and emotional social support.

There were three indicators of tangible social support and they were treated separately within all analyses because the measure had low reliability when all three items were analyzed together. The items that measured tangible support were as follows: (a) “How many people in your church (place of worship) would help you out if you needed help;” (b) “How often do people in your church (place of worship) help you out? Would you say very often, fairly often, not too often, or never;” and (c) “How often do you help out people in your church (place of worship)? Would you say very often, fairly often, not too often, or never?” The first item required the respondent to fill in a number and the last two items used a Likert-

scale with categories ranging from 4 (very often) to 1 (never). An additional category representing men who reported, “never needing help” were categorized under 1 (never).

The items measuring emotional support were as follows: (a) “How often do your church members make you feel loved and cared for? Would you say very often, fairly often, not too often, or never; (b) “How often do they listen to you talk about your private problems and concerns; (c) “How often do they express interest and concern in your well-being?” Each item had four categories ranging from 4 (very often) to 1 (never). Cronbach’s $\alpha = .72$.

Health behavior indices. The health behavior indices included questions within the NSAL that focused on the following health behavior domains: physical activity, cigarette smoking, substance use (i.e., alcohol, marijuana, cocaine, prescription, other drugs) and behavioral health counseling for substance use. Two indices were created, Substance Use and Physical Activity, and the item assessing behavioral health counseling for substance use was kept as a separate dependent variable, as shown in Table 1. Therefore, there are three health behavior variables, which were created based on the items that were significantly correlated with one another. In order to create the two indices, the following steps were completed:

- 1) Some items were reverse coded (i.e., physical activity and behavioral health counseling for substance use variables);
- 2) All variables were recoded so that the responses ranged from 0-5 (i.e., three physical activity items originally ranged from 1 (never) to 4 (often) and now it ranges from 0 (never) to 5 (often); four substance use items - one cigarette smoking item originally ranged from 1 (yes) to 5 (no) and now it ranges from 0 (yes) to 5 (no), one alcohol

Table 1

Items for Each Health Behavior.

Health domain	Questions
Physical activity	How often do you engage in active sports or exercise?
index	Would you say often, sometimes, rarely or never?
	How often do you take walks?
	(Would you say often, sometimes, rarely or never?)
	Please tell me how often you typically do each of the following things.
	How often do you work in the garden or the yard? Would you say often, sometimes, rarely or never?
Substance use	Do you currently smoke?
index	In the past 12 months, how often did you usually have at least one drink - nearly every day, three to four days a week, one to two days a week, one to three days a month, or less than once a month?
	How often did you use marijuana or hashish in the past twelve months- nearly every day, 3 to 4 days a week, 1 to 2 days a week, 1 to 3 days a month, or less than once a month?
	How often did you use cocaine in the past twelve months- nearly every day, 3 to 4 days a week, 1 to 2 days a week, 1 to 3 days a month, or less than once a month?

Table 1 (continued)

Health domain	Questions
Substance use index	<p>How often did you use prescription drugs without a doctor's recommendation in the past twelve months - nearly every day, 3 to 4 days a week, 1 to 2 days a week, 1 to 3 days a month, or less than once a month?</p> <hr/> <p>How often did you use one or more of the drugs on page 69 (i.e., heroin, opium, glue, LSD, peyote, or any other drug) in the past twelve months- nearly every day, 3 to 4 days a week, 1 to 2 days a week, 1 to 3 days a month, or less than once a month?</p>
Behavioral health counseling for substance use	<p>Did you talk to a medical doctor or other professional about your use of [(alcohol/or/drugs)] in the past 12 months? By professional we mean psychiatrists, psychologists, counselors, spiritual advisors, herbalists, acupuncturists and other healing professionals?</p>
<p>item originally ranged from 1 (nearly every day) to 6 (did not drink in past 12 months) and now it ranges from 0 (nearly every day) to 5 (did not drink in past 12 months), one marijuana, one cocaine, one prescription and other drugs originally ranged from 1(nearly every day) to 6 (less than once a month) and now ranges from 0 (nearly every day) to 5 (never); and one behavioral health counseling for substance use item originally ranged from 1 (no) to 5 (yes) and now it ranges from 0 (no) to 5 (yes);</p>	
<p>3) Variables were combined using an average of the separate items.</p>	

Covariate measures.

There were eight covariates that were included in all analyses that referred to the participants' age, household income, health status, work status, marital status, region and religious affiliation.

Data Analyses

Due to the complex sampling procedures used by NSAL, the analyses for this proposed study will begin with the full dataset including 6,082 cases so that all sampling stages (i.e., clusters of MSAs and non-MSAs, area segments, housing units, and eligible respondents) would be part of the correction for non-independent observations. Then, the particular cases of African American men, those who attended (n=893) and did not attend (n=272) church services more than once a year were selected and analyzed within the larger sample. The sample of interest was defined by creating variables, called "sample" and "AAmenNoattend," that will equal the 893 and 272 African American men who attended and did not attend church services more than once a year.

Univariate descriptive statistics were calculated for all variables and Likert scale variables were treated as continuous. Hence, means and standard deviations are presented as well as frequency distributions. Linear regression coefficients were also calculated to determine the existence and nature of any bivariate relationships between all of the variables. A logistic regression was run on the behavioral counseling for substance use item because it is a two-category outcome variable.

Independent samples t-tests were used to assess any significant differences between those who did and did not attend church services more than once a year on the following

variables: non-organizational religious involvement, subjective religious involvement and health behaviors as measured by the Physical Activity, Substance Use indices and the behavioral counseling for substance use item. Stata (StataCorp, 2009), version 11.0, was the statistical software used to conduct all analyses because it takes into account the complex sampling present within the NSAL data. Upon running each statistical test, Stata adjusted for the lack of independence among observations that is an assumption of multivariate analyses.

Mediation was assessed using the structural equation modeling technique, which provides a maximum likelihood estimation of the path model of the observed variables (i.e., religious involvement dimensions, social connection with church members, and health behaviors). According to Baron and Kenny (1986), mediation is established when the following conditions are met: (1) the independent variable affects each mediator in the predicted direction (paths A1-A9); (2) the independent variable affects the dependent variable (path C1-C9); and (3) each mediator affects the dependent variable when the independent variable is controlled (paths B1-B9). If all conditions are met and the relationships are in the predicted direction, as shown in Figure 1, then the independent variable should have less of an effect on the dependent variable in condition three than in condition two. Stata (StataCorp, 2009) tested the statistical significance of the indirect, hence mediated, effects. Mediators were tested independently and in combination. Finally, the following covariate variables were controlled for in all equations: health status, age, income, education, work status, marital status, region and religious affiliation.

CHAPTER 4

Paper 1

Title - Religious Involvement, Social Connection with Church Members and Health Behaviors of African American Men: Examining Differences Between Those Who Did and Did Not Attend Church Services

Abstract

The relationships among religious involvement, social connection with church members and health behaviors are examined in a sample of African American men derived from the National Survey of American Life (NSAL). Regression analyses were run to examine the relationships among religious involvement (i.e., organizational, non-organizational, and subjective), social connection with church member variables (i.e., tangible and emotional social support and social network characteristics) and health behaviors (i.e., physical activity, substance use, and behavioral counseling for substance use). Independent samples t-tests were run on the two samples of African American men, those who attended (n=893) and those who did not attend church services more than once a year (n=272). The results showed that organizational and non-organizational religious involvement were associated with physical activity and substance use among African American men who attended church services. For the men who did not attend church services, only non-organizational religious involvement was significantly associated with substance use. The social connection with church member variables were also found to be significantly associated with certain health behaviors among the men who attend church

services. There were also significant differences between the two samples on non-organizational and subjective religious involvement and the two of the health behaviors (physical activity and substance use). The implications of these findings are further discussed to inform future studies and interventions.

Introduction

Across different racial and ethnic groups, health disparities exist in deaths from chronic diseases and in the health behaviors associated with these diseases (Winkleby & Cubbin, 2004). Such disparities have led to higher mortality rates for cardiovascular disease (CVD), cancer, diabetes, and obesity among African American men, in particular (Linnan, et al., 2011; Office of Minority Health & Health Disparities, 2008). The fatal health outcomes among African American men are unlike any other group; however, at least half of the deaths from diseases such as CVD or cancer could be prevented by engaging in health-promoting behavior (Linnan et al.; Winkleby & Cubbin).

Health behaviors including physical activity, smoking, and alcohol have been examined extensively in the literature (Centers for Disease Control and Prevention, 2005; Dowda et al., 2003; Pleis et al., 2010; Winkleby & Cubbin, 2004) in order to present the health status of the general population within the United States. Based on the research, men engage in more risk behaviors than women such as smoking cigarettes or drinking alcohol but men are also more likely to participate in leisure-time physical activity (Pleis et al.; Williams, 2003). African American men, specifically, engage in more regular physical activity compared to their female counterparts but they are still less active than Whites (Pleis, et al.; Whitt-Glover et al., 2007). In terms of risk behaviors, the Center for Disease Control's

National Center for Health Statistics (NCHS) reported 23% of African American men 18 years of age and older considered themselves to be current smokers in 2009 (Pleis et al.). Although the percentage of current cigarette smokers is low among the men, tobacco use is the most preventable cause of death and African Americans are heavily impacted by it (Delva et al., 2005). The NCHS (2010) also reported in 2009 that 50% of African American men were current regular drinkers, meaning they had “at least 12 drinks in [their] lifetime or in any one year and a drink 1-365 times in the past year” (p.92). Another risk behavior to consider is the use of illicit drugs. The NCHS (2010), in 2007, found that 9.5% of African Americans used illicit drugs in the past month, 7.2% used marijuana, and 2.2% used nonmedical psychotherapeutic drugs. The 2009 results of the National Survey on Drug Use and Health reported that current illicit drug use is higher among males than females aged 12 years or older (Substance Abuse and Mental Health Services Administration, SAMHSA, 2010). Furthermore, African American men had a significantly higher rate of past month illicit drug use than the national average between 2004 and 2008 (SAMHSA, 2010). These statistics provide some insight about the health behaviors of African American men that are contributing to the mortality rate of this group. Although some of the statistics are low in comparison to other groups, it is imperative to examine what is necessary to increase positive health behaviors among the African American male population in order to reduce the health disparities.

Religious involvement is prevalent among African Americans (Lincoln & Mamiya, 1990) and Black churches have often played a significant role in addressing community challenges such as the health of their members. The literature has stated that participation in

religious services does promote healthier habits that, in turn, could result in better health (Chitwood, et al., 2008; George, et al., 2002; Gillum, 2006; Gillum, 2005; Hill, et al., 2006; Hill, et al., 2007; Merrill & Thygeson, 2001; Nagel & Sgoutas-Emch, 2007; Roff et al., 2005; Schlundt et al., 2008; Wallace & Forman, 1998). There is evidence to suggest that religious involvement is protective of health and is significantly associated with more exercise (Gillum, 2006; Hill et al., 2006; Hill et al., 2007; Merrill & Thygeson; Schlundt et al., 2008; Wallace & Forman), less smoking (Benjamins & Buck, 2008; Gillum, 2005; Hill et al., 2006; Hill et al., 2007; Roff et al.) and less substance use (Bowie et al., 2006; Chitwood et al.; Hill et al., 2006; Hill et al., 2007; Menagi et al., 2008; Michalak et al., 2007; Steinman et al., 2008). If a relationship between religion and health does in fact exist, it is necessary to examine the mechanisms through which religious involvement affects health behaviors among African American men.

One potential mechanism that has previously been investigated to help explain the association of religious involvement and health behaviors is social support. Social support and social resources (i.e., social support and social integration) have both been proposed to mediate the relationship between religious involvement and different health behaviors such as substance use (Bowie et al., 2006; Edlund et al., 2010; Menagi et al., 2008). It is well documented that social support is strongly related to health behaviors (Emmons et al., 2007; Gallant & Dorn, 2001; Jackson, 2006; McNeill, Wyrwich, Brownson, Clark, & Kreuter, 2006; Sallis et al., 1992; Strine et al., 2008; Walcott - McQuigg & Prohaska, 2001) as well as religious involvement (Chatters et al., 2002; Taylor & Chatters, 1988; Taylor et al., 2005). These relationships have been explored but not among African American men. The purpose

of this study is to examine the direct relationships among three dimensions of religious involvement (i.e., organizational, non-organizational, and subjective), social connection with church members (i.e., tangible and emotional social support, social network characteristics) and health behaviors (i.e., physical activity, substance use, behavioral counseling for substance use) for African American men. Additionally, group differences will be investigated to determine if there are significant differences between African American men who attend church services more than once a year and those who do not.

Study Research Questions and Hypotheses

The following research questions and hypotheses will be tested:

- 1) What are the bivariate relationships between religious involvement and health behaviors for African American men who attended and those who did not attend church services more than once a year?

Hypothesis 1: All three dimensions of religious involvement (organizational, non-organizational, and subjective) will be positively and significantly associated with health behaviors as measured by the Physical Activity Index, Substance Use Index, and the behavioral counseling for substance use item for African American men who attended and those who did not attend church services more than once a year.

- 2) What are the bivariate relationships between the social connection with church members and health behaviors for African American men who attended church services more than once a year?

Hypothesis 2: The social connection with church member variables (social network characteristics, tangible social support and emotional social support) will be significantly and positively associated with health behaviors as measured by the Physical Activity Index, Substance Use Index, and the behavioral counseling for substance use item for African American men who attended church services more than once a year.

3) What are the bivariate relationships between the social connection with church members and religious involvement for African American men who attended church services more than once a year?

Hypothesis 3: All three dimensions of religious involvement (organizational, non-organizational and subjective) will be significantly and positively associated with the social connection with church member variables (social network characteristics, tangible social support and emotional social support).

4) Is there a difference in non-organizational religious involvement and subjective religious involvement for those who attended and those who did not attend church services more than once a year?

Hypothesis 4a: There will be a significant difference on non-organizational religious involvement for those who attended and those who did not attend church services more than once a year.

Hypothesis 4b: There will be a significant difference on subjective religious involvement for those who attended and those who did not attend church services more than once a year.

5) Is there a difference in the health behaviors of those who attended and those who did not attend church services more than once a year?

Hypothesis 5: There will be a significant difference in the health behaviors of those who attended and those who did not attend church services more than once a year.

Method

The dataset used for this study was the National Survey of American Life: Coping With Stress in the 21st Century (NSAL). This secondary dataset provides a large enough sample of African American men to make some generalized interpretations about how the variables of interest interact within this population.

Participants

Data was collected from a sample of 3,570 African Americans aged 18 and older that were English-speaking, non-institutionalized and resided in households located in the coterminous 48 states. This survey population included only African American adults who did not identify ancestral ties in the Caribbean (Heeringa et al., 2004). The response rate for African Americans was 70.9% (Heeringa et al.). For the purposes of this study, data was used from two samples: one comprised of African American men who did not attend church services more than once a year (n=272) and the other comprised of African American men who attended church services more than once a year (n=893). There were a total of 1,148 African American men who attended church services since they were 18 years old but 149 of them only attended services less than once a year. Additionally, there were 106 participants missing data so they were dropped from the analyses. This resulted in a sample size of 893

African American men who attended church services (i.e., other than for weddings and funerals) more than once a year.

Parent Study Recruitment, Sampling, and Data Collection Instrument

The National Survey of American Life (NSAL): Coping With Stress in the 21st Century dataset was collected by The Program for Research on Black Americans at the University of Michigan's Institute for Social Research from February 2001 to March 2003 (Jackson et al., 2007). Heeringa et al. (2004) states that the NSAL is an integrated national household probability sample survey of 6,199 respondents using a multi-stage sample design. The sample included 3,570 African Americans, 1,006 non-Hispanic Whites and 1,623 Blacks of Caribbean² descent with a response rate of 71.5%. The NSAL dataset combined a core national area probability sample of households with a supplemental sample of households in areas that had a high concentration of Afro-Caribbean residents. Although the NSAL study targets non-Hispanic Whites and Afro-Caribbeans for comparative purposes, "the NSAL Core national sample is designed to be optimal for a national study of the African American survey population" (Heeringa et al., p. 227).

There were four sampling stages: the *primary stage* involved sampling the US Metropolitan Statistical Areas (MSAs) and counties; the *second stage* involved the sampling of area segments; the *third stage* was the sampling of the housing units within the area segments; and the *fourth stage* was the random selection of eligible respondents from the

² There is a discrepancy between what is reported by Heeringa et al. (2004) and what the dataset shows. The dataset shows that the sample included 3,570 African Americans, 891 non-Hispanic Whites, and 1,438 Blacks of Caribbean descent with 183 individuals classified as "all other Hispanic."

housing units (Heeringa et al., 2004). The NSAL core sample was comprised of 64 primary stage units made up of MSAs and non-MSAs (e.g., “single counties or a grouping of geographically contiguous counties with small populations”) (Heeringa et al., p. 222). At the second stage, 456 area segments were nested within those primary stage units. By the third stage of sampling, the NSAL core sample became a stratified probability sample of US households based on two domains defined by the 1990 census proportions of African American households. The first domain incorporated all census block groups with 10% or more African American households reported while the second domain included all census block groups with less than 10% of African American households. Once housing units were identified, trained interviewers made in-person contact with each household to find out the age, gender, race and Hispanic or Caribbean ancestry of each household member. A list was compiled of all household members and those who were eligible to be selected as a NSAL respondent were identified within each household. In order to randomly select a NSAL respondent within each household (one respondent per household), the researchers used an objective procedure developed by Kish (as cited by Heeringa et al.). Finally, face-to-face interviews were conducted in the homes of respondents (approximately 14 percent of the interviews were conducted either partially or entirely by telephone) and recorded on laptop computers (Taylor et al., 2007). As a result of this complex sampling design, special analytical procedures were implemented using the following design and weighting variables: sampling error stratum, sampling error cluster, NSAL weight centered for total N of 6,082 and NSAL weight population weight.

Measures

The following variables from the NSAL were used for this study: religious involvement (i.e., organizational, non-organizational and subjective religious involvement), social connection with church members (i.e., social network characteristics, tangible and emotional social support), and three health behaviors (i.e., physical activity, substance use, and behavioral counseling for substance use). Two health behavior indices were created from items within the NSAL, one pertaining to participants' engagement in physical activity and the other pertaining to substance use. Likert scale variables were treated as continuous. Means, standard deviations and frequency distributions were also computed.

Recoding. All independent variables (i.e., the three dimensions of religious involvement and the three variables representing social connection with church members) were reverse coded for high scores to indicate more engagement in that variable. For example, some of the items within the organizational religious participation measure were originally on a Likert scale of 1-nearly every day to 5-less than once a year but they were reverse coded so that 1 equaled less than once a year and 5 equaled nearly every day. In order to derive scores, the organizational religious participation, tangible social support and social network measures were standardized so that all of the items incorporated within those measures were on the same scale. Variables within the health behavior indices (Physical Activity and Substance Use) were recoded for the responses to range from zero to five. As with the independent variables, higher scores denoted more involvement in health-promoting behaviors so the behavioral health counseling for substance use and physical activity items were reverse coded but the cigarette smoking and substance use items were left alone.

Lastly, some variables were transformed into dummy variables (0 and 1) if the variable was categorical or if the histogram of the variable did not appear normally distributed. The levels of dummy variables differed for each variable depending on the number of categories within that variable. Upon analysis, one level was left out for each of the variables that were created into dummy variables. All but two of the covariates used in the analyses were created into dummy variables because they were categorical: health status (five levels), education (four levels), work status (three levels), marital status (three levels), region (four levels) and religious affiliation (14 levels). Subjective religious involvement was recoded into a three level dummy variable because the histogram was not normally distributed.

Religious involvement measures.

Organizational religious participation. Organizational religious participation included frequency of service attendance, number of hours at religious services, church membership, frequency of participation in congregational activities and number of hours per week in other activities at the place of worship (Cronbach's $\alpha = .55$). The categories and values for frequency of religious service attendance were as follows: attend nearly every day (5), attend at least once a week (4), a few times a month (3), a few times a year (2), less than once a year (1). The number of hours at religious services on a typical Sunday was measured with the question, "On a typical (Sunday/Saturday) how many hours are you at church or place of worship?" Church membership was measured with the question, "Are you an official member of a church or other place of worship?" Frequency of participation in congregational activities was measured with the question, "Besides regular service, how often do you take

part in other activities at your church? Would you say nearly every day (5), at least once a week (4), a few times a month (3), a few times a year (2), or never (1)?" Finally, the number of hours per week in other activities at the place of worship was measured with the question, "Not including religious services, how many hours per week are you at your place of worship?"

Non-organizational religious participation. There were five items that measured non-organizational religious participation: reading religious books or other religious materials, watching religious television programs, listening to religious radio programs, praying and asking someone to pray for you (Cronbach's $\alpha = .73$). Respondents were asked how often they took part in these activities (i.e., nearly every day, at least once a week, a few times a month, at least once a month, a few times a year, or never), using a 6-point Likert scale for each item (6-nearly every day to 1-never).

Subjective religious participation. Four measures of subjective religious participation were used: (a) importance of religion while growing up, (b) importance of parents taking or sending their children to religious services, (c) overall importance of religion in the respondent's life and (d) respondent's self-rating of religiosity (Cronbach's $\alpha = .72$). Each item had four categories ranging from 4 (very important or very religious) to 1 (not important at all or not religious at all).

Social connection with church member measures.

Social network characteristics. Items measuring closeness to and frequency of contact with church members were as follows: (a) "How close are you to the people in your church? Would you say very close, fairly close, not too close, or not close at all;" and

(b) “How often do you see, write or talk on the telephone with church members? Would you say nearly every day, at least once a week, a few times a month, at least once a month, a few times a year, hardly ever or never?” For the first item a Likert-scale was used ranging from 4 (very close) to 1 (not close at all) and the second item used a Likert-scale ranging from 6 (nearly every day) to 1 (never).

Social support. The social support measures included both tangible and emotional social support.

There were three indicators of tangible social support and they were treated separately within all analyses because the measure had low reliability when all three items were analyzed together. The items that measured tangible support were as follows: (a) “How many people in your church (place of worship) would help you out if you needed help;” (b) “How often do people in your church (place of worship) help you out? Would you say very often, fairly often, not too often, or never;” and (c) “How often do you help out people in your church (place of worship)? Would you say very often, fairly often, not too often, or never?” The first item required the respondent to fill in a number and the last two items used a Likert-scale with categories ranging from 4 (very often) to 1 (never). An additional category representing men who reported, “never needing help” were categorized under 1 (never).

The items measuring emotional support were as follows: (a) “How often do your church members make you feel loved and cared for? Would you say very often, fairly often, not too often, or never; (b) “How often do they listen to you talk about your private problems and concerns; (c) “How often do they express interest and concern in your well-being?” Each item had four categories ranging from 4 (very often) to 1 (never). Cronbach’s $\alpha = .72$.

Health behavior indices. The health behavior indices included questions within the NSAL that focused on the following health behavior domains: physical activity, cigarette smoking, substance use (i.e., alcohol, marijuana, cocaine, prescription, other drugs) and behavioral health counseling for substance use. Two indices were created, Substance Use and Physical Activity, and the item assessing behavioral health counseling for substance use was kept as a separate dependent variable. Therefore, there are three health behavior variables, which were created based on the items that were significantly correlated with one another. In order to create the two indices, the following steps were completed:

- 6) Some items were reverse coded (i.e., physical activity and behavioral health counseling for substance use variables);
- 7) All variables were recoded so that the responses ranged from 0-5 (i.e., three physical activity items originally ranged from 1 (never) to 4 (often) and now it ranges from 0 (never) to 5 (often); four substance use items - one cigarette smoking item originally ranged from 1 (yes) to 5 (no) and now it ranges from 0 (yes) to 5 (no), one alcohol item originally ranged from 1 (nearly every day) to 6 (did not drink in past 12 months) and now it ranges from 0 (nearly every day) to 5 (did not drink in past 12 months), one marijuana, one cocaine, one prescription and other drugs originally ranged from 1 (nearly every day) to 6 (less than once a month) and now ranges from 0 (nearly every day) to 5 (never); and one behavioral health counseling for substance use item originally ranged from 1 (no) to 5 (yes) and now it ranges from 0 (no) to 5 (yes);
- 8) Variables were combined using an average of the separate items.

The Physical Activity Index (PAI) included three items that focused on the frequency of garden/yardwork, sports/exercise and walking. The Substance Use Index (SUI) included the items that focused on the frequency of use of alcohol, marijuana, cocaine, prescription drugs, and tobacco. These five items showed a significant positive correlation with one another and did not correlate with the physical activity items. The item asking about the frequency of use of heroin, opium, glue, LSD, peyote, or any other drug was dropped because it did not correlate with any of the other substance use items and was not included in the Substance Use Index. The indices are to be viewed as behaviors that are added together into an index but are not meant to be seen as items grouped into a scale that require a reliability coefficient. Additionally, the behavioral counseling for substance use item was kept separate because it did not correlate with the other health behavior items in the way that was to be expected. It should be positively correlated with the other substance use items since it was reverse coded but instead it showed significant negative correlations with the other substance use items.

Covariate measures.

There were eight covariates that were included in all analyses that referred to the participants' age, household income, health status, work status, marital status, region and religious affiliation.

Data Analyses

Due to the complex sampling procedures used by NSAL, the analyses for this study began with the full dataset including 6,082 cases so that all sampling stages (i.e., clusters of MSAs and non-MSAs, area segments, housing units, and eligible respondents) would be part of the correction for non-independent observations. Then, the particular cases of African

American men, those who attended (n=893) and did not attend (n=272) church services more than once a year were selected and analyzed within the larger sample.

Univariate descriptive statistics were calculated for all variables and Likert scale variables were treated as continuous. Hence, means and standard deviations are presented as well as frequency distributions. Linear regression coefficients were also calculated to determine the existence and nature of any bivariate relationships between all of the variables. A logistic regression was run on the behavioral counseling for substance use item because it is a two-category outcome variable.

Independent samples t-tests were used to assess any significant differences between those who did and did not attend church services more than once a year on the following variables: non-organizational religious involvement, subjective religious involvement and health behaviors as measured by the Physical Activity, Substance Use indices and the behavioral counseling for substance use item. Stata (StataCorp, 2009), version 11.0, was the statistical software used to conduct all analyses because it takes into account the complex sampling present within the NSAL data. Upon running each statistical test, Stata adjusted for the lack of independence among observations that is an assumption of multivariate analyses.

Results

The results presented here are the descriptive statistics, bivariate regressions that identify the relationship between all of the variables, and the results from t-tests that examine group differences. Regression analyses were run on two samples, the sample of African American men who did not attend church services (n = 272) and the sample of African American men who attended church services more than once a year (n = 893).

Table 2 shows all of the descriptive statistics for the two samples. The mean age of the African American men who attended church services more than once a year was 42.44 ($SD = 16.35$), while the mean age for those who did not attend church services was 39.58 ($SD = 14.94$). Among the total sample of African American men ($n = 1,271$), church attendees reported a mean household income of \$44,044.28 and non-church attendees reported a mean household income of \$33,548.32. Thirty-seven percent of church attendees had at least 12 years of education compared to 46.7% of the non-church attendees. In terms of employment, 72.8% of the church attendees and 66.8% of the non-church attendees were employed. Fifty-four percent of the church attendees and 35% of the non-church attendees were married. The highest percentage of men in both samples reported being in “very good” health (36.6% of church attendees and 34.8% of non-church attendees). The majority of the men who attended church services lived in the “South” (61.7%) while only 42.7% of the non-church attendees reported living in the same region. Finally, 47.3 and 36.5 of the church attendees and non-church attendees reported being Baptist.

Among the men who attended church services more than once a year, only a small number of hours were spent in church for services or other activities at the place of worship

Table 2

Participant Characteristics of African American Men Who Attended and Did Not Attend Church Services More Than Once a Year

Characteristics	Church attendees (<i>n</i> = 893)		Non-church attendees (<i>n</i> = 272)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Covariates				
Age (years)	42.44	16.35	39.58	14.94
Household income (\$)	44,044.28	35,756.19	33,548.32	30,827.75
	<i>n</i>	%	<i>n</i>	%
Education				
0-11 years of education	212	20.4	96	31.9
12 years of education	356	37.4	123	46.7
13-15 years of education	241	25.7	31	12.5
16 or more years of education	144	16.5	22	8.9
Employment status				
Employed	683	72.8	173	66.8
Unemployed	66	7.6	36	13.4
Not in labor force	204	19.6	62	19.5

Table 2 (continued)

Characteristics	Church attendees		Non-church attendees	
	<i>(n = 893)</i>		<i>(n = 272)</i>	
	<i>n</i>	%	<i>n</i>	%
Covariates				
Marital status				
Married/cohabiting	453	53.7	81	35.0
Divorced/separated/widowed	236	19.0	71	22.6
Never married	264	27.4	119	42.1
Health status				
Excellent	172	17.6	47	20.6
Very good	344	36.6	84	34.8
Good	268	29.3	63	20.3
Fair	133	13.7	46	15.1
Poor	36	2.9	18	5.4
Region				
Northeast	103	14.5	45	21.0
Midwest	133	14.8	54	20.8
South	653	61.7	141	42.7
West	64	9.1	32	15.5

Table 2 (continued)

Characteristics	Church attendees (<i>n</i> = 893)		Non-church attendees (<i>n</i> = 272)	
	<i>n</i>	%	<i>n</i>	%
Covariates				
Religious affiliation				
Protestant	31	3.8	9	3.1
Baptist (all types)	478	47.3	106	36.5
Lutheran	4	.6	0	0
Methodist (all types including United Brethren)	66	7.0	5	2.2
Pentecostal	33	3.3	6	3.1
Presbyterian	7	.7	1	.5
Protestant (other)	165	18.7	30	11.9
Catholicism/Catholic (no denomination mentioned)	54	5.5	11	3.9
Catholic (Roman)	7	1.0	3	1.3
Catholic (others)	1	.2	0	0
Agnostic or Atheist	0	0	2	.6
No religious preference	37	3.6	23	7.7
Other	32	3.5	11	3.8
No religion	38	4.6	65	25.5

Table 2 (continued)

Characteristics	Church attendees		Non-church attendees	
	<i>(n = 893)</i>		<i>(n = 272)</i>	
	<i>n</i>	%	<i>n</i>	%
Religious Involvement				
Organizational:				
- Church membership (yes/no)	629*	66.0	—	—
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
- Frequency of service attendance (1 = less than once a year, 5 = nearly every day)	3.12	.91	—	—
- Number of hours at religious services	2.71	1.82	—	—
- Frequency of participation in congregational activities (1 = never, 5 = nearly every day)	2.28	1.19	—	—
- Number of hours per week in other activities at the place of worship	1.53	4.10	—	—
Non-organizational:				
- Reading religious books or other religious materials (1 = never, 6 = nearly every day)	4.17	1.54	2.74	1.63
- Watching religious television programs (1 = never, 6 = nearly every day)	3.81	1.68	2.60	1.71
- Listening to religious radio programs (1 = never, 6 = nearly every day)	3.74	1.93	2.33	1.76
- Praying (1 = never, 6 = nearly every day)	5.65	.94	4.46	1.89
- Asking someone to pray for you (1 = never, 6 = nearly every day)	3.69	1.88	2.43	1.83

Table 2 (continued)

Characteristics	Church attendees (<i>n</i> = 893)		Non-church attendees (<i>n</i> = 272)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Religious Involvement				
Subjective religious involvement:				
- Importance of religion while growing up (1 = not at all, 4 = very)	3.69	.63	3.32	.87
- Importance of parents taking or sending their children to religious services (1 = not at all, 4 = very)	3.85	.39	3.45	.78
- Overall importance of religion in the respondent's life (1 = not at all, 4 = very)	3.78	.52	3.10	.97
- Respondent's self-rating of religiosity (1 = not at all, 4 = very)	3.16	.69	2.62	.91

Table 2 (continued)

Characteristics	Church attendees (<i>n</i> = 893)		Non-church attendees (<i>n</i> = 272)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Psychosocial				
Social network characteristics:				
- Closeness to church members (1 = not close at all, 4 = very close)	2.98	.96	—	—
- Frequency of contact with church members (1 = never, 6 = nearly every day)	3.47	1.83	—	—
Tangible social support:				
- Number of church members that would help	15.75	23.03	—	—
- Frequency church members help (1 = never, 4 = very often)	1.81	1.35	—	—
- Frequency you help church members (1 = never, 4 = very often)	2.47	1.17	—	—
Emotional social support:				
- Church members make you feel loved (1 = never, 4 = very often)	3.39	.81	—	—
- Church members listen to problems (1 = never, 4 = very often)	2.23	1.16	—	—
Church members express interest in well-being (1 = never, 4 = very often)	3.09	1.02	—	—

Table 2 (continued)

Characteristics	Church attendees (<i>n</i> = 893)		Non-church attendees (<i>n</i> = 272)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Health Behaviors				
Physical activity:				
- Frequency of garden/yardwork (0 = never, 5 = often)	2.44	2.08	1.79	2.00
- Frequency of sports/exercise (0 = never, 5 = often)	3.02	1.95	2.64	2.04
- Frequency of taking walks (0 = never, 5 = often)	3.54	1.83	3.42	1.88
Substance use:				
- Number of times had at least one drink in past 12 mths (0 = nearly every day, 5 = no drink in past 12 mths)	3.14	1.66	2.59	1.71
- Frequency of marijuana/has use in past 12 mths (0 = nearly every day, 5 = less than once a month)	4.51	1.21	3.82	1.76
- Frequency of cocaine use in past 12 mths (0 = nearly every day, 5 = less than once a month)	4.95	.37	4.85	.71
- Frequency of non-recommended prescription drug use in past 12 mths (0 = nearly every day, 5 = less than once a month)	4.98	.26	4.95	.43
	<i>n</i>	%	<i>n</i>	%
- Currently smoke (yes/no)	291*	30.5	105*	38.6
Behavioral counseling for substance use (yes/no)	21*	2.2	11*	4.0

Note. Totals of percentage are not 100 for every characteristic because of rounding. (—) =

Data was not possible to obtain due to skip patterns in the survey.

* Indicates the frequency of participants that responded “yes.”

(means of 2.71 and 1.53 hours). Church attendees scored higher on items measuring non-organizational religious involvement than non-church attendees but both samples of men prayed almost every day with average scores of 5.65 and 4.46 (1 = never, 6 = nearly every day). Both samples of men scored fairly high on subjective religious involvement, although church attendees scored higher than non-church attendees on their self-rating of religiosity (mean of 3.16 versus 2.62 on a 4-point scale). African American men that attended church services were fairly close to church members and were in contact with church members more than once a month. The church attendees reported an average of 15 church members they felt would help them if necessary but they also reported that church members do not help them out too often. On the other hand, the men who attended church reported that they help church members out more often. The church attendees also reported that church members did express interest in their well-being and made them feel loved fairly often while church members listening to problems did not occur too often. Finally, non-church attendees scored lower than church attendees on the physical activity items but both samples of men reported more walking than any other exercise. Both samples of African American men engaged in very little substance use but non-church attendees appeared to use more marijuana on average than church attendees. However, the two samples of men did drink alcohol at least weekly while 30.5% of church attendees and 38.6% of non-church attendees smoked cigarettes. Of the men who drank alcohol or used illicit drugs, only 2.2% of church attendees and 4% of non-church attendees participated in behavioral counseling for substance use. Among all of the participant characteristics mentioned except for health status, there is a significant difference between the two samples of men (i.e., church attendees and non-church

attendees). Each of the proposed research questions and hypotheses along with their corresponding results are discussed. Across all findings for hypotheses one through three, the small percentages of variance explained (R^2) may be significant due to the large sample size and thus should be interpreted with caution.

Hypothesis 1: All three dimensions of religious involvement (organizational, non-organizational, and subjective) will be positively and significantly associated with health behaviors as measured by the Physical Activity Index, Substance Use Index, and the behavioral counseling for substance use item for African American men who attended and those who did not attend church services more than once a year.

To test this hypothesis each of three religious involvement dimensions (organizational, non-organizational, and subjective) were regressed on three health behaviors (physical activity, substance use and behavioral counseling for substance use). Due to skip patterns within the NSAL, the sample of African American men who did not attend church services more than once a year was not asked the organizational religious involvement questions, therefore, linear regression analyses examining the relationships between organizational religious involvement and the three health behaviors were not run on this sample.

The analysis, shown in Table 3, revealed that organizational ($B = .23, p = .002$) and non-organizational religious involvement ($B = .21, p = .000$) were both significantly associated with physical activity scores based on the physical activity index for African

Table 3

Bivariate Regression Analysis Summary for Religious Involvement and Social Connection Variables Associated With the Physical Activity of African American Men

Variable	Church attendees (n = 893)		Non-church attendees (n = 272)	
	B	R ²	B	R ²
Organizational religious involvement	.23**	.016**	—	—
Non-organizational religious involvement	.21***	.030***	.17**	.025**
Subjective religious involvement				
Low	-.20	.002	-.44	.013
Medium	.02	.002	-.23	.013
Social network characteristics	.13*	.008*	—	—
Tangible social support				
- Number of church members that would help	.005*	.007*	—	—
- Frequency church members help	.16**	.022***	—	—
- Frequency you help church members	.21***	.030***	—	—
Emotional social support	.25***	.025***	—	—

Note. (—) = Data was not possible to obtain due to skip patterns in the survey.

* $p < .05$. ** $p < .01$. *** $p < .001$.

African American men who attended church services more than once a year the linear regression analysis. Organizational religious involvement accounted for 1.6% of the variance while non-organizational religious involvement accounted for 3% of the variance in physical activity based on the physical activity index. There was no evidence to show that subjective

religious involvement was significantly associated with physical activity for African American men who attended church services more than once a year.

Table 3 also shows that non-organizational religious involvement was significantly associated with the physical activity scores ($B = .17, p = .008$) for the sample of African American men who did not attend religious services more than once a year, accounting for 2.5% of the variance in physical activity. On the other hand, there was no evidence to show that subjective religious involvement was significantly associated with the physical activity for this same sample of men. In terms of substance use, neither non-organizational nor subjective religious involvement were significantly associated with the health behavior, as seen in Table 4.

All three dimensions of religious involvement were found to be significantly associated with substance use based on the substance use index for African American men who attended church services more than once a year, as listed in Table 4. Organizational religious involvement ($B = .19, p = .000$) accounted for 4% of the variance in substance use for this sample of men. Non-organizational religious involvement ($B = .04, p = .037$) accounted for .5% of the variance in substance use for this sample of men. Finally, the two levels of subjective religious involvement ($B = -.28, p = .032$; $B = -.15, p = .001$), in comparison with the reference group, accounted for 1.3% of the variance in substance use based on the substance use index.

Table 4

Bivariate Regression Analysis Summary for Religious Involvement and Social Connection Variables Associated With the Substance Use of African American Men

Variable	Church attendees (n = 893)		Non-church attendees (n = 272)	
	B	R ²	B	R ²
Organizational religious involvement	.19***	.040***	—	—
Non-organizational religious involvement	.04*	.005*	-.05	.004
Subjective religious involvement				
Low	-.28*	.013**	-.16	.004
Medium	-.15**	.013**	-.18	.004
Social network characteristics	.07*	.009*	—	—
Tangible social support				
- Number of church members that help	.001	.002	—	—
- Frequency church members help	.05**	.007**	—	—
- Frequency you help church members	.05*	.007*	—	—
Emotional social support	.001	.000	—	—

Note. (—) = Data was not possible to obtain due to skip patterns in the survey.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Among the men who attended church services, the logistic regression analysis revealed that organizational religious involvement was significantly associated with behavioral counseling for substance use (OR, .47; 95% confidence interval [CI], .23 to .96). The two levels of subjective religious involvement were also significantly associated with behavioral counseling for substance use in comparison to the reference group (OR, 15.7; 95% confidence interval [CI], 2.7 to 91.5; OR, 3.7; 95% CI, 1.1 to 12.3). These results support the hypothesis, however, not as expected. African American men with low and medium subjective religious involvement have greater odds of engaging in behavioral counseling for substance use than the men with high subjective religious involvement.

In sum, the results indicate that there is some support for hypothesis one. Organizational religious involvement was significantly associated with physical activity, substance use and behavioral counseling for substance use for African American men who attended church services more than once a year. The more organizational religious involvement, the more physically active one became. Additionally, an increase in organizational religious involvement translated to a decrease in substance use. Non-organizational religious involvement was also significantly associated with physical activity for both African American men who did and did not attend church services more than once a year. In other words, the more non-organizational religious involvement, the more one is physically active for both samples of African American men. Non-organizational religious involvement was also found to be significantly associated with less substance use but only among African American men who attended church services more than once a year. On the

other hand, non-organizational religious involvement was not associated with substance use for African American men who did not attend church services.

The results did confirm that subjective religious involvement was significantly associated with substance use for African American men who attended church services more than once a year. That is, men with low and medium subjective religious involvement had higher substance use by .28 and .15 than men with high subjective religious involvement. Subjective religious involvement was also significantly associated with behavioral counseling for substance use for the men who attended church services more than once a year. African American men with low subjective religious involvement have odds of getting behavioral counseling for substance use that are 15.3 times higher than the same odds for men with high subjective religious involvement. Similarly, African American men with medium religious involvement have odds of getting behavioral counseling for substance use that are 3.9 times higher than the same odds for men with high subjective religious involvement.

Hypothesis 2: The social connection with church member variables (tangible social support, emotional social support, and social network characteristics) will be significantly and positively associated with health behaviors as measured by the Physical Activity Index, Substance Use Index, and the behavioral counseling for substance use item for African American men who attended church services more than once a year.

Once again, due to the skip patterns within the NSAL, the sample of African American men who did not attend church services more than once a year was not asked questions related to the social connection with church members, therefore, linear regression

analyses examining the relationships between the social connection with church member variables and the three health behaviors were not run on this sample. As can be seen in Table 4, all three social connection with church member variables were found to be significantly associated with physical activity among African American men who attended church services more than once a year. Specifically, social network characteristics was significant ($B = .13, p = .036$) for African American men who attended church more than once a year, accounting for .8% of the variance in physical activity. For the analyses regarding tangible social support, the three tangible social support items are treated separately. The first indicator of tangible social support, number of church members that would help, was significant ($B = .005, p = .015$), accounting for .7% of the variance in physical activity. Frequency church members help (i.e., the second indicator of tangible social support) was significant ($B = .16, p = .001$), accounting for 2.2% of the variance in physical activity. Frequency you help church members (i.e., third indicator of tangible social support) was also significant ($B = .21, p = .000$), accounting for 3% of the variance in physical activity. Lastly, emotional social support was significant ($B = .25, p = .000$) for this sample of men, accounting for 2.5% of the variance in physical activity.

In relation to substance use, social network characteristics ($B = .07, p = .005$) and two indicators of tangible social support were significant for African American men who attended church services more than once a year, shown in Table 4. Frequency church members help and frequency you help church members were significant ($B = .05, p = .007$; $B = .05, p = .017$), both accounting for .7% of the variance in substance use. Social network characteristics accounted for .9% of the variance in substance use based on the substance use

index. Emotional social support was not found to be significantly associated with substance use for this sample of men.

Overall, the results again provide partial support for the proposed hypothesis two. All three of the social connection with church member variables (i.e., tangible social support, emotional social support and social network characteristics) were significantly and positively associated with physical activity. An increase in the three indicators of tangible social support, emotional social support, and social network characteristics was related to an increase in physical activity. There was only support of two indicators of tangible social support (frequency church members help and frequency you help church members) and social network characteristics being significantly and positively associated with substance use. The more church members help, you help church members and the more social networks one reported, the less one engaged in substance use. Emotional social support was not found to be significantly associated with substance use, which fails to support the proposed hypothesis. None of the analyses revealed that the social connection with church member variables were significantly associated with behavioral counseling for substance use.

Hypothesis 3: All three dimensions of religious involvement (organizational, non-organizational, and subjective) will be significantly and positively associated with the social connection with church member variables (tangible social support, emotional social support, and social network characteristics).

The linear regression analysis, in Table 5, revealed that organizational religious involvement was significantly associated with social network characteristic scores ($B = .75, p = .000$) for African American men, accounting for 38% of the variance in social network

Table 5

Bivariate Regression Analysis Summary for Religious Involvement Associated With the Social Connection of African American Men Who Attended Church Services (n = 893)

Variable	B	R ²
Social network characteristics		
Organizational religious involvement	.75***	.376***
Non-organizational religious involvement	.37***	.214***
Subjective religious involvement		
Low	-1.17***	.105***
Medium	-.45***	.105***
Tangible social support – Number of church members that help		
Organizational religious involvement	8.96***	.074***
Non-organizational religious involvement	4.04***	.035***
Subjective religious involvement		
Low	-10.89**	.015**
Medium	-5.35*	.015**
Tangible social support – Frequency church members help		
Organizational religious involvement	.62***	.148***
Non-organizational religious involvement	.30***	.078***
Subjective religious involvement		
Low	-.80***	.042***
Medium	-.48***	.042***

Table 5 (continued)

Variable	B	R ²
Tangible social support – Frequency you help church members		
Organizational religious involvement	.70***	.214***
Non-organizational religious involvement	.39***	.154***
Subjective religious involvement		
Low	-.92***	.048***
Medium	-.43***	.048***
Emotional social support		
Organizational religious involvement	.41***	.130***
Non-organizational religious involvement	.26***	.123***
Subjective religious involvement		
Low	-.99***	.074***
Medium	-.28***	.074***

* $p < .05$. ** $p < .01$. *** $p < .001$.

characteristics. Similarly, non-organizational religious involvement was significantly associated with social network characteristics scores ($B = .37$, $p = .000$) for the same sample of African American men, accounting for 21% of the variance in social network characteristics. The results also showed that the two levels of subjective religious involvement (in comparison with the reference group) were significantly associated with social network characteristic scores ($B = -1.17$, $p = .000$; $B = -.45$, $p = .000$), accounting for 10% of the variance in social network characteristics.

Again for the analyses that follow, the tangible social support items were treated separately. The results of the three religious involvement dimensions regressed on the three indicators of tangible social support showed that each dimension was significant. Organizational religious involvement ($B = .8.96, p = .000$) accounted for 7.4% of the variance in number of church members that help while non-organizational religious involvement ($B = 4.04, p = .000$) accounted for 3.5% of the variance. When subjective religious involvement was included into the regression as a dummy variable with 2 levels (low and medium), both levels were significant ($B = -10.90, p = .002$; $B = -5.35, p = .012$) compared to the reference group (high subjective religious involvement). Subjective religious involvement accounted for 1.5% of the variance. In terms of frequency church members help, organizational religious involvement ($B = .62, p = .000$) accounted for 14.8% of the variance while non-organizational religious involvement ($B = .30, p = .000$) accounted for 7.8% of the variance. The two levels of subjective religious involvement ($B = -.80, p = .000$; $B = -.48, p = .000$) accounted for 4.2% of the variance in frequency church members help. Finally, organizational religious involvement ($B = .70, p = .000$) accounted for 21.4% of the variance in frequency you help church members and non-organizational religious involvement ($B = .39, p = .000$) accounted for 15.4% of the variance. Low and medium subjective religious involvement ($B = -.92, p = .000$; $B = -.43, p = .000$) accounted for 4.8% of the variance.

The linear regression analysis also revealed that all three dimensions of religious involvement were significantly associated with emotional social support. Specifically, organizational religious involvement was significant ($B = .41, p = .000$) for African

American men, accounting for 13% of the variance in emotional social support. Non-organizational religious involvement was significant ($B = .26, p = .000$), accounting for 12% of the variance in emotional social support. Finally, the two levels of subjective religious involvement were significant ($B = -.99, p = .000$; $B = -.28, p = .000$) compared to the reference group. Subjective religious involvement accounted for 7.4% of the variance in emotional social support among African American men.

Hypothesis 4a: There will be a significant difference on non-organizational religious involvement for those who attended and those who did not attend church services more than once a year.

An independent samples *t* test was conducted to evaluate the hypothesis that the non-organizational religious involvement for those who attend religious services and those who do not attend religious services more than once a year will be significantly different. Those results are in Table 6. The test was significant, $t(df) = 18.00, p = .000$, so the results support the research hypothesis. There is a significant difference between those who do and do not attend religious services more than once a year. Those who attend religious services more than once a year ($M = 4.18, SEM = .04$) scored higher on non-organizational religious involvement than those who do not attend religious services more than once a year ($M = 2.92, SEM = .06$).

Hypothesis 4b: There will be a significant difference on subjective religious involvement for those who attended and those who did not attend church services more than once a year.

Table 6

Group Differences on Religious Involvement Measures Between Those Who Attended and Did Not Attend Church Services More Than Once a Year

Religious involvement measure	Church attendees n = 953		Non-church attendees n = 272		<i>t</i> (1223)	<i>p</i>
	<i>M</i>	<i>SEM</i>	<i>M</i>	<i>SEM</i>		
Non-organizational religious involvement	4.18	.04	2.92	.06	18.00	.000
Subjective religious involvement	3.61	.02	3.10	.04	10.56	.000

Note. *SEM* = standard error of measurement.

An independent samples t-test was conducted to evaluate the hypothesis that the subjective religious involvement for those who attend religious services and those who do not attend religious services more than once a year will be significantly different, also shown in Table 6. The test was significant, $t(df) = 10.56, p = .000$, so the results support the research hypothesis. There is a significant difference between those who do and do not attend religious services more than once a year. Those who attend religious services more than once a year ($M = 3.61, SEM = .02$) scored higher on subjective religious involvement than those who do not attend religious services more than once a year ($M = 3.10, SEM = .04$).

Hypothesis 5: There will be a significant difference in the health behaviors of those who attended and those who did not attend church services more than once a year.

Table 7

Group Differences in Health Behaviors Between Those Who Attended and Did Not Attend Church Services More Than Once a Year

Health behavior measure	Church attendees n = 953		Non-church attendees n = 272		<i>t</i> (1223)	<i>p</i>
	<i>M</i>	<i>SEM</i>	<i>M</i>	<i>SEM</i>		
Substance use	-.11	.02	-.40	.07	3.85	.000
Physical activity	3.01	.05	2.77	.09	2.76	.009
Behavioral counseling for substance use	.11	.02	.24	.09	-1.49	.144

Note. *SEM* = standard error of measurement.

Independent samples t-tests were conducted to evaluate the hypothesis that the health behaviors (substance use, physical activity, and behavioral counseling for substance use) for those who attend religious services and those who do not attend religious services more than once a year will be significantly different. As seen in Table 7, the tests were significant for substance use [$t(df) = 3.85, p = .000$] and physical activity [$t(df) = 2.76, p = .009$] so the results support the research hypothesis. There is a significant difference between those who do and do not attend religious services more than once a year. Those who attend religious services more than once a year ($M = -0.11, SEM = .02$; $M = 3.01, SEM = .05$) scored higher on the substance use and physical activity indices than those who do not attend religious services more than once a year ($M = -0.40, SEM = 0.07$; $M = 2.77, SEM = .09$). However,

when examining behavior counseling for substance use, the test was non-significant [$t(df) = -1.49, p = .144$]. These results were counter to the research hypothesis.

Discussion

The impact of health disparities on African American men is great and there is a strong need to address them, particularly because so many African American men are dying from preventable diseases. The purpose of this article was to identify factors associated with the health behaviors that can influence fatal health outcomes among the African American male population. The study examines the following: whether dimensions of religious involvement are significantly associated with the health behaviors of two samples of African American men, those who did and did not attend church services more than once a year; whether social connection with church members are significantly associated with the health behaviors of African American men who attended church services; and whether the three dimensions of religious involvement are significantly associated with the social connection with church members among African American men who attended church services. Additionally, group differences on two dimensions of religious involvement and health behaviors between the two samples of African men were explored.

The results demonstrate that there is a relationship between religious involvement and the health behaviors of African American men who attend and do not attend church services. For African American men who attended church services more than once a year, organizational and non-organizational religious involvement were both significantly associated with physical activity and substance use. In other words, an increase in both dimensions of religious involvement resulted in an increase in physical activity and a

decrease in substance use. These results correspond to other studies (Chitwood et al., 2008; Hill et al., 2007; Strawbridge et al., 2001) that have shown that religious involvement is associated with a healthier lifestyle. Although previous studies have found similar results, they have comprised of samples with a small percentage of African Americans and an even smaller percentage of African American men.

Among the same sample of African American men who attended church services, subjective religious involvement was found to also be significantly associated with substance use. The results showed that men with low and medium subjective religious involvement engage in more substance use than men who scored high on subjective religious involvement. This finding is consistent with the literature that suggests that more religious involvement is associated with less substance use (Chitwood et al., 2008). Specifically, Chitwood et al. conducted a systematic review of relevant studies examining the relationship between different dimensions of religious involvement and substance use and found that subjective religious involvement was protective against substance use, although research on this dimension was limited.

Lastly, subjective religious involvement was the only dimension of religious involvement that was significantly associated with behavioral counseling for substance use among African American men who attended church services more than once a year. The expectation was that the men with higher subjective religious involvement would have greater odds of getting behavioral counseling for substance use but the results indicated the opposite. Men that found religion to be less important in their lives had higher odds of engaging in behavioral counseling for substance use than the men that placed great

importance on religion. This finding is interesting because it may speak to the lack of support present within the lives of those that place less importance on religion. African American men who are less religiously involved may be more likely to get formal treatment and counseling because they have less access to the resources of the church while the men who are more religiously involved use the informal support within the church. On the other hand, this study found that African American men that have a high level of religious involvement engage in less substance use so they would not need to participate in behavioral counseling for substance use. This particular health behavior was also only measured using a single dichotomous item with very little variability in the responses. With the majority of the responses on one side, this item may not have been useful as a measure of behavior counseling for substance use. The results for this item should be viewed tentatively because the number of cases is too small to determine if any effect is reliable.

The results for the sample of African American men who did not attend church services provided a different picture compared to those who attended church services. Non-organizational religious involvement was the only dimension that was significantly associated with a health behavior. Specifically, an increase in non-organizational religious involvement was associated with an increase in physical activity. The literature supports results indicating increases in religious involvement to be linked to increases in physical activity (Gillum, 2006; Hill et al., 2006; Hill et al., 2007; Merrill & Thygeson, 2001; Roff et al., 2005; Schlundt et al., 2008; Wallace & Forman, 1998). On the other hand, subjective religious involvement was not significantly associated with physical activity or substance use for this sample of African American men. The literature does not support this finding

because organizational religious involvement is more commonly used as the measure of religious involvement so other dimensions have not been examined as extensively (Chitwood et al., 2008). Furthermore, the number of men who did not attend church services is smaller in comparison to the number of men who attended church services more than once a year and the level of subjective religious involvement among the non-attendees may have been too low to observe significance.

In relation to the social connection with church member variables among men who attended church services, there was only partial support for the hypothesis. Only two indicators of tangible social support and social network characteristics stood out as significantly associated with both physical activity and substance use. The more church members helped, the more an individual helped church members and the more social network characteristics men reported, the more physical activity and less substance use they engaged in. The other indicator of tangible social support (i.e., the number of church members that help) and emotional social support were also associated with physical activity but not substance use. Previous studies have shown social support to be significantly correlated with physical activity and substance use (Cotter & Lachman, 2010; Dowda et al., 2003; Emmons et al., 2007; Gallant & Dorn, 2001; Jackson, 2006; McNeill et al., 2006; Sallis et al., 1992; Strine et al., 2008; Walcott - McQuigg & Prohaska, 2001) but emotional social support was found to be associated with substance use as well (Strine et al.). Within the literature, neither African American men nor those who attended church services were samples of interest. Many of these studies used samples in which the majority was female and White. Therefore,

the use of an African American male sample to examine the relationship among social support, social network characteristics and health behaviors fills a gap in the literature.

The social connection with church member variables were also significantly related to the three dimensions of religious involvement. Regression analyses revealed that organizational, non-organizational and subjective religious involvement were all significantly associated with the three tangible support items, emotional social support and social network characteristics. Particularly, African American men who had higher levels of organizational and non-organizational religious involvement reported more tangible social support, emotional social support and social network characteristics with church members. Subjective religious involvement was also significantly associated with the social connection variables. In other words, men with low and medium levels of subjective religious involvement reported less tangible and emotional social support as well as fewer social network characteristics than men with higher levels of subjective religious involvement.

In addition to the analyses conducted to assess the nature of the relationships between the three dimensions of religious involvement, the social connection with church member variables and the two health behaviors, group differences were also evaluated between the two samples of African American men. The results revealed that there was a significant difference on non-organizational and subjective religious involvement between those who do and do not attend church services more than once a year. The African American men who attended church services more than once a year had higher levels of non-organizational and subjective religious involvement than the sample of African American men who did not attend church services. As one might expect, frequent attendance at church services does

strongly relate to other dimensions of religious involvement (Taylor et al., 2004). If one attends church services frequently, he may also read and watch more religious material and place more value on religion in his life.

Finally, group differences were tested to determine if there was a significant difference on the health behaviors of those of who do and do not attend church services more than once a year. The findings show that there is a significant difference on physical activity and substance use between African American men who do and do not attend church services more than once a year. The men who attended church services engaged in more physical activity and less substance use than those who did not attend church services. Many studies suggest that frequent church attendance is strongly related to more physical activity, less smoking, and less alcohol use (Hill et al., 2006; Hill et al., 2007; Strawbridge et al., 2001). For that reason, a sample of men who attended church services more than once a year would engage in more health-promoting behaviors than men who attended church services infrequently.

Study Limitations and Strengths

Many studies examining the relationship between religious involvement and health behaviors have a small to moderate percentage of African American participants and more women than men. Accordingly, there is a lack of information specific to African American men and one cannot gauge how their religious involvement may affect their health behaviors. For example, no studies were found that discussed how religious involvement dimensions relate to illicit drug use among the African American male population. The present study fills this gap by using a national dataset (i.e., NSAL) that comprises of a large sample of African

American men and including a variety of health behaviors. Furthermore, this study provides data not only on the religious involvement of African American men but also on the social support and social network characteristics of this population with church members, which is infrequently studied.

Despite extensive examination of an African American male sample, there remain a few limitations. First, the data used from the NSAL is cross-sectional so causal relationships cannot be determined. Second, some data was not collected from a portion of the sample because of the skip patterns throughout the NSAL survey. The African American men who did not attend church services more than once a year were not asked questions pertaining to the tangible and emotional social support and social network characteristics, which prevented any comparisons to be made with the sample men of who attended church services. Thirdly, the measurement of some of the variables could have been better with the use of reliable and valid scales. For instance, organizational religious involvement had a Cronbach's $\alpha = .55$. Social network characteristics only comprised of two items while behavioral counseling for substance use comprised of one item, both of which are too small to be considered a scale and to have a reliability coefficient. Additionally, two of the health behaviors (i.e., physical activity and substance use) were items combined into indices and were not meant to be considered reliable and valid scales. The variables with a small number of items were also not designed as items in a scale, which could result in lower reliability. Therefore, the health behavior indices should not be treated as scales and the variable with low reliability may still be measuring the proposed constructs but should be viewed with caution. Finally, some of the items used in the NSAL were not consistent with the common practice of measuring

certain variables. For example, cigarette smoking was measured in the NSAL with the following item: “Do you currently smoke?” The Centers for Disease Control and Prevention’s (CDC) National Center for Health Statistics define current smoker as someone who has “smoked at least 100 cigarettes in their lifetime and still currently smoke” (Pleis, 2010, p. 86). Furthermore, the NSAL physical activity questions ask about the frequency of activity but not the duration of engaging in that activity. Reports from the CDC suggest that the frequency of any activity of at least 10 minutes and the duration of that activity be included when reporting physical activity statistics (Pleis).

Conclusion

These results indicate that some relationships do exist between different dimensions of religious involvement and the health behaviors of African American men. For the sample of African American men who attended church services more than once a year, the results suggest that these men would benefit from organizational and non-organizational religious involvement. Both dimensions of religious involvement were significantly associated with health-promoting behaviors (i.e., increased physical activity and decreased substance use). Even the sample of men who did not attend church services showed a decrease in substance use if they had high levels of non-organizational religious involvement. Furthermore, tangible social support and social network characteristics both produced salutary results related to physical activity and substance use while emotional social support only had a positive effect on physical activity.

The declining health status of the African American male population requires that additional studies focus on the health behaviors of these men in order to fill a gap in the literature. Moreover, the results of this study suggest that certain dimensions of religious involvement can benefit those

who attend and do not church services. Future studies should focus on different aspects of religious involvement and try to identify the mechanisms by which different dimensions of religious involvement impact different health behaviors among African American men. Mechanisms such as the social network with and social support of church members should be explored in more depth to examine whether this source of support produces different results from what already exist in the literature. Insights into such mechanisms could then be applied to interventions to decrease the disproportionate burden of illness and disease among the African American male population. Furthermore, future studies should examine the social support African American men who do not attend church services experience in order to see where their source of support comes from and if these men benefit from the support of the church in any way. Upon identifying the sources of support for African American male non-church attendees, researchers can then observe whether positive associations exist between social support and health behaviors for this group of men as well.

CHAPTER 5

Paper 2

Title – The Relationship Between Religious Involvement and the Health Behaviors of African American Men: Examining the Mediating Role of Social Connection With Church Members

Abstract

Social connection with church members is examined as a mediator of the relationship between religious involvement and health behaviors. Using data from the National Survey of American Life (NSAL), multiple regression analyses were run on a sample of African American men who attended church services more than once a year ($n = 893$). The variables that were used in the study were as follows: social connection with church members – social network characteristics, tangible and emotional social support; religious involvement – organizational, non-organizational and subjective; and health behaviors – physical activity, substance use and behavioral counseling for substance use. One indicator of tangible social support (i.e., frequency you help church members) and emotional social support were found to completely mediate the relationship between organizational religious involvement and physical activity. Additionally, the same indicator of tangible social support and social network characteristics partially mediated the relationship between non-organizational religious involvement and physical activity. None of the social connection with church member variables mediated the relationship between religious involvement dimensions and substance use but organizational religious involvement remained significantly associated

with the health behavior. The results of the current study differ slightly from other studies examining social support as a mediator. The implications of the findings are further discussed to inform future studies and interventions.

Introduction

Overall, religion has been positively associated with health and an overwhelming amount of literature supports the existence of this relationship (Brown & Gary, 1994; Chatters, 2000; Ferraro & Koch, 1994; George, et al., 2002; Hill, et al., 2007; Koenig, McCullough, & Larson, 2001; Levin, 1994; Olphen et al., 2003; Powell et al., 2003). The link between religion and health has been explored in relation to different aspects of health (i.e., physical health, mental health, mortality) and different health outcomes (e.g., cardiovascular disease, hypertension, stroke and cancer), all providing evidence that religious involvement can be beneficial to one's health (Chatters, 2000; Levin, 1994). The literature has also stated that participation in religious services promotes healthier habits such as increasing physical activity and decreasing smoking and alcohol use, which could also result in better health (Chitwood, et al., 2008; George et al., 2002; Gillum, 2006; Gillum, 2005; Hill, et al., 2006; Hill, et al., 2007; Merrill & Thygeson, 2001; Nagel & Sgoutas-Emch, 2007; Roff et al., 2005; Schlundt et al., 2008; Wallace & Forman, 1998).

There is a need to explore the connection of religious involvement and health among African Americans and men, in particular. Religious involvement is prevalent among African Americans and Black churches have often played a significant role in addressing community challenges such as the health of their members (Lincoln & Mamiya, 1990; Taylor et al.,

2004). Currently, the health of African American men is rapidly declining and mortality rates are rising (Moser et al., 2005). Research suggests that risk behaviors such as smoking cigarettes or drinking alcohol have an important influence on health outcomes and men tend to engage in more of these behaviors than women (Mahalik et al., 2007). For example, the 2009 results of the National Survey on Drug Use and Health reported that current illicit drug use is higher among males than females (aged 12 years or older). African American men, specifically, had a significantly higher rate of past month illicit drug use than the national average between 2004 and 2008 (SAMHSA, 2010). Furthermore, African American men are less active than Whites even though they engage in more regular physical activity than their female counterparts (Pleis et al., 2010; Whitt-Glover et al., 2007). It is logical to focus on the African American male population given the centrality of the church in the African American community, the protective affect that religious involvement has on health and health behaviors and the high mortality rates of African American men. More importantly, it is necessary to examine the mechanisms through which the association of religious involvement and health behaviors exists among this group of men.

One frequently discussed explanation for the linkage between religious involvement and health is the receipt of social support (Ferraro & Koch, 1994; George et al., 2002; Olphen et al., 2003; Powell et al., 2003). In a preliminary study, Olabode-Dada (2011) examined the bivariate relationships between the social support of church members, religious involvement and health behaviors among African American men church attendees. The results indicated that only organizational and non-organizational religious involvement, social network characteristics, and tangible and emotional social support were significantly

associated with physical activity among church attendees. All three religious involvement dimensions (i.e., organizational, non-organizational and subjective) were associated with substance use but only social network characteristics and tangible social support were significantly associated with substance use for church attendees. Finally, all three religious involvement dimensions significantly associated with social network characteristics, tangible and emotional social support among the African American men that attended church services. These findings suggest that certain types of social support could act as mediators between different dimensions of religious involvement and specific health behaviors.

There have only been a few studies examining social support as a mediator between dimensions of religious involvement and health behaviors such as substance use (Bowie et al., 2006; Edlund et al., 2010; Menagi et al., 2008) and physical activity (Kim & Sobal, 2004). These studies showed religious involvement variables to be associated with the targeted health behaviors (i.e., physical activity, alcohol use, and illicit drug use) but the investigation of social support as a potential mediator resulted in little to no effect on the relationship (Bowie et al.; Edlund et al.; Menagi et al.; Kim & Sobal). Of the two studies that did find small effects of social support on the religiosity-health behavior connection, one study used a national sample of adults and the other focused on African American adults (Bowie et al.; Edlund et al.). Social support as a mediator warrants further study because it has not been explored among a variety of populations and the evidence is too small to rule it out as a potential mechanism. Moreover, little research has been done to explore social support among African American men.

The purpose of the present study is to test whether the social connection with church members (i.e., social network characteristics, tangible and emotional social support) mediate the relationships between three dimensions of religious involvement (i.e., organizational, non-organizational and subjective) and health behaviors (i.e., physical activity, substance use, behavioral counseling for substance use). One theory that can be used to guide how these variables are associated is Bandura's (1977a, 1986) Social Cognitive Theory (SCT). Social Cognitive Theory is a comprehensive structure for understanding how humans, their environment and their behaviors interact to create social change (Baranowski et al., 2002). When determining how religious involvement, the social connection with church members and health behaviors relate to one another it is important to consider the person, the environment and the behavior. These three components together make up SCT's reciprocal determinism that takes into account the context or situation surrounding individual behavior change.

Reciprocal determinism describes how it is necessary to examine the interaction between the person, environment, behavior and overall situation when attempting to explain what prompts and maintains behavior change. The environment is anything physically external to the person (i.e., people, place and things) that has the potential to affect a person's behavior and the situation is one's perception of their environment along with how they perceive their role in the situation (Baranowski et al., 2002). They all simultaneously interact, influencing one another along the way. Therefore, when a change occurs among the person, their behavior, or the environment, a change is created in all other components and causes a shift in the situation. As the situation shifts, the three components (the person, environment,

behavior) are evaluated and adapted in a way that they mirror one another in order to support behavioral change. In this view of behavioral change, one specific component does not cause a change in behavior. There are multiple factors that influence behavior while one's behavior also affects those factors. Furthermore, none of the components are considered to be the ultimate cause because the person, environment and one's behavior are so interdependent that figuring out the specific cause of each is difficult depending on the point in time in which the situation is examined (Bandura, 1978). Consequently, it is difficult to test causality within the framework of reciprocal determinism but one can see how to view the relationships in a model that may operate in such a cyclical manner.

Study Research Questions and Hypotheses

The following research questions and hypotheses will be used to test the mediation model.

- 1) Will African American men who report a higher level of religious involvement also report a higher score for health behaviors, when controlling for covariates?

Hypothesis 1: African American men who report a higher level of organizational, non-organizational, and subjective religious involvement will report higher scores for physical activity as measured by the Physical Activity Index and higher scores for substance use as measured by the Substance Use Index, when controlling for covariates.

- 2) Will African American men who report a higher level of religious involvement also report greater levels of social connection with church members (i.e., tangible and emotional social support, and social network characteristics), when controlling for covariates?

Hypothesis 2: African American men who report a higher level of organizational, non-organizational, and subjective religious involvement will report greater levels of social connection with church members (tangible social support, emotional social support and social network characteristics), when controlling for covariates.

3) Will social network characteristics, tangible social support and emotional social support (social connection with church members) act as mediating factors independently and in combination to explain the relationship between religious involvement and health behaviors, when controlling for covariates?

Hypothesis 3: Social network characteristics, tangible social support and emotional social support (social connection with church members) will all act as mediators in combination and independently between organizational, non-organizational, and subjective religious involvement and physical activity as measured by the Physical Activity Index and substance use as measured by the Substance Use Index.

Method

The dataset used for this study was the National Survey of American Life: Coping With Stress in the 21st Century (NSAL) (Jackson et al., 2007). This secondary dataset provides a large enough sample of African American men to make some generalized interpretations about how the variables of interest interact within this population.

Participants

Data was collected from a sample of 3,570 African Americans aged 18 and older that were English-speaking, non-institutionalized and resided in households located in the

coterminous 48 states. This survey population included only African American adults who did not identify ancestral ties in the Caribbean (Heeringa et al., 2004). The response rate for African Americans was 70.9% (Heeringa et al.). For the purposes of this study, data was used from the sample of African American men who attended church services more than once a year (n = 893). There were a total of 1,148 African American men who attended church services since they were 18 years old but 149 of them only attended services less than once a year. Additionally, there were 106 participants missing data so they were dropped from the analyses. This resulted in a sample size of 893 African American men who attended church services (i.e., other than for weddings and funerals) more than once a year.

Parent Study Recruitment, Sampling, and Data Collection Instrument

The National Survey of American Life (NSAL): Coping With Stress in the 21st Century dataset was collected by The Program for Research on Black Americans at the University of Michigan's Institute for Social Research from February 2001 to March 2003 (Jackson et al., 2007). Heeringa et al. (2004) states that the NSAL is an integrated national household probability sample survey of 6,199 respondents using a multi-stage sample design. The sample included 3,570 African Americans, 1,006 non-Hispanic Whites and 1,623 Blacks of Caribbean³ descent with a response rate of 71.5%. The NSAL dataset combined a core national area probability sample of households with a supplemental sample of households in areas that had a high concentration of Afro-Caribbean residents. Although the NSAL study

³ There is a discrepancy between what is reported by Heeringa et al. (2004) and what the dataset shows. The dataset shows that the sample included 3,570 African Americans, 891 non-Hispanic Whites, and 1,438 Blacks of Caribbean descent with 183 individuals classified as "all other Hispanic."

targets non-Hispanic Whites and Afro-Caribbeans for comparative purposes, “the NSAL Core national sample is designed to be optimal for a national study of the African American survey population” (Heeringa et al., p. 227).

There were four sampling stages: the *primary stage* involved sampling the US Metropolitan Statistical Areas (MSAs) and counties; the *second stage* involved the sampling of area segments; the *third stage* was the sampling of the housing units within the area segments; and the *fourth stage* was the random selection of eligible respondents from the housing units (Heeringa et al., 2004). The NSAL core sample was comprised of 64 primary stage units made up of MSAs and non-MSAs (e.g., “single counties or a grouping of geographically contiguous counties with small populations”) (Heeringa et al., p. 222). At the second stage, 456 area segments were nested within those primary stage units. By the third stage of sampling, the NSAL core sample became a stratified probability sample of US households based on two domains defined by the 1990 census proportions of African American households. The first domain incorporated all census block groups with 10% or more African American households reported while the second domain included all census block groups with less than 10% of African American households. Once housing units were identified, trained interviewers made in-person contact with each household to find out the age, gender, race and Hispanic or Caribbean ancestry of each household member. A list was compiled of all household members and those who were eligible to be selected as a NSAL respondent were identified within each household. In order to randomly select a NSAL respondent within each household (one respondent per household), the researchers used an objective procedure developed by Kish (as cited by Heeringa et al.). Finally, face-to-face

interviews were conducted in the homes of respondents (approximately 14 percent of the interviews were conducted either partially or entirely by telephone) and recorded on laptop computers (Taylor et al., 2007). As a result of this complex sampling design, special analytical procedures were implemented using the following design and weighting variables: sampling error stratum, sampling error cluster, NSAL weight centered for total N of 6,082 and NSAL weight population weight.

Measures

The following variables from the NSAL were used for this study: religious involvement (i.e., organizational, non-organizational and subjective religious involvement), social connection with church members (i.e., tangible and emotional social support, social network characteristics), and three health behaviors (i.e., physical activity, substance use, and behavioral counseling for substance use). Two health behavior indices were created from items within the NSAL, one pertaining to participants' engagement in physical activity and the other pertaining to substance use. Likert scale variables were treated as continuous. Means, standard deviations and frequency distributions were also computed.

Recoding. All independent variables (i.e., the three dimensions of religious involvement and the three variables representing social connection with church members) were reverse coded for high scores to indicate more engagement in that variable. For example, some of the items within the organizational religious participation measure were originally on a Likert scale of 1-nearly every day to 5-less than once a year but they were reverse coded so that 1 equaled less than once a year and 5 equaled nearly every day. In order to derive scores, the organizational religious participation, tangible social support and social

network measures were standardized so that all of the items incorporated within those measures were on the same scale. Variables within the health behavior indices (Physical Activity and Substance Use) were recoded for the responses to range from zero to five. As with the independent variables, higher scores denoted more involvement in health-promoting behaviors so the behavioral health counseling for substance use and physical activity items were reverse coded but the cigarette smoking and substance use items were left alone.

Lastly, some variables were transformed into dummy variables (0 and 1) if the variable was categorical or if the histogram of the variable did not appear normally distributed. The levels of dummy variables differed for each variable depending on the number of categories within that variable. Upon analysis, one level was left out for each of the variables that were created into dummy variables. All but two of the covariates used in the analyses were created into dummy variables because they were categorical: health status (five levels), education (four levels), work status (three levels), marital status (three levels), region (four levels) and religious affiliation (14 levels). Subjective religious involvement was recoded into a three level dummy variable because the histogram was not normally distributed.

Religious involvement measures.

Organizational religious participation. Organizational religious participation included frequency of service attendance, number of hours at religious services, church membership, frequency of participation in congregational activities and number of hours per week in other activities at the place of worship (Cronbach's $\alpha = .55$). The categories and values for frequency of religious service attendance were as follows: attend nearly every day

(5), attend at least once a week (4), a few times a month (3), a few times a year (2), less than once a year (1). The number of hours at religious services on a typical Sunday was measured with the question, "On a typical (Sunday/Saturday) how many hours are you at church or place of worship?" Church membership was measured with the question, "Are you an official member of a church or other place of worship?" Frequency of participation in congregational activities was measured with the question, "Besides regular service, how often do you take part in other activities at your church? Would you say nearly every day (5), at least once a week (4), a few times a month (3), a few times a year (2), or never (1)?" Finally, the number of hours per week in other activities at the place of worship was measured with the question, "Not including religious services, how many hours per week are you at your place of worship?"

Non-organizational religious participation. There were five items that measured non-organizational religious participation: reading religious books or other religious materials, watching religious television programs, listening to religious radio programs, praying and asking someone to pray for you (Cronbach's $\alpha = .73$). Respondents were asked how often they took part in these activities (i.e., nearly every day, at least once a week, a few times a month, at least once a month, a few times a year, or never), using a 6-point Likert scale for each item (6-nearly every day to 1-never).

Subjective religious participation. Four measures of subjective religious participation were used: (a) importance of religion while growing up, (b) importance of parents taking or sending their children to religious services, (c) overall importance of religion in the respondent's life and (d) respondent's self-rating of religiosity (Cronbach's $\alpha =$

.72). Each item had four categories ranging from 4 (very important or very religious) to 1 (not important at all or not religious at all).

Social connection with church member measures.

Social network characteristics. Items measuring closeness to and frequency of contact with church members were as follows: (a) “How close are you to the people in your church? Would you say very close, fairly close, not too close, or not close at all;” and (b) “How often do you see, write or talk on the telephone with church members? Would you say nearly every day, at least once a week, a few times a month, at least once a month, a few times a year, hardly ever or never?” For the first item a Likert-scale was used ranging from 4 (very close) to 1 (not close at all) and the second item used a Likert-scale ranging from 6 (nearly every day) to 1 (never).

Social support. The social support measures included both tangible and emotional social support.

There were three indicators of tangible social support and they were treated separately within all analyses because the measure had low reliability when all three items were analyzed together. The items that measured tangible support were as follows: (a) “How many people in your church (place of worship) would help you out if you needed help;” (b) “How often do people in your church (place of worship) help you out? Would you say very often, fairly often, not too often, or never;” and (c) “How often do you help out people in your church (place of worship)? Would you say very often, fairly often, not too often, or never?” The first item required the respondent to fill in a number and the last two items used a Likert-

scale with categories ranging from 4 (very often) to 1 (never). An additional category representing men who reported, “never needing help” were categorized under 1 (never).

The items measuring emotional support were as follows: (a) “How often do your church members make you feel loved and cared for? Would you say very often, fairly often, not too often, or never; (b) “How often do they listen to you talk about your private problems and concerns; (c) “How often do they express interest and concern in your well-being?” Each item had four categories ranging from 4 (very often) to 1 (never). Cronbach’s $\alpha = .72$.

Health behavior indices. The health behavior indices included questions within the NSAL that focused on the following health behavior domains: physical activity, cigarette smoking, substance use (i.e., alcohol, marijuana, cocaine, prescription, other drugs) and behavioral health counseling for substance use. Two indices were created, Substance Use and Physical Activity, and the item assessing behavioral health counseling for substance use was kept as a separate dependent variable. Therefore, there are three health behavior variables, which were created based on the items that were significantly correlated with one another. In order to create the two indices, the following steps were completed:

- 9) Some items were reverse coded (i.e., physical activity and behavioral health counseling for substance use variables);
- 10) All variables were recoded so that the responses ranged from 0-5 (i.e., three physical activity items originally ranged from 1 (never) to 4 (often) and now it ranges from 0 (never) to 5 (often); four substance use items - one cigarette smoking item originally ranged from 1 (yes) to 5 (no) and now it ranges from 0 (yes) to 5 (no), one alcohol item originally ranged from 1 (nearly every day) to 6 (did not drink in past 12

months) and now it ranges from 0 (nearly every day) to 5 (did not drink in past 12 months), one marijuana, one cocaine, one prescription and other drugs originally ranged from 1 (nearly every day) to 6 (less than once a month) and now ranges from 0 (nearly every day) to 5 (never); and one behavioral health counseling for substance use item originally ranged from 1 (no) to 5 (yes) and now it ranges from 0 (no) to 5 (yes);

11) Variables were combined using an average of the separate items.

The Physical Activity Index (PAI) included three items that focused on the frequency of garden/yardwork, sports/exercise and walking. The Substance Use Index (SUI) included the items that focused on the frequency of use of alcohol, marijuana, cocaine, prescription drugs, and tobacco. These five items showed a significant positive correlation with one another and did not correlate with the physical activity items. The item asking about the frequency of use of heroin, opium, glue, LSD, peyote, or any other drug was dropped because it did not correlate with any of the other substance use items and was not included in the Substance Use Index. The indices are to be viewed as behaviors that are added together into an index but are not meant to be seen as items grouped into a scale that require a reliability coefficient. Additionally, the behavioral counseling for substance use item was kept separate because it did not correlate with the other health behavior items in the way that was to be expected. It should be positively correlated with the other substance use items since it was reverse coded but instead it showed significant negative correlations with the other substance use items.

Covariate measures.

There were eight covariates that were included in all analyses that referred to the participants' age, household income, health status, work status, marital status, region and religious affiliation.

Data Analyses

Due to the complex sampling procedures used by NSAL, the analyses for this study used the full dataset including 6,082 cases so that all sampling stages (i.e., clusters of MSAs and non-MSAs, area segments, housing units, and eligible respondents) would be part of the correction for non-independent observations. Then, the particular cases of African American men who attended church services more than once a year ($n = 893$) were selected and analyzed within the larger sample.

Univariate descriptive statistics were calculated for all variables and Likert scale variables were treated as continuous. Hence, means and standard deviations are presented as well as frequency distributions. Linear regression coefficients were also calculated to determine the existence and nature of any bivariate relationships between all of the variables.

Mediation was assessed using the structural equation modeling technique using the software program Stata (StataCorp, 2009), version 11.0, which provides a maximum likelihood estimation of the path model of the observed variables (i.e., religious involvement dimensions, social connection with church members, and health behaviors). According to Baron and Kenny (1986), mediation is established when the following conditions are met: (1) the independent variable affects each mediator in the predicted direction (paths A1-A9); (2) the independent variable affects the dependent variable (path C1-C9); and (3) each mediator

affects the dependent variable when the independent variable is controlled (paths B1-B9). If all conditions are met and the relationships are in the predicted direction, as shown in Figure 1, then the independent variable should have less of an effect on the dependent variable in condition 3 than in condition 2. Stata (StataCorp) tested the statistical significance of the indirect, hence mediated, effects. Mediators were tested independently and in combination. Finally, the following covariate variables were controlled for in all equations: health status, age, income, education, work status, marital status, region and religious affiliation.

Results

Table 8 shows all of the descriptive statistics for the sample. The mean age of the African American men who attended church services more than once a year was 42.44 ($SD = 16.35$) and the mean household income was \$44,044.28. In the sample, 37% had at least 12 years of education, 72.8% were employed, 54% were married, 36.6% reported being in “very good” health, 61.7% of the men lived in the “South” and 47.3% reported being Baptist. As a whole, the sample scored in the mid-range on items pertaining to the frequency of participation and attendance in church services (means of 3.12 and 2.28). This sample only spent a small number of hours in church for services or other activities at the place of worship (means of 2.71 and 1.53 hours). Men scored slightly high on items measuring non-organizational religious involvement. For example, the men in this sample prayed almost every day with an average score of 5.65 (1 = never, 6 = nearly every day). The subjective

Table 8

Participant Characteristics of African American Men Who Attended Church Services More Than Once a Year (n = 893)

Characteristics	<i>M</i>	<i>SD</i>
Covariates		
Age (years)	42.44	16.35
Household income (\$)	44,044.28	35,756.19
	<i>n</i>	%
Education		
0-11 years of education	212	20.4
12 years of education	356	37.4
13-15 years of education	241	25.7
16 or more years of education	144	16.5
Employment status		
Employed	683	72.8
Unemployed	66	7.6
Not in labor force	204	19.6

Table 8 (continued)

Characteristics	<i>n</i>	%
Covariates		
Marital status		
Married/cohabiting	453	53.7
Divorced/separated/widowed	236	19.0
Never married	264	27.4
Health status		
Excellent	172	17.6
Very good	344	36.6
Good	268	29.3
Fair	133	13.7
Poor	36	2.9
Region		
Northeast	103	14.5
Midwest	133	14.8
South	653	61.7
West	64	9.1

Table 8 (continued)

Characteristics	<i>n</i>	%
Covariates		
Religious affiliation		
Protestant	31	3.8
Baptist (all types)	478	47.3
Lutheran	4	.6
Methodist (all types including United Brethren)	66	7.0
Pentecostal	33	3.3
Presbyterian	7	.7
Protestant (other)	165	18.7
Catholicism/Catholic (no denomination mentioned)	54	5.5
Catholic (Roman)	7	1.0
Catholic (others)	1	.2
Agnostic or Atheist	0	0
No religious preference	37	3.6
Other	32	3.5
No religion	38	4.6

Table 8 (continued)

Characteristics	<i>n</i>	%
Religious Involvement		
Organizational:		
- Church membership (yes/no)	629*	66.0
	<i>M</i>	<i>SD</i>
- Frequency of service attendance (1 = less than once a year, 5 = nearly every day)	3.12	.91
- Number of hours at religious services	2.71	1.82
- Frequency of participation in congregational activities (1 = never, 5 = nearly every day)	2.28	1.19
- Number of hours per week in other activities at the place of worship	1.53	4.10
Non-organizational:		
- Reading religious books or other religious materials (1 = never, 6 = nearly every day)	4.17	1.54
- Watching religious television programs (1 = never, 6 = nearly every day)	3.81	1.68
- Listening to religious radio programs (1 = never, 6 = nearly every day)	3.74	1.93
- Praying (1 = never, 6 = nearly every day)	5.65	.94
- Asking someone to pray for you (1 = never, 6 = nearly every day)	3.69	1.88
Subjective religious involvement:		
- Importance of religion while growing up (1 = not at all, 4 = very)	3.69	.63
- Importance of parents taking or sending their children to religious services (1 = not at all, 4 = very)	3.85	.39
- Overall importance of religion in the respondent's life (1 = not at all, 4 = very)	3.78	.52
Respondent's self-rating of religiosity (1 = not at all, 4 = very)	3.16	.69

Table 8 (continued)

Characteristics	<i>M</i>	<i>SD</i>
Psychosocial		
Social network characteristics:		
- Closeness to church members (1 = not close at all, 4 = very close)	2.98	.96
- Frequency of contact with church members (1 = never, 6 = nearly every day)	3.47	1.83
Tangible social support:		
- Number of church members that would help	15.75	23.03
- Frequency church members help (1 = never, 4 = very often)	1.81	1.35
- Frequency you help church members (1 = never, 4 = very often)	2.47	1.17
Emotional social support:		
- Church members make you feel loved (1 = never, 4 = very often)	3.39	.81
- Church members listen to problems (1 = never, 4 = very often)	2.23	1.16
- Church members express interest in well-being (1 = never, 4 = very often)	3.09	1.02

Table 8 (continued)

Characteristics	<i>M</i>	<i>SD</i>
	Health Behaviors	
Physical activity:		
- Frequency of garden/yardwork (0 = never, 5 = often)	2.44	2.08
- Frequency of sports/exercise (0 = never, 5 = often)	3.02	1.95
- Frequency of taking walks (0 = never, 5 = often)	3.54	1.83
Substance use:		
- Number of times had at least one drink in past 12 mths (0 = nearly every day, 5 = no drink in past 12 mths)	3.14	1.66
- Frequency of marijuana/has use in past 12 mths (0 = nearly every day, 5 = less than once a month)	4.51	1.21
- Frequency of cocaine use in past 12 mths (0 = nearly every day, 5 = less than once a month)	4.95	.37
- Frequency of non-recommended prescription drug use in past 12 mths (0 = nearly every day, 5 = less than once a month)	4.98	.26
	<i>n</i>	%
- Currently smoke (yes/no)	291*	30.5
Behavioral counseling for substance use (yes/no)	21*	2.2

Note. Totals of percentage are not 100 for every characteristic because of rounding.

* Indicates the frequency of participants that responded “yes.”

religious involvement was also found to be high for this sample (means ranging from 3.16 to 3.85 on a 4-point scale). African American men were fairly close to church members and were in contact with church members more than once a month. Although the sample reported an average of 15 church members they felt would help them if necessary, they also reported

that church members do not help them out too often. On the other hand, this sample of men reported that they help church members out more often. The men reported that church members did express interest in their well-being and made them feel loved fairly often while church members listening to problems did not occur too often. Finally, the physical activity of the sample was about average, with men reporting more walking than any other exercise. This sample of African American men engaged in very little substance use such as marijuana or cocaine. However, the men did drink alcohol at least weekly and 30.5% of the sample smoked cigarettes. Of the men who drank alcohol or used illicit drugs, only 2.2% participated in behavioral counseling for substance use.

Based on bivariate regression analyses conducted by Olabode-Dada (2011), subjective religious involvement was not included in the mediation model with the physical activity index because subjective religious involvement was not found to be significantly associated with this health behavior. Behavioral counseling for substance use was also not included as a dependent variable because only one of the independent variables and none of the mediation variables were significantly associated with this health behavior. Finally, emotional social support and one indicator of tangible social support (i.e., number of church members that help) were not included as a mediator when substance use was the dependent variable because neither variable was significantly associated with substance use. Subsequent research analyses are conducted on African American men who attended church services more than once a year. The following covariates variables were controlled for in all equations: health status, age, income, education, work status, marital status, region and religious affiliation. Across all findings, the small percentages of variance explained

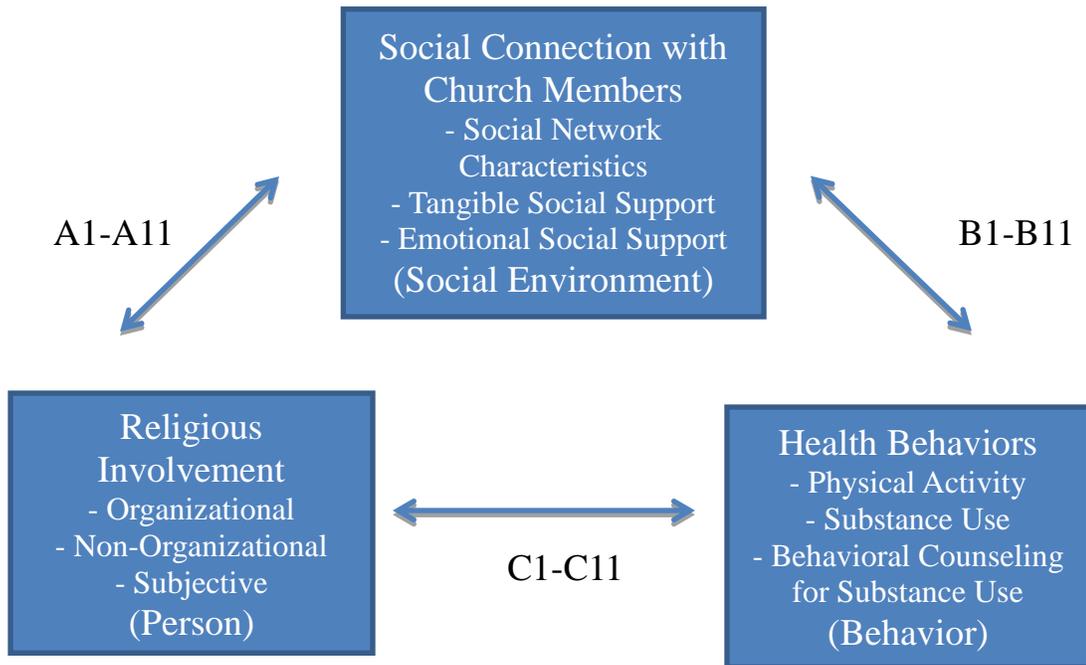


Figure 2. Path-analytic model.

(R^2) may be significant due to the large sample size and should be viewed with caution.

Test of Mediation

Hypothesis 1: African American men who report a higher level of organizational, non-organizational, and subjective religious involvement will report higher scores for physical activity as measured by the Physical Activity Index and higher scores for substance use as measured by the Substance Use Index, when controlling for covariates.

This hypothesis corresponds to one of the conditions of Baron and Kenny's (1986) mediation model, which suggests that the independent variable affects the dependent variable

(path C1-C11 in Figure 1). While controlling for all covariates variables, the regression analysis showed that organizational religious involvement was significantly associated with physical activity scores ($B = .137, p = .036$) and it accounted for 16.7% of the variance, as seen in Table 9. Organizational religious involvement was also significantly associated with substance use scores ($B = .148, p = .000$), accounting for 11.2% of the variance in substance use. Non-organizational religious involvement was significantly associated with physical activity scores ($B = .195, p = .000$), accounting for 18.6% of the variance in physical activity. However, non-organizational religious involvement was not found to be significantly associated with substance use scores when covariates were included in the model. There was also no evidence to show that subjective religious involvement was significantly associated with substance use scores.

The results did provide some evidence to support the hypothesis. Non-organizational religious involvement was found to be significantly associated with physical activity, when controlling for all covariates. In other words, an increase in non-organizational religious involvement translated into an increase in physical activity among African American men who attended church services more than once a year. Organizational religious involvement was also associated with physical activity and was the only dimension significantly associated with substance use after controlling for all covariates. More organizational religious involvement related to less substance use. Lastly, subjective religious involvement was not found to be significantly associated with substance use.

Table 9

Regression Analysis Summary for Religious Involvement Variables Associated With Health Behaviors

Independent variable	Physical Activity		Substance Use	
	B	R ²	B	R ²
Organizational religious involvement	.137*	.167***	.148***	.112***
Non-organizational religious involvement	.195***	.186***	.026	.093***
Subjective religious involvement				
Low	—	—	-.196	.096**
Medium	—	—	-.094	.096**

Note. The control variables that were included in the model are age, household income, region, education, marital status, employment status, religious affiliation and health status.

(—) = After running bivariate regressions, subjective religious involvement was not found to be associated with physical activity so it was not included in the mediation model.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Hypothesis 2: African American men who report a higher level of organizational, non-organizational, and subjective religious involvement will report greater levels of social

connection with church members (tangible social support, emotional social support and social network characteristics), when controlling for covariates.

Hypothesis 2 corresponds to another condition of Baron and Kenny's (1986) mediation model, which suggests that the independent variable affects each mediator in the predicted direction (paths A1-A11 in Figure 1). The regression analysis showed that organizational religious involvement was significantly associated with all three social connection with church member variables when controlling for covariates. Specifically, organizational religious involvement was significantly associated with social network characteristic scores ($B = .71, p = .000$) for African American men, accounting for 42.6% of the variance in social network characteristics. For analyses related to tangible social support, the three indicators were analyzed separately. Organizational religious involvement was significantly associated with the number of church members that help ($B = 8.41, p = .000$), frequency church members help ($B = .67, p = .000$) and frequency you help church members ($B = .67, p = .000$). It accounted for 11.3% of the variance in number of church members that help, 20.3% of the variance in frequency church members help and 25.1% of the variance in frequency you help church members. Furthermore, organizational religious involvement was significantly associated with emotional social support scores ($B = .40, p = .000$), accounting for 21.4% of the variance in emotional social support.

Similarly, non-organizational religious involvement was significantly associated with all social connection with church member variables when controlling for covariates. This dimension of religious involvement was significantly associated with social network characteristics ($B = .32, p = .000$) for African American men, accounting for 27.9% of the

variance. Non-organizational religious involvement was significantly associated with number of church members that help ($B = 3.48, p = .000$), frequency church members help ($B = .32, p = .000$) and frequency you help church members ($B = .36, p = .000$). It accounted for 8.1% of the variance in the number of church members that help, 14% of the variance in frequency church members help and 19.9% of the variance in frequency you help church members. Finally, it was associated with emotional social support scores ($B = .25, p = .000$), accounting for 20.9% of the variance.

The two levels (low and medium) of subjective religious involvement (in comparison to the reference group, high subjective religious involvement) were both significantly associated with social network characteristics ($B = -.90, p = .000, B = -.40, p = .000$), accounting for 19.5%. Subjective religious involvement was also significantly associated with all three indicators of tangible social support. Only low subjective religious involvement was associated with the number of church members that help ($B = -6.93, p = .047$). On the other hand, both levels of subjective religious involvement were significantly associated with frequency of church members help ($B = -.88, p = .000; B = -.50, p = .000$) and frequency you help church members ($B = -.72, p = .000; B = -.35, p = .001$). Subjective religious involvement accounted for 6.5% of the variance in the number of church members that help, 10.1% of the variance in frequency church members help and 10.9% of the variance in frequency you help church members. Finally, subjective religious involvement was significantly associated with emotional social support ($B = -.88, p = .000; B = -.26, p = .000$), and accounted for 16% of the variance.

As hypothesized, all three dimensions of religious involvement were found to be significantly associated with the social connection with church member variables. Even with covariate variables in the model, an increase in organizational and non-organizational religious involvement related to an increase in reports of social network characteristics, tangible social support and emotional social support. Subjective religious involvement was also found to be significantly associated with social network characteristics, tangible social support and emotional social support in a positive direction. In other words, men with low and medium subjective religious involvement reported less social network characteristics, tangible social support and emotional social support than the men with high subjective religious involvement.

Hypothesis 3: Tangible social support, emotional social support and social network characteristics (social connection with church members) will all act as mediators in combination and independently between organizational, non-organizational, and subjective religious involvement and physical activity as measured by the Physical Activity Index and substance use as measured by the Substance Use Index.

This hypothesis refers to the final condition of Baron and Kenny's (1986) mediation model that states that each mediator affects the dependent variable when the independent variable is controlled (paths B1-B11). Again, the following analyses treated the tangible social support items separately. The direct effect of the frequency you help church members on physical activity was significant ($B = .139, p = .008$), suggesting that one indicator of tangible social support is significantly associated with physical activity. The direct effect of emotional social support on physical activity was also significant ($B = .139, p = .031$). Table 10 shows that

Table 10

Regression Analysis Summary for Religious Involvement Variables Associated With Physical Activity Through Social Connection Variables

Independent variable	Social network characteristics	Number of church members that help	Freq. church members help	Freq. you help church members	Emotional social support	R ²
	Indirect	Indirect	Indirect	Indirect	Indirect	Direct
Organizational religious involvement	-.104	.003	.045	.094*	.055*	.193
Non-organizational religious involvement	-.058*	.001	.020	.044*	.029	.205

Note. The control variables that were included in the model are age, household income, region, education, marital status, employment status, religious affiliation and health status.

* $p < .05$. ** $p < .01$. *** $p < .001$.

one indicator of tangible social support (i.e., frequency you help church members) and emotional social support were the only mediators that had a significant indirect effect on physical activity for African American men who attended church services more than once a year. The relationship between organizational religious involvement and physical activity was completely mediated by the frequency you help church members item ($B = .094$, $p = .013$) and emotional social support ($B = .055$, $p = .027$), while controlling for all other

mediators and covariates. The item assessing the frequency you help church members also had a significant direct ($B = .120, p = .023$) and social network characteristics had a significant direct effect ($B = -.179, p = .031$) on physical activity when controlling for non-organizational religious involvement. However, non-organizational religious involvement remained significantly associated with physical activity ($B = .16, p = .003$). The relationship between non-organizational religious involvement and physical activity was, therefore, partially mediated by frequency you help church members item ($B = .044, p = .035$) and social network characteristics ($B = -.058, p = .034$). When assessing the indirect effect of all three mediators in the model for physical activity, the findings were non-significant. None of the social connection variables mediated the relationships between the three dimensions of religious involvement and substance use but organizational religious involvement remained significant ($B = .173, p = .000$), as seen in Table 11.

Overall, there was some evidence to support hypothesis three. One indicator of tangible social support, emotional social support and social network characteristics were significantly associated with physical activity and acted as mediators between two dimensions of religious involvement and physical activity. The relationship between organizational religious involvement and physical activity was completely mediated by frequency you help church members and emotional social support, while controlling for all other variables. In other words, one indicator of tangible social support and emotional social support explained the association between the two variables. Frequency you help church members also partially mediated the relationship between non-organizational religious involvement and physical activity along with social network characteristics. Non-

Table 11

Regression Analysis Summary for Religious Involvement Variables Associated With Substance Use Through Social Connection Variables

Independent variable	Social network characteristics	Frequency church members help	Frequency you help church members	R ²
	Indirect	Indirect	Indirect	Direct
Organizational religious involvement	-.029	.016	-.013	.115*
Non-organizational religious involvement	.007	.012	-.003	.097*

Note. The control variables that were included in the model are age, household income, region, education, marital status, employment status, religious affiliation and health status.

* $p < .05$. ** $p < .01$. *** $p < .001$.

organizational religious involvement still remained significantly associated with physical activity so the relationship was not fully explained by the indicator of tangible social support and social network characteristics. Although none of the social connection with church member variables acted as mediators between the religious involvement dimensions and substance use, organizational religious involvement remained significantly associated with substance use with all mediators and covariates in the model. Furthermore, all findings testing the indirect effect of the mediators in combination were non-significant.

Discussion

It is well documented that religious involvement is not only protective of one's health outcomes but also one's health lifestyle. The purpose of this study was to examine the salutary effect of religious involvement on the health behaviors of African American men through the social connection with church members. A mediation model was tested to determine the following: whether three dimensions of religious involvement were positively associated with social connection with church members; whether the three dimensions of religious involvement were positively associated with health behaviors; and whether social connection with church members were also positively associated with health behaviors. Analyses were run to test this mediation on a sample of African American men who attended church services more than once a year.

As a whole, there was some evidence to support each of the proposed hypotheses. Findings showed that both organizational and non-organizational religious involvement were significantly associated with physical activity when controlling for all covariates. In other words, an increase in both religious involvement dimensions related to an increase in physical activity among African American men who attended church services more than once a year. Likewise, Kim and Sobal (2004) found that men who engaged in more prayer (i.e., non-organizational religious involvement) also engaged in more moderate physical activity. Organizational religious involvement was the only dimension found to be significantly associated with substance use among this sample of men. The more a man engaged in organizational religious involvement, the less he engaged in substance use. Similarly, Bowie et al. (2006) found that organizational religious involvement (i.e., frequency of church

attendance) was the only significant predictor of alcohol use among a sample of African American young adults. The results of these analyses reveal that mediation is feasible given that the relationships between the dimensions of religious involvement (i.e., organizational and non-organizational) and physical activity are significant; however, non-organizational and subjective religious involvement were not significantly associated with substance use so these relationships cannot be mediated. The results also revealed that all three dimensions of religious involvement were associated with the social connection with church member variables among African American men. An increase in organizational, non-organizational and subjective religious involvement related to an increase in social network characteristics, all three indicators of tangible social support and emotional social support after controlling for covariates.

Finally, the findings showed that one indicator of tangible social support (i.e., frequency you help church members) and emotional social support were significantly associated with physical activity when controlling for organizational religious involvement and covariates. The relationship between organizational religious involvement and physical activity was completely mediated by the tangible social support indicator and emotional social support, meaning they explain the existence of the relationship. The same indicator of tangible social support and social network characteristics were significantly associated with physical activity when controlling for non-organizational religious involvement and all covariates. The tangible social support indicator and social network characteristics acted as mediators between non-organizational religious involvement and physical activity but only partially explaining this relationship. Non-organizational religious involvement had a direct

effect on physical activity and remained significant even with all of the mediators and covariates in the model. In other words, more of the relationship between non-organizational religious involvement and physical activity is yet to be explained by other variables that have not been explored. Contrary to these findings, Kim and Sobal (2004) did not find social support to account for the relationship between religious involvement and physical activity but the majority of their participants were White women. The difference in samples might make a difference because the Black church and support from its congregants is important in the lives of African Americans (Taylor & Chatters, 1986; Taylor et al., 2005). Furthermore, social support received from church members may be distinct from other sources of social support in order for a mediation to be observed (George et al., 2002).

None of the social connection with church member variables mediated the relationships between the three religious involvement dimensions and substance use. Organizational religious involvement continued to be significant and have a direct effect on substance use with all mediators and covariates in the model. Therefore, the relationship between this dimension of religious involvement and substance use was not accounted for by any of the possible mediators. These findings align with other studies that showed no mediation to occur when social support, religious involvement, and substance use were all entered into the model (Bowie et al., 2006; Menagi et al., 2008). Additional research is necessary to investigate possible mechanisms by which the association between organizational religious involvement and substance use occurs. As mentioned earlier, neither non-organizational nor subjective religious involvement were significantly associated with

substance use so these relationships could not be mediated. When testing all of the indirect effects of the mediators in combination, the results were non-significant.

Study Limitations and Strengths

This study fills a gap in the literature because it used a large sample of African American men pulled from a national dataset (i.e., NSAL) and they all attended church services more than once a year. Frequent church attendance has been found to be more prevalent among African American women so studies focusing on the religious involvement of African American men are rare. Furthermore, there are no studies examining possible mediators to explain the relationship between religious involvement and the health behaviors of African American men. Additionally, the current study presents data on social network characteristics, tangible and emotional social support with church members which has yet to be found in the literature among the African American male population.

The current study explores factors influencing the health behaviors of an understudied population but limitations still exist. First, it is important to mention that even though a mediation model was tested, causality cannot be determined because data within the NSAL is cross-sectional. Second, the items measuring social network characteristics, tangible and emotional social support ask specifically about one's social connection with church members but the church members may overlap with family and friends. This could be problematic in making a distinction about the source of these target variables. If there is overlap between church members, family and friends, then conclusions highlighting what is gained from church members only cannot be made. Third, the measurement of some of the variables could be better. For example, social network characteristics only comprised of two items

while behavioral counseling for substance use comprised of one item, both of which are too small to be considered a scale and to have a reliability coefficient. The three items for tangible social support were pulled together from a list of questions pertaining to social support but when grouped together, they had low reliability so they were treated separately. Organizational religious involvement had a substantially low reliability coefficient of .55, which could be due to the small number of items within the measure and it may have been created as an index. In other words, some of these measures were not designed as scales and should be viewed with caution but they may still be measuring the proposed constructs. Similarly, two of the health behaviors (i.e., physical activity and substance use) were items combined into indices and were not meant to be considered reliable scales. Another limitation of the study was that some of the items used in the NSAL were not consistent with the common practice of measuring certain variables. For example, cigarette smoking was measured in the NSAL with the following item: "Do you currently smoke?" The Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics define current smoker as someone who has "smoked at least 100 cigarettes in their lifetime and still currently smoke" (Pleis, 2010, p. 86). Furthermore, the NSAL physical activity questions ask about the frequency of activity but not the duration of engaging in that activity. Reports from the CDC suggest that the frequency of any activity of at least 10 minutes and the duration of that activity be included when reporting physical activity statistics (Pleis). Finally, this study did not fully test reciprocal determinism. Within the original model of reciprocal determinism, the arrows between the person, the social environment, and behavior are bidirectional but only one direction of the model was tested. Only one direction of the model

was tested because there was not enough information in the NSAL dataset to include in the model in order to be able to estimate coefficients.

Conclusion

The results of this study indicate that some of the relationships between religious involvement and health behaviors are explained by the social connection with church members for African American men who attended church services more than once a year. Help to church members and feeling cared for by church members stood out as factors that fully explain the relationship between organizational religious involvement and physical activity. Additionally, help to church members and frequency of interaction with church members explained the relationship between private religious involvement (e.g., reading or watching religious material) and physical activity. These findings suggest that African American men who frequently attend church services could experience health benefits from religious involvement depending on the type of social support the men receive from church members, the support the men provide to fellow congregants and their social network within the church.

The link between religious involvement and health behaviors has been explored extensively but there is a dearth of empirical, longitudinal studies focusing on the potential mechanisms by which the association exists. In addition to social network characteristics and social support, other mechanisms such as health self-efficacy may also warrant investigation. Future studies should expand upon the knowledge of the religious involvement and health behavior linkage among the African American male population and compare the effect of different sources of social support on those health behaviors. There is also a need to use

better measurement that is more reliable and valid in order to produce credible results. Lastly, researchers need to provide more theoretical justification in explaining the relationship between religious involvement and health behaviors.

CHAPTER 6

Summary of Dissertation

Overall, the current study highlights the importance of religious involvement and social connection with church members in the lives of African American men. Upon observing the results of the two papers presented, there was a positive relationship between all three dimensions of religious involvement and two of the health behaviors (i.e., physical activity and substance use) for men who attended church services more than once a year. This suggests that men who are more religiously involved by participating in various church activities, reading more religious material and placing importance on religion is also related to more physical activity and less substance use. Private religious involvement (e.g., reading or watching religious material) was shown to be associated with an increase in physical activity even among African American men who did not attend church services more than once a year. Although two of the religious involvement dimensions were not related to behavioral counseling for substance use among either sample of African American men, subjective religious involvement did show a positive association for men who attended church services more than once a year. There was a connection between the men who placed a high level of importance on religion in their lives and participation in more behavioral counseling for substance use.

When examining the social connection with church members, there were relationships found between certain health behaviors as well as the three dimensions of religious involvement. African American men who reported frequent contact with church

members, help to and from church members showed an increase in physical activity and a decrease in substance use. Reports of feeling cared for by church members were only related to an increase in physical activity. Moreover, the more religiously involved men reported greater interaction with church members, help to and from church members and feelings of concern from church members.

Finally, the results of these studies showed that the relationship between private religious involvement and physical activity is explained to some extent by the help provided to church members and the frequency of interaction with church members. Other possible reasons that reading or watching religious material may be related to African American men engaging in more physical activity might be because of their adherence to religious tenets (e.g., treating the body as a temple). Adherence to religious tenets that speak to health could lead church members to become more health conscious, thereby increasing their likelihood of engaging in more positive health behaviors (Ellison & Levin, 1998; Taylor et al., 2004). Thus, the social environment may be shaped to support healthy lifestyles and people within the church may practice and motivate others to practice positive health behaviors in order to stay aligned with living the healthy lifestyle espoused by the church as an institution (Ellison & Levin). Additional factors that might explain the relationship between private religious involvement and physical activity could be the leadership roles that men carry in the church. Assuming greater leadership responsibilities within the church may motivate individuals to engage in positive health behaviors because they become role models for fellow congregants who look to the leaders to uphold religious doctrine and norms (Ellison & Levin). Even the

observation of other men in these leadership roles could influence one's health behaviors (Ellison & Levin; Lincoln & Mamiya, 1990; Taylor et al., 2004).

The aid that is provided to church members as well as feeling cared for by church members fully explains the relationship between public religious involvement (e.g., participation in church activities) and physical activity. In other words, greater participation in church activities relates to an increase in physical activity through the help men give to other church members and if the men feel cared for by church members. The evidence of this study suggests that a relationship would not exist between public religious involvement and physical activity if men provide help to church members and feel emotionally supported by church members.

Although the social connection with church members did not explain any of the relationships between religious involvement and substance use, there was still a relationship between public religious involvement and substance use. More participation in church activities is related to men engaging in less substance use but the relationship is yet to be explained. Therefore, it would appear that African American men who attend church services more than once a year are benefiting from religious involvement by participating in more health-promoting behaviors, which can partly be explained by the social connection with church members. Religious involvement such as prayer or reading religious material even had a favorable effect on the health of men who did not attend church services more than once a year. Again, this could be due to the engrained religious messages and teachings found in religious books and on television that pervade the culture of the African American community. Religious involvement is so prevalent among African Americans that one does

not have to attend church services in order to pray or ask someone else for prayer. Public as well as private religious involvement incorporates religious norms that people internalize and, thus, influences behavior.

Social Cognitive Theory's reciprocal determinism implies that it is also likely that there is an interaction between different events that may cause and also be the result of men engaging in health-promoting behaviors. Men are engaging with their environment while they simultaneously possess their own thoughts and ideas that influence their behavior. A man's behavior is affected by the environment but the man plays an active role in creating the environment as well (Bandura, 1978). For example, men may start going to church and engage in healthier behaviors because they have the desire to improve their lives even while the church environment may foster a healthy lifestyle. People's thoughts, behaviors and their environment aid in determining each other (Bandura). Therefore, it is possible that there is no specific cause to men increasing their physical activity but rather an exchange of different factors (i.e., religious involvement and the social connection with church members) that influences their behavior, environment, and thoughts. The current study provides evidence to suggest that African American men's physical activity is associated with religious involvement and the social connection with church members but these relationships are reciprocal and not unidirectional, as traditionally conceptualized.

Future studies should examine the bidirectionality of religious involvement, social connection with church members and health-promoting behaviors based on reciprocal determinism. Subsequent studies should also observe different sources of social support to see if there is a distinction between the social support received from church members, friends

and family for African American men. Furthermore, studies should identify the sources of support that African American men who do not attend church services receive and whether social support, particularly from church members, has a beneficial effect on their health behaviors. There should also be additional investigation of the relationship between non-organizational religious involvement (e.g., praying or reading the bible) and health behaviors to assist in explaining how they relate to one another. Finally, future studies should use better measurement when assessing men's religious involvement, the social support received from church members and their health behaviors.

As a whole, previous research has not provided reasons as to why African American men should increase their religious involvement. Researchers have implied that men who are not religiously involved are deficient in some way, and such a suggestion may stem from the many studies that show religion to be beneficial to ones' health as well as the statistics that demonstrate the health of African American men to be declining. The results of the present study imply that religious involvement maintains its importance and relevance to African American men, regardless if they attend or do not attend church services. Moreover, if there is a need to address the health issues of African American men, the church may still be the place to do so even though there are fewer men involved in the church.

The results of this study suggest that the setting of the church would be an appropriate location to implement an intervention targeting African American men's health behaviors. Interventions could focus on the frequency men help other church members and create situations in which men would assess whether they feel cared for or listened to by fellow church members, examining if such factors influence changes in physical activity. The

results of the current study could also be applied to interventions targeting men who do not attend church services based on the findings. In order to have access to the men who do not attend church services, it might be useful to recruit African American men at community centers, parks or recreational facilities. An intervention may utilize focus groups (outside of the church setting) where men engage in bible study or watching religious programming on television to assess if private religious involvement has an effect on men's health behaviors. Applying the results of this study in various settings and to different interventions for African American men who attend and do not attend church services is necessary in order to improve the health and reduce the mortality rates for these men.

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