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Exploring The Relationship Between Church Level Predictors Of Status And Obesity Risk In African American Women Of Faith

Kinjal Pandya
University of South Carolina

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EXPLORING THE RELATIONSHIP BETWEEN CHURCH LEVEL PREDICTORS OF
STATUS AND OBESITY RISK IN AFRICAN AMERICAN WOMEN OF FAITH

by

Kinjal Pandya

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Accepted by:

Cheryl Armstead, Director of Thesis

Suzanne Swan, Reader

Cheryl L. Addy, Vice Provost and Dean of the Graduate School

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ABSTRACT

Although obesity is a nationwide epidemic, there are large racial, gender, socioeconomic, and geographical disparities in the rates of this condition. Specifically, African American women are more likely to be classified as obese as compared to all other gender and racial groups. Scholars have targeted African American churches to implement dietary and physical activity interventions in an attempt to combat the racial disparity in obesity rates. One of the main correlates studied in regards to obesity has been individual level markers of status such as socioeconomic status and subjective social status. Even though we focus on churches as a place of intervention, we know very little about the socioeconomic status parameters of church affiliation in regard to organizational power, prestige, and hierarchy. Markers of status vary by cultural, gender, and geographical groups. It is possible that for a Southern church attending population of African American women, one's church is a marker of status. The purpose of this study is to examine how markers of church related status, relate to total and central measures of adiposity in a sample of Southern, religious, African American females.

Data for the current study comes from two sources: 1) a large dietary and physical activity intervention conducted in churches in the Midlands of South Carolina from 2010 to 2014 and 2) data from a survey asking participants to rate churches on a scale of 1 to 10 to develop a measure of church prestige created and administered in 2016. Participants were 790 African American females, ages 25 to 86 ($M=57.28$, $SD=11.92$). Results from

the factor analysis showed a three factor solution for church social status. Results from the regression analyses showed moderate relationships between the factors of church social status and measures of obesity.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
ABSTRACT	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER 1 INTRODUCTION.....	1
1.1 PREVALENCE OF OBESITY.....	3
1.2 THEORETICAL FRAMEWORK	9
1.3 GAPS IN CURRENT RESEARCH & PROPOSED STUDY	10
1.4 THE AFRICAN AMERICAN CHURCH: BACKGROUND & SIGNIFICANCE.....	11
1.5 STATUS AS A PREDICTOR OF OBESITY RISK.....	15
1.6 CURRENT STUDY AIMS	19
CHAPTER 2 METHODS.....	20
2.1 STUDY I OVERVIEW	20
2.2 STUDY I MEASURES	21
2.3 STUDY II OVERVIEW	23
2.4 STUDY II MEASURES	24
2.5 DATA ANALYTIC STRATEGY	25
CHAPTER 3 RESULTS	27
3.1 DESCRIPTIVE STATISTICS	27
3.2 BIVARIATE ANALYSES.....	27

3.3 STUDY AIM 1	28
3.4 STUDY AIM 2	29
CHAPTER 4 DISCUSSION	49
4.1 SUMMARY OF FINDINGS	49
4.2 IMPLICATIONS	51
4.3 LIMITATIONS & FUTURE DIRECTIONS	52
REFERENCES	55
APPENDIX A: BODY MASS INDEX GUIDELINES	67
APPENDIX B: CHURCH VARIABLES	68

LIST OF TABLES

Table 3.1 Sample Characteristics.....	31
Table 3.2 Church Names and Prestige Scores	32
Table 3.3 Churches and Associated Means and Standard Deviations of Outcomes	33
Table 3.4 Sample Characteristics of Community Panel	34
Table 3.5 Correlations between Total and Central Measures of Obesity	36
Table 3.6 Correlations between Church Demographic Variables	37
Table 3.7 Results from Factor Analysis.....	40
Table 3.8 Hierarchical Regression 1: Church Social Status and Body Mass Index	41
Table 3.9 Hierarchical Regression 2: Church Social Status and Waist to Hip Ratio	42
Table 3.10 Hierarchical Regression 3: Church Social Status and Fat Percentage.....	43
Table 3.11 Hierarchical Regression 4: Church Social Status and Waist Circumference ..	44
Table A.1 Body Mass Index Guidelines	67
Table B.1 Church Demographic Questions from Study 1	68

LIST OF FIGURES

Figure 3.1 Prestige Scores of Churches	45
Figure 3.2 The Relationship between Church Prestige and Body Mass Index.....	46
Figure 3.3 The Relationship between Church Hierarchy and Waist Circumference.....	47
Figure 3.4 The Relationship between Church Prestige and Fat Percentage	48

CHAPTER 1

INTRODUCTION

Although obesity is a nationwide epidemic, there are large racial, gender, socioeconomic, and geographical disparities in the rates of this condition (Fradkin et al., 2015; Myers, Slack, Martin, Broyles, & Heymsfield, 2015). Obesity gives rise to a number of comorbid chronic diseases such as diabetes, hypertension, and coronary heart disease (Ogden, Carroll, Kit, & Flegal, 2014). African Americans are at an especially higher risk for these chronic diseases and are more likely to be classified as obese (Flegal, Carroll, Kit, & Ogden, 2012). Specifically, African American women are more likely to be classified as obese as compared to all other gender and racial groups (Rahman & Berenson, 2010).

Furthermore, the rates of obesity are much greater in the Southern region of the United States (Myers, Slack, Martin, Broyles, & Heymsfield, 2015). Among this region lies the area commonly referred to as the “Bible Belt.” The Bible Belt is a region in the southeastern and south-central United States in which Christian church attendance across denominations is generally higher than the nation's average (Heyrman, 2013). Given the large disparities mentioned above, this study examines correlates of obesity in a Southern, church attending population of African American women. The obesity epidemic has been addressed from numerous perspectives including structural barriers to diet and exercise, individual level factors such as genetics and motivation, as well as

sociocultural factors such as attitudes and perceptions about body weight and size (Cutts, Darby, Boone, & Brewis, 2009; Davis et al., 2007; S. Kumanyika, Morssink, & Agurs, 1991). Recently, scholars have utilized community based participatory research to build partnerships with African American churches to implement dietary and physical activity interventions in an attempt to combat the racial disparity in obesity (Marci Kramish Campbell et al., 2007; Drake, Shelton, Gilligan, & Allen, 2010; B. Harmon, 2012). Churches are utilized as places for interventions because a large number of African Americans attend church and view God and religion as an important part of their lives (B. E. Harmon, Blake, Armstead, & Hebert, 2013). The current study utilized community based participatory research to deliver a community specific dietary and physical activity intervention.

Despite the widespread use of churches as places of interventions for obesity, these interventions in general, are largely ineffective, with a majority of participants not being able to maintain the initial 5% weight loss. One potential “confounding” variable that may contribute to these results is the role of churches and church social status. In other words, even though we focus on churches as a place of intervention, we know very little about how churches as organizations and institutions operate and can indirectly impact outcomes of obesity interventions. It is possible that for a Southern church attending population of African American women, one’s church can be a symbol of status. And research has shown that both socioeconomic status and subjective status have implications for health (Nancy E. Adler, Epel, Castellazzo, & Ickovics, 2000; Williams, Mohammed, Leavell, & Collins, 2010).

Therefore, the purpose of this study is to examine how markers of church social status relate to measures of obesity in a sample of Southern, religious, African American females. Although the specific sample may be seen as a limitation at first, it is important to take an emic approach to studying obesity. An emic approach encourages examining concepts within one cultural or gender group whereas etic research compares similarities and differences between different groups (Xia, 2011).

To date, no one has attempted to link markers of church status to obesity risk in African American women. Therefore, the purpose of this study is to attempt to define church social status, test whether this construct is related to measures of adiposity in a sample of Southern, religious, African American women. This study offers many contributions. First, a definition of church social status will make this construct easier to use and conceptualize in future research. Furthermore, understanding the role of church related markers of status will help us design better, more holistic, interventions that take into account the indirect dynamics of how status related to one's church can impact the results of faith-based interventions.

1.1 Prevalence of Obesity

Obesity has become a serious problem in the United States with almost thirty five percent of adults over the age of twenty being classified as obese (Ogden et al., 2014). In addition, another thirty four percent of the U.S. population is overweight. The ever-growing prevalence of obesity threatens to create a greater economic burden caused by indirect and direct costs of health care (Fryar, Carroll, Ogden, & Division of Health and Nutrition Examination Surveys, September 2012; Spieker & Pyzocha, 2016).

Obesity is defined in “classes” and these “classes” are derived by a consensus of clinical best practices and expert panel guidelines (Classification of Overweight and Obesity by body mass index, waist circumference, and Associated Disease Risks, 2016). The 2013 Guidelines for the Management of Overweight and Obesity in Adults defined overweight as a body mass index of 25.0 to 29.9 kg/m², Class I obesity as a body mass index of 30.0 to 34.9 kg/m², Class II obesity as a body mass index of 35.0 to 39.9 kg/m², and Class III or extreme obesity as a body mass index ≥ 40 kg/m² (Michael D. Jensen et al., 2014). A waist circumference greater than 102 centimeters for males and 88 centimeters for females was also included in the guidelines for obesity (M. D. Jensen et al., 2013). Please see Table 1 for a visual representation of these categories.

The numerous negative consequences of different classes of obesity have spurred interest in understanding its correlates. These class level definitions are based on evidence that obesity is systematically linked to hazardous conditions caused by levels of dysregulation among multiple factors (Ogden et al., 2014). Studies have found genetic, physiological, psychological, and sociocultural correlates of obesity (Bohnert et al., 2013; Coogan, Wise, Cozier, Palmer, & Rosenberg, 2012; Diggins, Woods-Giscombe, & Waters, 2015; Fradkin et al., 2015; Gidding, Palermo, DeLoach, Keith, & Falkner, 2014; Johnson, Carson, Affuso, Hardy, & Baskin, 2014; Maligie, Crume, Scherzinger, Stamm, & Dabelea, 2012; Porter Starr, Fischer, & Johnson, 2014; Powell-Young, Zabaleta, Velasco-Gonzalez, & Sothern, 2013; Rahmati-Yamchi, Zarghami, Rahbani, & Montazeri, 2011; Ren et al., 2010; Willig, Richardson, Agne, & Cherrington, 2014).

1.1.1 Measures of Obesity

Common methods to measure body adiposity include skinfold thickness measurements (Taylor et al., 2010), underwater weighing (Jensky-Squires et al., 2008), bioelectrical impedance (Dehghan & Merchant, 2008), dual-energy x-ray absorptiometry (J. E. Adams, 2003), and isotope dilution (Lee & Gallagher, 2008). This study utilizes fat percentage (total body fat mass in pounds multiplied by 100) derived from bioelectrical impedance. The methods listed above are not always readily available, and they are either expensive or need to be conducted by highly trained personnel. Furthermore, many of these methods can be difficult to standardize, complicating comparisons across studies and time periods (Taylor et al., 2010). Therefore, many researchers and practitioners utilize body mass index as a screening tool for obesity. Body mass index can be defined as the calculated ratio of one's weight in kilograms over one's height in meters squared (Michael D. Jensen et al., 2014)

Measures of obesity can be broken down into two main categories: measures of overall adiposity and measures of central adiposity. Body mass index and fat percentage are examples of measures of total adiposity. The two measures of central adiposity utilized in this study are waist to hip ratio and waist circumference. Waist to hip ratio can be defined as the ratio of the circumference of the narrowest point of one's waist over the circumference of the widest section of one's buttocks (Lear, James, Kumanyika, 2010). Waist circumference is the total circumference around a person's midsection, usually measured above the iliac crest or hipbone (Hebert et al., 2013). The National Institute of Health guidelines state that women with a WC greater than 88 cm or 35 inches and men with a waist circumference greater than 40 inches or 101 cm are at increased risk for

diabetes, hypertension, and cardiovascular disease (Obesity, Heart, Institute, Health, & Initiative, 2000).

1.1.2 Obesity Disparities and Current Context

Current research shows that the prevalence of obesity and obesity-related chronic diseases is not evenly distributed across the United States (U.S.), but instead tend to be regional in its dispersion (Myers et al., 2015). Southern states with large African American populations, like South Carolina (Adams, Der Ananian, DuBose, Kirtland, & Ainsworth, 2003), Mississippi (Hutchinson et al., 1997), and Alabama have some of the highest rates of obesity among their residents as compared to the rest of nation. Among these states, Mississippi ranks the 3rd highest, Alabama the 5th highest, and South Carolina, the 10th highest in terms of prevalence of adulthood obesity rates (Adult Obesity in the United States, 2016).

This context is important given that the current study was conducted in South Carolina, where 42.7% of African Americans are obese (Adult Obesity in the United States, 2016). Within these regions, there are gender disparities such that the obesity rates are higher in African American females (40.1%) as compared to African American males (32.6%) (Differences in Prevalence of Obesity Among Black, White, and Hispanic Adults -United States, 2006—2008, 2009). In order to target these disparities, researchers have turned to churches as a place of intervention.

1.1.3 Obesity Interventions

Recently, scholars have utilized community based participatory research method to build partnerships with the community to address health promotion efforts. Community

based participatory research is a framework for conducting research in which community members are involved in all steps of the process from formulating an intervention to data collection, and publication. Community based participatory research is a way to insure integration of community voices and input in the entire research process (Wallerstein & Duran, 2010).

Scholars have targeted African American churches to implement dietary and physical activity interventions in an attempt to combat the racial disparity in obesity rates (Marci Kramish Campbell et al., 2007; Drake et al., 2010; B. Harmon, 2012). This is because spirituality often serves as a source of meaning and purpose and provides a framework within which people interpret their lives and experiences. Spiritual beliefs and practices are particularly salient for African Americans who report high levels of personal religious commitment (Sahgal & Smith, 2009). Churches are well-suited to identify and prioritize health problems, provide the assets to address them within their congregations, and to address the needs of fellow members in a setting of prayer, support, and trust. Faith-based programs involving nutrition, cancer screening, cardiovascular disease, diabetes education, and others have been evaluated and results are generally positive, although effectiveness varies (Kramish Campbell et al., 2004; Lasater, Becker, Hill, & Gans, 1997; McNabb, Quinn, Kerver, Cook, & Karrison, 1997; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001).

Several faith-based interventions have targeted fruit and vegetable consumption and physical activity in African Americans. Some dietary interventions include including Eat for Life (Resnicow et al., 2001), Black Churches United for Better Health (Marci K Campbell et al., 1999), Body and Soul (Resnicow et al., 2004), Wellness for African

Americans through Churches (Kramish Campbell et al., 2004), and Healthy Body/Healthy Spirit (Resnicow et al., 2005). These interventions have been successful in increasing fruit and vegetable consumption by 0.6 - 1.4 servings/day.

Project Joy was a faith based dietary and physical activity intervention designed for African American women (Yanek et al., 2001). This study showed significant results in the intervention groups for most outcomes except physical activity. Healthy Body/Healthy Spirit reported that a culturally sensitive, multicomponent intervention was superior to a control group for changing diet and physical activity, but adding motivational interviewing calls enhanced the effectiveness for fruit and vegetable consumption but not physical activity (Resnicow et al., 2005). The Health-e-AME faith-based physical activity initiative used community based participatory research to promote physical activity in just over 300 African Methodist Episcopal churches in South Carolina (Wilcox et al., 2007). While the immediate intervention group did not differ significantly from the delayed intervention group, gains in physical activity were associated with awareness of the program, perceived support of the pastor for health promotion, and having had a member of the congregation talk to the participant about physical activity. Lose Weight and Win was an 8-week group weight loss program conducted in churches for African American women. Although changes in physical activity were not examined per se, participants rated this component as most useful, and weight loss averaged 6 pounds (S. K. Kumanyika & Charleston, 1992).

In all, many dietary and physical activity interventions have been conducted in African American churches with varying levels of success. The present study attempts to better understand the role of churches themselves in the outcomes of these interventions.

1.2 Theoretical Framework

Campbell and colleagues identified the lack of a guiding theoretical model as a weakness of many faith-based interventions (Marci Kramish Campbell et al., 2007). While theoretical models have not been developed specifically to address behavior change within the context of race, ethnicity, or religion, several models incorporate the influence of broader social factors. Social ecological models provide a framework for how to conceptualize the community based participatory research intervention approach.

1.2.1 Socioecological Model

Social ecological models view health behaviors as being acquired and maintained through a complex and interactive set of intrapersonal (individual), interpersonal, institutional, community, public policy, and environmental factors (Robinson, 2008; Sallis, Owen, & Fisher, 2008). In a faith-based setting, intrapersonal approaches could include classes or programs to change physical activity or diet and linking faith and religious practices with health behaviors (e.g., “Your body is a temple of the Holy Spirit.”). We suggest that whether your church has the capacity and resources to organize classes and activities can be a marker of their socioeconomic status. In other words, if your church has the financial resources to organize such activities, your church can be perceived as having more social status than other churches. Interpersonal approaches include incorporating the family and other forms of fellowship. Institutional approaches could work within the hierarchical structure of the church to modify key leaders’ behaviors and policies that ultimately affect individual churches and their members. Community influences can operate on the church as a self-selected community that

fosters social interaction among its members through their shared culture, faith, and beliefs. Some churches are very well known throughout the community due to either their historical significance, the large congregations they attract, or due to their overall influence on the community. We propose that how well-known or influential your church can be a marker of status. One can think of policies within the church, e.g., building physical activity breaks into meetings and providing healthy food options are included at all functions. In all, the socioecological model allows us to take into account social variables such as markers of status associated with church as it relates to health and health behavior.

1.3 Gaps in Current Research & Proposed Study

Despite the widespread use of churches as places of interventions for obesity, these interventions in general, are largely ineffective, with a majority of participants not being able to keep off the initial 5% weight loss. Furthermore, studies cite that Black women demonstrate the least amount of weight loss as compared to White women and Black men (Bennett et al., 2013).

One potential explanation that may contribute to these results is our lack of understanding regarding the differences and similarities in churches. African American churches are very complex organizations with hierarchies, resources, and play many important roles in the lives of its members. In addition to being places of worship, they have been cultural icons in our communities. Churches have been used to organize protests and activist efforts during the Civil Rights Movement and beyond. They are a place that African Americans can gather and exchange resources, prayer, and build a

sense of community. African American churches support causes like education, employment, and upward mobility (Lincoln & Mamiya, 1990).

Drawing from the literature on the impact of socioeconomic and subjective social status on health (Nancy E Adler & Newman, 2002; Williams et al., 2010), we propose that characteristics associated with church (i.e. perceived social standing in the community, financial resources of the church, etc.) can be conceptualized as markers of social status that can then indirectly impact health outcomes. Therefore, we argue that it is possible that for a Southern church attending population of African American women, one's church can be a symbol of status. In the following section, the history, significance, and characteristics of African American churches that can contribute to markers of church social status will be reviewed.

1.4 The African American Church: Background & Significance

1.4.1 Statistics

According to the Landscape Survey conducted in 2007, African Americans are the most religious group compared to all other racial/ethnic groups in the United States, with 87% of African Americans describing themselves as belonging to one religious group or another. Additionally, 79% of African Americans say that religion is very important in their lives, compared to 56% among all U.S adults (Sahgal & Smith, 2009).

Moreover, 53% of African Americans report attending religious services at least once a week, and 76% report that they pray at least on a daily basis. Among all racial and gender groups, African American women are the most religious group with 84% saying religion is very important to them, and 59% saying they attend religious services at least

once a week. There are geographical differences as well with 60% of all members of historically African American churches residing in the South (Sahgal & Smith, 2009).

Today "the black or African American church" is widely understood to include the following seven major Protestant denominations: the National Baptist Convention, the National Baptist Convention of America, the Progressive National Convention, the African Methodist Episcopal Church, the African Methodist Episcopal Zion Church, the Christian Methodist Episcopal Church and the Church of God in Christ. The data from the current study comes from African American churches from primarily the Methodist and Baptist denominations. The Methodist and Baptist denominations of the "African American church" are the most represented denominations in South Carolina (Sahgal & Smith, 2009). There are also most alike in their practices and that is why the current study selected these churches into the study.

1.4.2 History of the African American Church

The first African American churches were created before slavery by free African Americans combining the principles of Christianity with African traditions, values, norms, and customs (Lincoln & Mamiya, 1990). The first African Baptist Church of Savannah, Georgia was founded in 1777 and is said to be the oldest Black church in North America (Lincoln & Mamiya, 1990). After the abolition of slavery, African Americans were barred from worshiping in the same church as Whites. Therefore, freed African Americans established their own congregations and church facilities (Lincoln & Mamiya, 1990). African American churches were borne out of segregation, racism, and discrimination and became a place that provided social support, mental and physical

health support, and educational and economic resources (McRae, Carey, and Anderson-Scott, 1998). African American churches were built and funded entirely by African American people and therefore were autonomous from White influence (Lincoln & Mamiya, 1990). They provided economic upward mobility by the founding of banks and credit unions separate from the mainstream White population. African American churches were also instrumental in creating networks and organizations to help members of their congregations to find employment (Lincoln & Mamiya, 1990).

1.4.3 The Role of African American Women in Church

As the purpose of this study is to examine church makers of social status in African American women, it is important to understand the role of African American women in churches. African American women make up the majority of the congregation (70%) and have a unique and complex relationship with the church (McRae et al, 1998). Historically, many males held the leadership positions in the church (i.e. being ministers and preachers) (Baer, 1993). Despite this gender role dichotomy with leaders being predominantly male and deaconesses functioning in gender defined roles different from deacons, African American women serve important roles and functions within African American churches.

Women are active members of the clergy. The clergy can be defined as any roles of leadership within the church including but not limited to ministers, deacons, and deaconesses (Lincoln & Mamiya, 1990). Deaconesses are female leaders in the church (sometimes married to a deacon) who play a role as nurturers, counselors, and educate other African American women church etiquette and protocol (Frazier, 1957). Deacons

usually contribute to financial decisions. They have a stronger influence on the pastor (Cone, 1977).

In addition to being deaconesses, women have other roles in the church. For example, in an article regarding the roles of women in the Sanctified Church (i.e. Pentecostal), the author identified many roles that African American women take on such as Elders, Mothers, the Mother of the Church, Nurses, among many others. These women are instrumental in the functioning of the church and very specific duties depending on their title (Peterson, 1990). In all, African American women play important roles within their churches which further supports the argument that characteristics associated with their church can serve as markers of status for these women.

1.4.4 Church Social Status

African American churches are not a monolithic entity. Research shows that churches differ greatly among various factors including the pastor and their unique message or style, the amount of resources that are available to the church, the ethnic and social class of the congregation, the financial stability of the church, as well as the differences in the social status and education of its congregation, hierarchies within the church, and church prestige (B. E. Harmon et al., 2013; McRae, Carey, & Anderson-Scott, 1998). All of these distinct factors can be conceptualized as markers that contribute to church social status.

To date, there is little research regarding markers of status associated with church membership, affiliation, and attendance and this data has been largely qualitative (Frazier, 1957; Lincoln & Mamiya, 1990; Peterson, 1990). The purpose of this study is

attempt to quantify church social status. Church level markers of status are important to study because they capture more sociocultural perceptions of relative social standing whereas traditional measures such as SES are based on numeric constructs like education level and income (Singh-Manoux, Marmot, & Adler, 2005).

1.5 Status as a Predictor of Obesity Risk

The notion that markers of church social status can impact obesity risk in African American women stems from the body of work that links status to health. Perhaps the most famous studies to link status to health are the Whitehall studies conducted in London, England starting in 1967 and ending in 1977 (Bell et al.). The first study consisted of 17,000 men employed by the British Civil Service. These men were followed longitudinally and results indicated that the men employed in the lowest grades were more likely to die prematurely than the men in the highest employment grades. The Whitehall II study was designed set up to determine the underlying structural causes of these premature deaths and to include women. The Whitehall II study started in 1985, and is currently in its 11th wave. Researchers in the Whitehall II studies found significant relationships between stress, health, work, and status (Bell et al.). Specifically, they found that individuals, who perceive less control at work, are at a higher risk for developing CHD. They also found that less social support at work is related a higher likelihood of developing mental health problems. Furthermore, individuals who put in a lot of effort at work, but reap few rewards of this effort, have a higher likelihood of developing CHD. Lastly, employees in the lower grade were more likely to smoke as compared to employees in the higher grade. In all, they found that individuals in the lower grade had the highest rates of mortality than individuals employed in the higher grades (Bell et al.).

Expanding on the Whitehall studies, a large body of research suggests that one's socioeconomic status, education level, and/or income have implications for health (Williams & Mohammed, 2010; (Nancy E Adler & Newman, 2002; Ostrove, Adler, Kuppermann, & Washington, 2000). People of lower socioeconomic and educational backgrounds are found to have higher rates of chronic disease and mortality (Statistics, 2012). Researchers have theorized that individuals of lower socioeconomic status and education backgrounds may face additional barriers to finding and receiving adequate health care services, which in turn, leads to poorer health outcomes (Statistics, 2012). The measures (socioeconomic status, education, income, etc.) used in these studies can be described as *objective* measures of status, or quantifiable ways of measuring one's standing in society (Goodman et al., 2003).

The research regarding socioeconomic status and health has mostly been with White or European American samples, and not with diverse groups (Pearson, 2008). For example, in a large 2007 literature review Lindsay McLaren included 333 studies that examined the link between socioeconomic status and health outcomes (McLaren, 2007). She organized the results by gender, income, education, and employment. This review has been cited 1149 times and not once does it mention race as a factor that can impact the relationship between socioeconomic status and health. This is problematic because in the United States, we see some of the largest gender and racial health disparities, and therefore, race needs to be taken into account (Pearson, 2008).

Due to the gaps in research concerning socioeconomic status, researchers have turned to a new measure of status, known as *subjective* social status as a means of understanding health disparities (N. Adler et al., 2008; Nancy E. Adler et al., 2000; Goodman et al.,

2003; Operario, Adler, & Williams, 2004; Ostrove et al., 2000; Singh-Manoux, Adler, & Marmot, 2003; Singh-Manoux et al., 2005). Subjective social status can be defined as the manner in which individuals perceive their relative position in the social hierarchy (Wolff, Acevedo-Garcia, Subramanian, Weber, & Kawachi, 2009). Research has shown that subjective social status is a better predictor of overall health as compared to objective social status (Adler et al., 2000). Specifically, low subjective social status has been related to a number of negative health outcomes including poorer self-reported global health, poorer functional status among older adults, smoking, and weight status, obesity, and greater abdominal fat deposition.

Subjective social status offers a more nuanced understanding of where an individual perceives their standing to be in society and therefore goes beyond the traditional measures of objective status. For example, according to measures of objective status, two individuals who have graduated from college are of the same status (i.e. college graduates). However, one individual may have gone to an Ivy League school whereas another individual attended a public university. Therefore, it is possible that the individual with an Ivy League education may perceive their status to be greater in comparison to the individual who has a degree from a public university (Adler et al., 2000).

Subjective social status is most commonly studied using the McArthur Scale of Social Status (Adler & Stewart, 2007). This instrument was developed by the MacArthur Network on Socioeconomic Status and Health. The scale consists of a ladder with ten rungs. Participants are asked to place an “x” on the rung where they see themselves on the ladder. There are two versions of the ladder: the socioeconomic status version and the

community version. The socioeconomic status version asks participants to rate their status based on more traditional measures of status including money, education, and jobs. The community ladder asks participants to rate their perceived status in regards to their standing in the community (Adler & Stewart, 2007). The current study utilizes the socioeconomic status version of the ladder as applied to churches.

The results of the Whitehall studies, studies with socioeconomic status, and subjective social status demonstrate the implication of status on health. More recent work has suggested that subjective status is a better predictor of health outcomes and wellbeing than objective status (Singh-Manoux et al., 2005). However, even the results linking subjective social status to health are limited. There has only been one study to date that has examined subjective social status and obesity risk as measured by waist circumference. The researchers did not find a significant association between the two (Subramanyam et al., 2012).

A plausible explanation for the lack of significant linkages between status and obesity in African American women is that the way we are measuring or conceptualizing status or even subjective status. It is important to look at more culturally relevant markers of status. Given the high rates at which African Americans attend church and view god as important in their lives, we propose that status associated with church can have implications for one's health behavior. Therefore, the purpose of this study is examined how church level predictors of class and social status impact risk factors for obesity. To date, no studies have examined church level predictors of social class and status to measures of obesity. In the next session, the specific aims of the study will be discussed.

1.6 Current Study Aims

Thus far, research has shown that both objective markers of status like socioeconomic status and subjective markers of status like subjective social status have implications for one's health. Furthermore, only a few studies to date have examined this relationship in African American women, and none to date have examined church related predictors of status to obesity risk in a southern population of African American women. Therefore, the purpose of this study is to determine whether there is a relationship between church level predictors of status and total and central measures of adiposity. The specific aims are as follows: 1) To attempt to define and quantify the construct of church social status. 2) To determine whether there is a relationship between church social status and measures of central and total adiposity in our sample of African American women. Based on previous research linking greater perceived status to better health, we hypothesize that greater perceived church social status will be linked to less obesity risk.

CHAPTER 2

METHODS

2.1 Study I Overview

The Healthy Eating and Active Living in the Spirit (HEALS) multiple risk factor intervention, conducted in 2010-2014, was designed to improve diet, increase physical activity, and reduce stress. Its goal was to reduce inflammation related to obesity and inactivity in a population at high risk of diabetes, cardiovascular disease, and cancer.

The study was designed using principles of community-based participatory research to form partnerships between the University of South Carolina Statewide Cancer Prevention and Control Program and community organizations such as the not for profit partner, Faith Based African American Communities Empowered for Change. At the individual level, constructs from the Transtheoretical Model (Burkholder & Nigg, 2002; Prochaska & Velicer, 1997) as well as Social Cognitive Theory (Bandura, 1997, 2004) were used as guides to create a behaviorally based health promotion curriculum that was implemented in weekly and monthly sessions by the researchers and their community partners.

Churches were randomized to receive the intervention either immediately or with a 12-month delay. The latter served as the study's control arm. Participants were between 15 and 86 years of age and free of cancer diagnoses or co-morbid conditions that might limit participation in the intervention.

All procedures and consent documents were approved by the IRB of the University of South Carolina. Churches were recruited in the Midlands of South Carolina (within 40 miles of the University of South Carolina—Columbia campus).

A variety of recruitment methods were used, including word of mouth; media (TV and radio); and community liaisons with connections to area churches. In keeping with community based participatory research principles and psychosocial variable data collection, three lay health leaders, selected by the pastor from each church, constituted the Church Education Team that facilitated the study. There were two phases to the intervention, but the current study analyzes the baseline phase.

Data for this study comes from twenty-one churches from the Midlands of South Carolina. Data were obtained via questionnaire and anthropometric measurement. The questionnaire data was collected via surveys that were mailed to the participants. These surveys included questions on demographics, social support, ethnic identity, and other sociocultural variables. Data on income was not collected because research shows that many people do not respond to the item or inaccurately represent their income, with people classifying themselves as middle class as compared to any other income bracket (Moore & Welniak, 2000). Using education as a measure of socioeconomic status is a commonly utilized method (Cowan et al., 2013). Therefore, education was used as a proxy for overall objective socioeconomic status.

2.2 Study I Measures

2.2.1 Anthropometric data. All anthropometric measurements, including height, hip and waist circumferences, total body weight, and fat mass obtained via bioelectrical impedance assessment (BIA), were taken during the clinic visits to churches by trained

study staff. Height was measured to the closest cm by use of a stadiometer. Using a Gulick™ measuring tape, hip and waist circumferences were obtained by measuring the widest part of the hips and immediately above the iliac crest, respectively. Weight and fat mass were measured on a Tanita TBF 300AR electronic scale precise to 0.1 kg and 0.1% fat, respectively. BMI was calculated by standard formula: [BMI = weight (kg) / height (m)²].

2.2.2 Education Level. Education was measured via a question that asked participants to report the highest level of education by marking one of the following categories: 1) 8th grade or less, 2) more than 8th grade but less than high school, 3) high school completed, no college, 4) high school completed some college, 5) college completed, and 6) more than college completed.

2.2.3 Church Variables. According to research on African American churches described above, we know that churches vary among different factors including but not limited to church hierarchy, church financial resources, and characteristics of the congregation (i.e. education and socioeconomic status). Therefore, variables from this data set that tapped into these constructs, were included in the analysis. The church variables from this study are single item demographic questions adapted from a large randomized control trial entitled Project Joy (Yanek et al., 2001).

Structurally based items included the number of full time ministers, deacons, and deaconesses, for example. These questions tell us about the way the church is organized. Deacons and deaconesses play an important role in church hierarchy. Members will go to them first with any problems before speaking to the minister. Many congregates state that they have closer relationships to the deacons and deaconess than the minister because

these are the people they see and interact more with on a daily basis (Lincoln & Mamiya, 1990). Questions assessing the employment status, social class, and education of the congregation were included because this speaks to factors that may impact the perceived social status of the church. In other words, churches that have a strong representation of highly educated members may have the reputation of catering to upper social class congregants. Finally, items that asked about the resources of the church (i.e. “how adequate are your church’s financial resources”), were included to measure aspects of church socioeconomic status. Please see Table A.2 for a complete list of the items.

2.3 Study II Overview

In order to measure perceived social status of community churches, an additional survey was created in 2016. This survey asked non-HEALS volunteers to rate churches from the Columbia area on a scale of 1 to 10 with one being churches with the least amount of resources, money, and education, and 10 being churches with the most resources, money, and education. We included churches from study I (i.e. HEALS) as well as other well-known churches in the area, and non-existent churches for the purposes of assessing response bias. This was in order to introduce a diverse sample of churches of churches reduce response bias. In other words, most people would rate the well-known churches higher on the scale and not rate the unknown churches. The members of FACE assisted with survey creation, administration, and community engagement. We also partnered with professors from USC and Benedict College to help with recruitment efforts.

A purposive sample of fifty-four volunteers demographically matching HEALS participants completed the church social status survey. After informed consent was given,

eligible male and female participants (church attending African American adults, 18 and older), completed a brief seventeen item survey that measured perceived church social status. The survey asked participants about their religious affiliation and denomination, name and location of the church they attended, their education and employment status, and asked them to rate the perceived status of their own church and other churches in the area. Participants were asked to rate area churches on a scale of one to ten with one being churches they perceived with the lowest status and ten being churches they perceived with the most status. These ratings were utilized as a measure of church social status.

2.4 Study II Measures

2.4.1 Church Prestige. Church prestige was measured using a ten point scale based on the MacArthur Scale of Subjective Social Status (Adler & Stewart, 2007). This instrument has been shown to be an effective way of measuring social status and has been validated for African Americans (N. Adler et al., 2008). In this item, participants were asked to rate area churches on a scale of one to ten. The question read: “How would you describe the social position of the following churches? Think of this ten point scale as representing where a church stands in the Midlands. Churches you would give a ranking of ten are the most prestigious churches with congregations having the most money, most education and the most resources. A church getting rating a one on the scale would be perceived by you as the less prestigious and more likely to have congregations with the least money, least education, and least resources. Having heard about church is enough for you to rate it. If you have never heard of a particular church, please check the “Don’t Know” box.”

2.5 Data Analytic Strategy

All statistics were conducted in IBM SPSS 24. First, from the total fifty-four participants from study II, we created a sub-sample of eighteen participants. These eighteen participants were selected because they share demographic characteristics that are similar to the participants of HEALS project (i.e. African American women over the age of 25). The ratings from other participants that did not meet these criteria were not included (i.e. men and/or younger than 25 years of age). Please see Table 3.4 for sample characteristics of the community panel. We used their ratings of area churches as our measure of church prestige for each church. Table 3.2 and Figure 1 represent the churches and their associated raw prestige score. We converted these raw averages into z-scores. Then, these z-score ratings were entered into the HEALS data set for each participant church. For example, individuals who attended church X received the same average score calculated using ratings by the community panel in study II.

2.5.1 Aim One. To examine the underlying dimensions of church social status, a factor analytic solution was employed. Factor analysis is based on the fundamental assumption that some underlying factors, which are smaller than the number of observed variables, are responsible for the co-variation among the observed variables. Exploratory factor analysis is used when the researcher does not know how many underlying dimensions exist for the given data (Atkins, 2014). As no one has attempted to quantify church social status before, and we did not know how many dimensions we would see, an exploratory factor analysis method was utilized. A principal components extraction method using an orthogonal rotation was conducted. This method is the most frequently

utilized in the literature because it explains more variance than factor loadings obtained from any other method of factoring (Atkins, 2014).

2.5.2 *Aim Two*. To answer the research question of whether there is a relationship between church social status and measures of obesity, four hierarchical regressions were conducted where the factors of church social status from the exploratory factor analysis were entered as predictor variables and the measures of obesity were entered as dependent variables. We controlled for age and education. In all hierarchical regressions, the order of entry was: model 1: age, model 2: age and education, model 3: age, education, factor 1 which we named church hierarchy, model 4: age, education, church hierarchy, factor two which we named church socioeconomic status or SES, and model 5: age, education, church hierarchy, church SES, factor three which we named church prestige.

CHAPTER 3

RESULTS

3.1 Descriptive Statistics.

The sample for this study consisted of 790 African American females. The mean age was 57.30. The mean waist to hip ratio was .87 which is classified as high risk for women (Michael D. Jensen et al., 2014). The mean waist circumference was 101.11 centimeters. The recommended waist circumference for non-pregnant women is 40 inches or 88 centimeters (M. D. Jensen et al., 2013). The average body mass index for our sample was 32.57 kg/m² which is in the class I obesity range (see Table 1). The average body fat percentage for our sample was 40.07%. The percentage of fat that is considered normal for “average” people (i.e. not athletes) is between 25-31% for women. Anything over 32% is considered obese for women (Gallagher et al., 2000). Table 3.1 provides a summary of these results.

3.2 Bivariate Analyses

As expected, measures of central adiposity were highly correlated with each other while measures of total adiposity were highly correlated with each other. More specifically, body mass index and fat percentage had a correlation of .65 ($r=.65, p<.05$), and waist to hip ratio and waist circumference had a correlation of .83 ($r=.83, p<.05$) (Table 3.5).

In terms of the church demographic variables, the number of deacons was highly correlated with the number of deaconesses ($r=.963, p<.05$). The accessibility of the senior lead pastor was highly correlated with how adequate are the church's financial resources ($r=.681, p<.05$). The church prestige scores from study two were highly correlated with how adequate the church's financial resources item ($r=.457, p<.05$). For more bivariate relationships between the church demographic variables, please see Table 3.6.

3.3 Study Aim 1

Utilizing a principal components analysis with orthogonal rotation for the exploratory factor analysis resulted in a three factor solution for the construct of church social status. We entered the church demographic items from the HEALS data set (items 1-10) and the prestige scores from study II (please see Table A.2 in Appendix A for complete list of items). Item 6 was removed after the initial analyses because it had a variance of zero. When conducting the factor analysis the first time, results indicated four factors. However, the items under the fourth factor cross loaded (i.e. loaded onto more than one factor). Therefore, these items (1, 7, and 9) were removed.

Eigenvalues were utilized to determine the number of underlying factors. Eigenvalues are variances of the factors (Atkins, 2014). The final factor analysis solution is reported in Table 3.7. This solution shows a three factor solution for church social status. Factor 1 consisted of items 1 and 2 (number of deacons or deaconesses). This factor was named church hierarchy due to the role deacons and deaconesses play in relaying concerns from members of the congregation to the minister. Factor 2 consisted of items 4, 5, 6 which dealt with the accessibility of the pastor, the social class of the

congregation, and church education level. This factor was entitled church socioeconomic status because it taps into the financial and educational components of the church.

Finally, the third factor consisted of one item: the standardized prestige scores collected from study II. This factor was entitled church prestige.

3.4 Study Aim 2

Overall, results from the four hierarchical regressions suggest some relationships between factors of church social status and measures of obesity. In regression 1, where body mass index was the independent variable, model 5 explained the most variance [$R^2_{Adjusted}=.02$, $F(1, 477) = 9.04$, $p=.003$]. Within this model, church prestige was negatively related to body mass index ($B=-.899$, $SE=.299$, $p=.003$) (please see Table 3.8). In regression 2, waist to hip ratio was entered as the dependent variable. Model 2 [$R^2_{Adjusted}=.04$, $F(1, 477) = 9.98$, $p=.007$] explained the most variance in waist to hip ratio. There were no significant relationships between waist to hip ratio and the church social status variables. Age ($B=.001$, $SE=.00$, $p=.000$) was positively related to waist to hip ratio and education ($B=-.01$, $SE=.00$, $p=.001$) was negatively related to waist to hip ratio (please see Table 3.9). In regression 3 where fat percentage was the dependent variable, model 5 explained the most variance in fat percentage [$R^2_{Adjusted}=.012$, $F(1, 473) = 2.13$, $p=.006$]. Furthermore, (please see Table 3.10). Finally, in the last hierarchical regression, waist circumference was entered as the dependent variable. Model 3 explained the most variance in waist circumference [church prestige was negatively related to fat percentage ($B=-1.01$ $SE=.39$, $p=.006$) $R^2_{Adjusted}=.01$, $F(1, 476) = 1.6$, $p=.035$]. More specifically, church hierarchy was positively related to waist circumference ($B=1.6$ $SE=.74$, $p=.035$) (please see Table 3.11).

In addition to adjusted r squared, goodness of fit is also important to assess. Goodness of fit is how well the observed values follow or fit the regression line. Figures 2, 3, and 4 demonstrate the relationships between the church social status variables on the x axes and the obesity measures on the y axes. These graphs illustrates that the line does not fit the data points very well or that the church social status variables only account for a small amount of variance in the obesity measure

Table 3.1
Sample Characteristics

Variables	N	Mean	Standard Deviation
1. Age	791	57.30	11.93
2. Education*	767	4.54	1.09
3. Waist to Hip Ratio (Waist circumference in inches/hip circumference in inches)	782	.87	.182
4. Waist Circumference (inches)	784	101.11 cm	38.875 cm
5. Body Mass Index (kg/m ²)	787	32.57 kg/m ²	6.785 kg/m ²
6. Body fat percentage	780	40.07%	8.759%

*Note:**Education: (1=8th grade or less, 2= more than 8th grade and less than high school, 3= high school completed, no college, 4= high school completed, no college, 5= college completed, 6= more than college completed).

Table 3.2

Church Names and Prestige Scores

Church Name	N	Prestige Score (out of 10) (N=18)
New Life Outreach ministries	71	3.61
Mt. Zion Missionary Baptist Church	33	3.56
Gill Creek Baptist Church	54	3.28
First Calvary Baptist Church	49	3.28
Francis Burns United Methodist Church	71	3.06
Wesley United Methodist Church	61	2.61
Bethlehem Baptist Church	48	2.33
D. Newman UMC	37	1.94
Zion Cannan Baptist Church	67	1.55
Mount Pilgrim Baptist Church	49	1.39
Camden Frist	55	1.39

Table 3.3

Churches and Associated Means and Standard Deviations of Outcomes

	N	Body mass index (kg/m ²) M(SD)	Fat percentage (%) M(SD)	Waist circumference (cm) M(SD)	Waist to hip ratio M (SD)
Mount Pilgrim Baptist Church	47	34.88 (5.88)	42.49 (7.53)	103.27 (15.84)	.88 (.09)
Camden First Zion Canaan Baptist Church	55	31.25 (5.1)	40.10 (8.02)	95.17 (12.83)	.85 (.09)
D. Newman UMC	67	33.32 (6.81)	40.36 (8.53)	99.09 (12.75)	.87 (.07)
Bethlehem Baptist Church	37	28.99 (5.36)	34.86 (8.8)	106.20 (45.46)	.86 (.07)
Wesley United Methodist Church	48	32.20 (5.32)	38.88 (8.05)	97.96 (13.9)	.87 (.07)
Francis Burns United Methodist Church	61	29.05 (5.87)	35.69 (7.5)	93.09 (13.63)	.87 (.08)
Gill Creek Baptist Church	71	34.16(6.73)	41.16 (9.49)	98.28 (15.03)	.84 (.08)
First Calvary Baptist Church	54	34.10 (7.64)	42.49 (8.86)	101.75 (15.64)	.87 (.08)
Mt. Zion Missionary Baptist Church	49	34.37 (8.02)	41.13 (9.69)	106.37 (15.59)	.90 (.08)
New Life Outreach ministries	33	34.33 (6.66)	41.40 (7.27)	103.72 (15.79)	.86 (.06)
	71	30.96 (6.03)	38.37 (7.96)	96.98 (14.31)	.87 (.10)

Table 3.4

Sample Characteristics of Community Panel

Subject ID	Age	Education	Their Church	HEALS church? (Yes or No)
3	55	High School Diploma or Equivalent	New William Street Baptist Church	No
4	35	Bachelor's Degree	Pine Grove AME Church	No
7	49	Master's Degree	Genesis COGIC	No
10	67	Associate Degree	Please Hill Missionary Baptist Church	No
11	35	Associate Degree	Please Hill Missionary Baptist Church	No
13	51	High School Diploma or Equivalent	Spring Hill AME	No
14	55	Associate Degree	Please Hill Missionary Baptist Church	No
15	54	High School Diploma or Equivalent	Please Hill Missionary Baptist Church	No
18	59	High School Diploma or Equivalent	Please Hill Missionary Baptist Church	No
19	49	Doctorate	Incarnation Lutheran	No
20	55	Doctorate	Brookland Baptist	No
21	49	Master's Degree	Heyward AME	No
23	55	Doctorate	Francis Burns United Methodist Church	Yes

24	45	Doctorate	Brookland Baptist	No
25	51	Doctorate	St. Martin De Porres	No
26	57	Doctorate	Brookland Baptist	No
27	53	Doctorate	Pine Grove AME	No
46	38	Associate Degree	Dozier CME	No

Table 3.5

Correlations between Total and Central Measures of Adiposity

Variables	1	2	3	4
1. Body Mass Index		.322* (n=782)	.126* (n=780)	.648* (n=778)
2. Waist Circumference			.826* (n=780)	.200* (n=775)
3. Waist to Hip Ratio				.034 (n=773)
4. Fat Percentage				

Note: *p<.05

Table 3.6

Correlations between Church Demographic Variables

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Number of Full Time Ministers		-.119*	-.149*	-.342*	.202*	-.143*	-.083*	.479*	.430*	.335*	-.221*
2. Number of Deacons			.963*	-.494*	.173*	-.122*	.270*	.339*	-.006	-.180*	-.168*
3. Number of Deaconesses				-.525*	.045	-.140*	.267*	.085*	-.062	-.195*	-.049
4. Does the church have an established health ministry?					-.091*	.1*	.084*	-.093*	.238*	.282*	.184*
5. Is the senior/lead pastor accessible to the congregation?						-.243*	.410*	.681*	.138*	.422*	-.298*

Variables	1	2	3	4	5	6	7	8	9	10	11
6. What is the employment status of the majority of your congregation?							-.002	.000	-.097*	.301*	
7. What is the social class of the majority of your congregation?								.000	.116*	.656*	.220*
8. How adequate are your church's financial resources?									.305*	.233*	.457*

9. How much impact does the church make in regard to the health of African Americans?	.391*	.184*
10. Church Education Level		.067
11. Prestige Score		

*Note: *p<.05*

Table 3.7

Results from Factor Analysis

Items	Church Hierarchy (Factor 1)	Church SES (Factor 2)	Church Prestige (Factor 3)	Communality
Number of deacons	.94	.09	-.056	.897
Number of deaconesses	.96	-.03	.074	.921
Does the church have an established health ministry?	-.68	.13	.362	.615
Is the senior/lead pastor accessible to the congregation?	.25	.77	-.451	.861
What is the social class of the majority of your congregation?	.44	.67	.308	.736
Church Education Level	-.08	.93	.038	.868
Prestige Score	-.06	.05	.92	.856
Eigenvalue	2.75	2.16	1.23	
% of Total Variance	34.35%	26.97%	15.35%	
Total Variance	76.64%			

Table 3.8

Hierarchical Regression 1: Church Social Status and Body Mass Index

Model	Predictor Variables	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>Adjusted R²</i>	ΔR^2	<i>F</i>	ΔF
1	Constant	33.4	1.5		22.7	-.00	.00	.645	.65
	Age	-.02	.03	-	-.80				
2	Constant	32.8	1.9		17.3	-.00	.00	.419	.19
	Age	-.02	.03	-	-.79				
3	Education	.11	.25	.02	.44	.00	.01	1.42	3.4
	Constant	31.7	1.1		15.9				
	Age	-.01	.03	-	-.31				
	Education	.21	.26	.03	.84				
4	Church Hierarchy	.56	.30	.09	1.8	.00	.00	1.25	.77
	Constant	31.4	2.0		15.6				
	Age	-.01	.03	-	-.19				
	Education	.23	.26	.04	.91				
	Church Hierarchy	.57	.30	.09	1.89				
5	Church SES	.25	.29	.04	.87	.02	.02	2.85	9.0*
	Constant	32.4	2.0		16.0				
	Age	-.03	.03	-	-1.02				
	Education	.31	.26	.06	1.2				
	Church Hierarchy	.53	.30	.09	1.8				
	Church SES	.23	.29	.04	.79				
Church Prestige	-.91	.31	-	-3.0*					

Note: dependent variable=Body mass index, * $p < .05$

Table 3.9

Hierarchical Regression 2: Church Social Status and Waist to Hip Ratio

Model	Predictor Variables	<i>B</i>	<i>SE</i>	β	<i>t</i>	Adjusted R^2	ΔR^2	<i>F</i>	ΔF
1	Constant	.81	.02		43.6	.02	.03	12.3	12.3*
	Age	.00	.00	.156	3.5*				
2	Constant	.84	.02		35.8	.04	.02	9.9	7.5*
	Age	.00	.00	.15	3.4*				
	Education	-.01	.00	-.12	-2.7*				
3	Constant	.83	.03		33.6	.04	.00	7.0	1.0
	Age	.00	.00	.17	3.6*				
	Education	-.01	.00	-.11	-2.4*				
	Church Hierarchy	.00	.00	.05	1.0				
4	Constant	.84	.03		33.5	.04	.00	5.7	1.7
	Age	.00	.00	.16	3.4*				
	Education	-.01	.00	-.12	-2.5*				
	Church Hierarchy	.00	.00	.05	.97				
	Church SES	-.01	.00	-.06	-1.3				
5	Constant	.83	.03		32.9	.04	.00	4.6	.31
	Age	.00	.00	.17	3.4*				
	Education	-.01	.00	-.12	-2.6*				
	Church Hierarchy	.00	.00	.05	.99				
	Church SES	-.01	.00	-.06	-1.3				
	Church Prestige	.00	.00	.03	.55				

Note: dependent variable=waist to hip ratio, * $p < .05$

Table 3.10
Hierarchical Regression 3: Church Social Status and Fat Percentage

Model	Predictor Variables	B	SE	β	t	Adjusted R ²	ΔR^2	F	ΔF
1	Constant	39.8	1.9		20.8	-.00	.00	.01	.01
	Age	-.00	.03	-.00	-.07				
2	Constant	39.7	2.5		16.06	-.00	.00	.00	.00
	Age	-.00	.03	-.00	-.07				
	Education	.02	.33	.00	.06	-.00	.00	.42	
3	Constant	38.8	2.6		14.85				1.3
	Age	.01	.03	.01	.22				
	Education	.10	.34	.01	.31				
	Church Hierarchy	.44	.41	.05	1.1				
4	Constant	38.3	2.6		14.5	-.00	.00	.78	1.9
	Age	.01	.04	.03	.38				
	Education	.14	.34	.02	.42				
	Church Hierarchy	.47	.41	.06	1.2				
	Church SES	.52	.38	.06	1.4				
5	Constant	39.4	2.6		14.9	.01	.02	2.1	7.5*
	Age	-.01	.04	-.02	-.39				
	Education	.23	.34	.03	.69				
	Church Hierarchy	.43	.41	.05	1.0				
	Church SES	.49	.38	.06	1.3				
	Church Prestige	-.11	.39	-.13	-2.7*				

Note: dependent variable=fat percentage, * $p < .05$

Table 3.11

Hierarchical Regression 1: Church Social Status and Waist Circumference

Model	Predictor Variables	<i>B</i>	<i>SE</i>	β	<i>t</i>	Adjusted <i>R</i> ²	ΔR^2	<i>F</i>	ΔF
1	Constant	39.8	1.9		20.8	-.00	.00	.25	.25
	Age	-.00	.03	-.00	-.07				
2	Constant	39.7	2.5		16.06	-.00	.00	.24	.24
	Age	-.00	.03	-.00	-.07				
3	Education	.02	.33	.00	.06	.00	.01	1.7	4.5*
	Constant	38.8	2.6		14.8				
	Age	.008	.03	.01	.22				
4	Education	.10	.33	.01	.31	.00	.00	1.3	.06
	Church Hierarchy	.44	.41	.05	1.1*				
	Constant	38.3	2.6		14.5				
	Age	.01	.04	.02	.38				
	Education	.14	.34	.02	.42				
5	Church Hierarchy	.47	.41	.06	1.2*	.00	.00	1.3	1.4
	Church SES	.52	.38	.06	1.4				
	Constant	39.4	2.6		14.9				
	Age	-.01	.04	-.02	-.39				
	Education	.23	.34	.03	.69				
5	Church Prestige	.43	.39	.05	1.1*	.00	.00	1.3	1.4
	Church SES	.49	.38	.06	1.3				
	Church Prestige	-1.1	.39	-.13	-2.7				

Note: dependent variable=Waist circumference, * $p < .05$

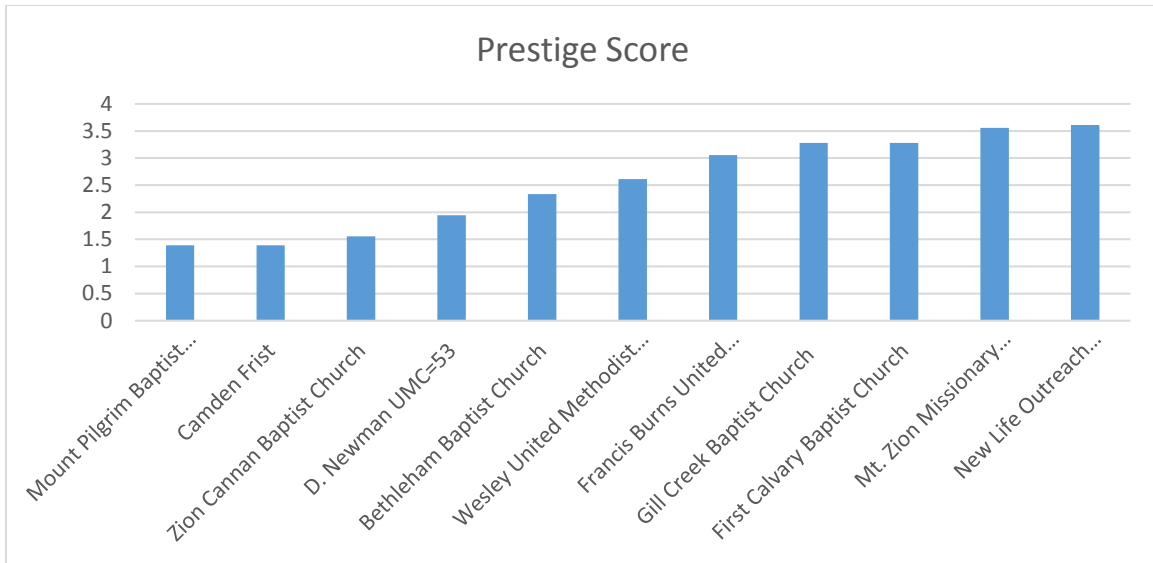


Figure 3.1
Prestige Scores of Churches

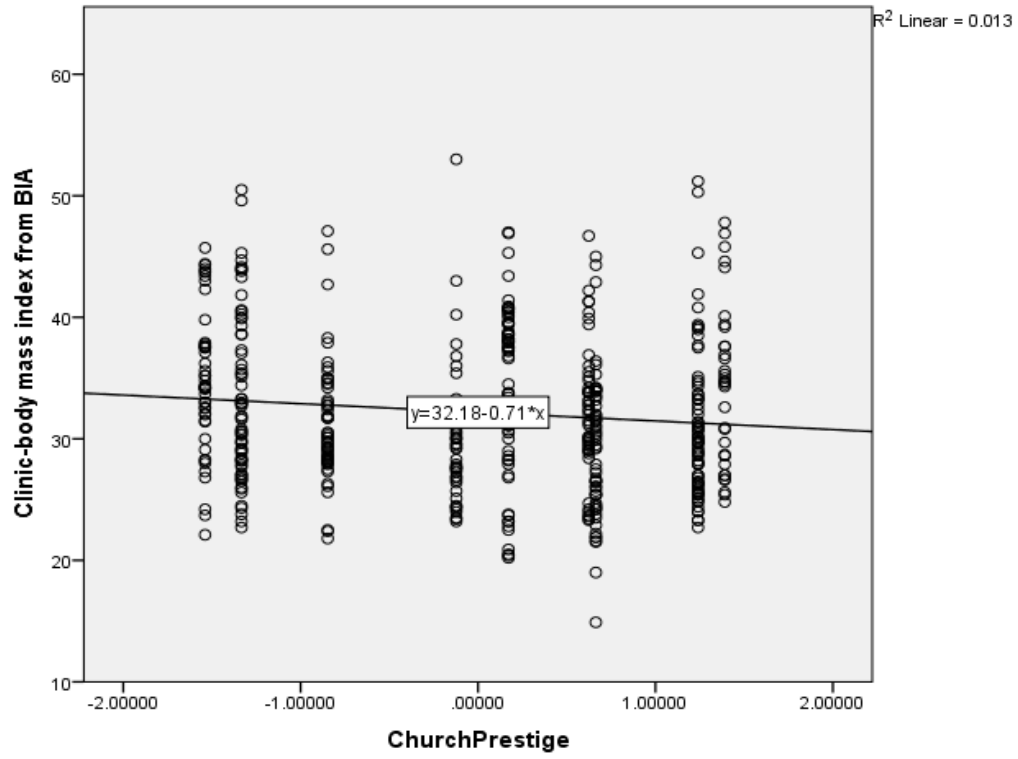


Figure 3.2

The Relationship between Church Prestige and Body Mass Index

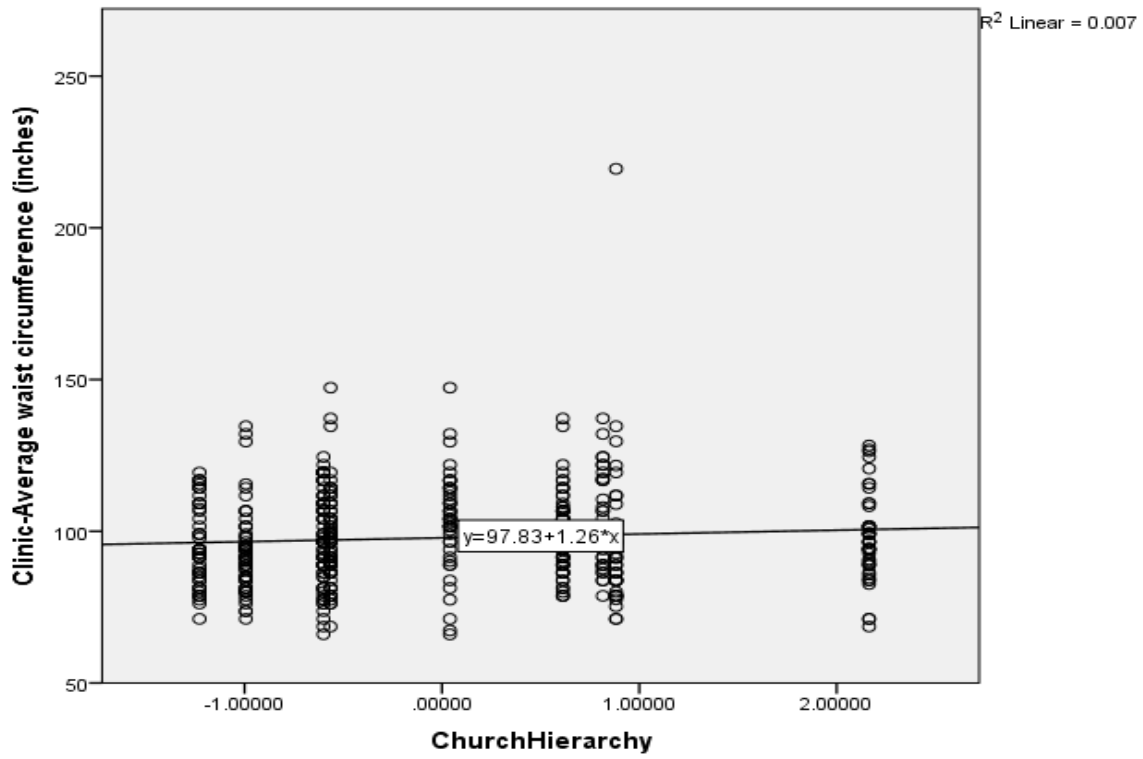


Figure 3.3

The Relationship between Church Hierarchy and Waist Circumference

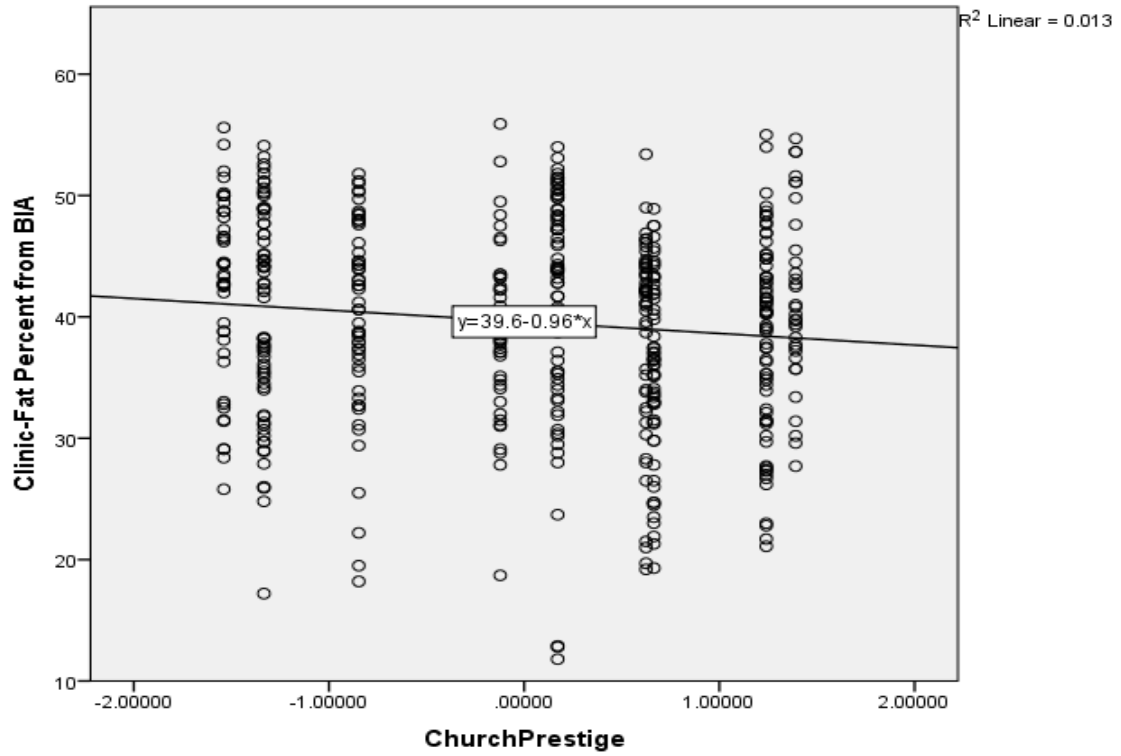


Figure 3.4

The Relationship between Church Prestige and Fat Percentage

CHAPTER 4

DISCUSSION

4.1 Summary of Findings

The purpose of this study was to attempt to determine the underlying dimensions of church social status and examine the relationship between church social status and measures of obesity. Results from the exploratory factor analysis indicated a three factor solution for church social status. We named the three factors for church social status: 1) church hierarchy, 2) church socioeconomic status, and 3) church prestige. Church hierarchy consisted of the items examining the number of deacons and deaconesses. Deacons and deaconesses play an important role in the order and structure of the church, often times relaying messages to the minister (Frazier, 1957). Church socioeconomic status consisted of items relating to pastor accessibility, social class of the congregation, and church education level. This item was termed church socioeconomic status because this factor taps into the financial and educational characteristics of its congregation and socioeconomic status is usually a combination of education and income (Cowan et al., 2013). Finally, the third factor was named church prestige and consisted of the standardized prestige scores collected from study II where participants were asked to rate area churches on a scale of 1 to 10. We defined church prestige as the perceived social standing a church has in a given community.

These factors were conceptualized as components that make up the construct of church social status. They were entered as predictors in a series of hierarchical regressions to test whether church social status was related to measures of obesity. This is based on previous research that shows that both objective and subjective measures of status predict health outcomes (Operario et al., 2004; Ostrove et al., 2000). Overall, results indicated that the dimensions of church social status are related to some measures of overall adiposity. First, results showed that church prestige was negatively related to body mass index and fat percentage. In other words, the more prestigious one's church is, the lower their total adiposity. This is consistent with the literature that suggests that the higher one's subjective status, the better one's health (Singh-Manoux et al., 2005). In this case, the greater the church prestige, the less central adiposity (i.e. healthier) of the individual.

In terms of measures of central adiposity, we saw a different pattern. In our sample, church hierarchy was positively related to waist circumference. In other words, the more hierarchy in church (i.e. more deacons and deaconesses), the greater the individuals' central adiposity. This can mean that the many structures and organizations (i.e. ministries) that exist within a church that an individual has to navigate through to get help or advice can limit if and when they get this help or counsel. Research has shown that the pastor is a great source of information especially when it comes to health (B. E. Harmon et al., 2013). This result can also be explained by the negative correlation between number of deacons and whether the church has an established health ministry ($r=-.494, p<.05$) and the negative correlation between number of deaconesses and whether the church has an established health ministry ($r=-.525, p<.05$). These results

indicate the greater the church hierarchy (i.e. more deacons and deaconesses), the less likely that the church has an established health ministry. So therefore, if one attends a church with an intricately structured social hierarchy, it may take more time until these individuals receive the help/counsel they need in regards to their health, and these can have indirect negative implications for their health.

4.2 Implications

This study was the first to attempt to quantify the concept of church social status, and relate it to measures of obesity. This study attempted to bridge the gap between qualitative literature from religious and African American studies that discuss the inner workings of the African American church by attempting to quantify church social status and apply this concept to obesity risk in African American females. We operationalized the concept of church social status and related to health outcomes showing that we need to go beyond traditional measures of status like socioeconomic status and even subjective social status and study perhaps more culturally relevant markers of status like church social status when trying to understand how status impacts health.

Researchers implement many obesity interventions in churches without understanding how the spaces we hold these interventions (i.e. churches) can impact the results of the intervention. This correlational study showed that components of church social status do impact measures of obesity such as body mass index, fat percentage, and waist circumference. Even though the effect size was small, and the church social status variables only explained a small percentage of variance in the measures of obesity, these results are not negligible. These results suggest that components of church organization

(i.e. hierarchy), the perceived status of the church in the community (i.e. prestige), and the education level and social class of the congregation (church socioeconomic status), all play a role in the health and well-being of its congregations.

Scholars cite the socioecological model as their theoretical foundation for conducting obesity interventions in churches, conceptualizing them as community organizations that the individual interacts with has implications for their health. However, we are not fully applying the socioecological model if we are not understanding the systems, roles, and norms within churches that can have implications for people's health. Proper use of the socioecological model can allow researchers to take an emic approach to studying the different systems an individual interacts with, that impacts their behavior. This study utilized an emic approach to understand correlates of obesity in African American women.

4.3 Limitations & Future Directions

Alongside the strengths and contributions of this study, there were some limitations. First, as briefly mentioned above, the strength of the conclusions drawn from the study may be limited by the small effect sizes resulting from analyses on the relationship between church social status and measures of obesity. The effect sizes ranged from 1% to 4%. An important explanation for these effect sizes is that there are many other factors that contribute to the variance in the measures of obesity including, but not limited to, diet, exercise, environmental factors, psychosocial factors, and genetic factors (Cutts et al., 2009; Davis et al., 2007; Diggins et al., 2015). While these are important variables to consider in the field's broad conceptualization of factors that

influence obesity, the specific focus of this study was to examine the impact of church social status on obesity risk. Given that similar studies examining such concepts also report small effect sizes (DeHaven, Hunter, Wilder, Walton, & Berry, 2004), these results indicate that church social status among African American communities may be an important piece of the puzzle in broadly conceptualizing factors that influence obesity. Additionally, future studies that assess the inter-relationships of these variables (e.g., the potential mediators and moderators), could help us explain more variance in obesity risk.

In addition to the limitation of the effect sizes, this study is purely exploratory and correlational and therefore no causal inferences can be made. Another limitation is perhaps the small sample size of the community panel whose scores we used as the measures of church prestige. It is our hope to ask more community members to rate the churches in order to increase the validity and reliability of that measurement.

In order to correct these limitations, future studies should incorporate a qualitative component to complement the quantitative results we found. For example, perhaps holding focus groups and asking individuals what they think church social status is and whether church prestige, church hierarchy, and church socioeconomic status are concepts they can identify, may assist in further validating the results of the factor analysis. Obtaining qualitative information in addition to the quantitative data we have can help us better understand, define, and operationalize church social status. A more refined and better validated measure of church social status can then be used in obesity interventions in order to better understand its role in the outcomes of the intervention. Another recommendation would be to identify what mechanisms connect church social status to obesity risk. This would require identifying and including mediators and moderators

which may help explain more variance in the obesity measures. In all, it our hope that this study can help us better understand the construct of church social status as it relates to African American women, and provides a starting point in measuring and operationalizing this construct to health outcomes.

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APPENDIX A: BODY MASS INDEX GUIDELINES

Table A.1

Body mass index guidelines.

Category	BMI (kg/m ²)
Underweight	< 18.5
Normal Weight	18.5–24.9
Overweight	25.0–29.9
Class I Obesity	30.0–34.9
Class II Obesity	35.0–39.9
Class III Obesity	40.0 +

APPENDIX B: CHURCH VARIABLES

Table B.1

Church Demographic Questions from Study I

Variables	Frequency (%)	N	Mean (Standard deviation)
Number of Full Time Ministers		689	1.25 (.573)
1	569 (82.6%)		
2	71 (10.3%)		
3	49 (7.1%)		
Number of Deacons		689	7.10 (6.79)
0	224 (32.5%)		
6	119 (17.3%)		
8	108 (15.7%)		
9	49 (7.1%)		
10	32 (4.6%)		
12	109 (15.8%)		
26	48 (7.1%)		
Number of Deaconesses		689	8.01 (8.02)
0	224 (32.5%)		
6	119 (17.3%)		
7	45 (6.5%)		
9	49 (7.1%)		
10	62 (9.1%)		
12	67 (9.7%)		
14	42 (6.1%)		
18	33 (4.8%)		
30	48 (7.1%)		

Does the church have an established health ministry?		689	1.39 (.488)
Yes	420 (61.1%)		
No	269 (39%)		
Is the senior pastor accessible to the congregation?		689	3.82 (.387)
Often	126 (18.3%)		
Always	563 (81.7%)		
What is the employment status of the majority of your congregation?		689	1.20 (.601)
Employed	620 (90%)		
Retired	69 (10%)		
How adequate are your church's financial resources?		641	2 (.542)
Not at all adequate	94 (13.6%)		
Adequate	453 (70.6%)		
More than adequate	94 (14.7%)		
What is the social class of the majority of your congregation?		689	2.54 (.623)
Working class	365 (53.1%)		
Middle class	276 (40%)		
Upper Middle Class	48 (7.1%)		
How much impact does the church make regarding the health of African Americans?		689	2.13 (.448)

No impact	30 (4.3%)		
Some impact	539 (78.2%)		
A lot of impact	120 (17.4%)		
Church Education Level		689	2.53 (.597)
High school graduate or GED	358 (52.1%)		
College Graduate	294 (42.7%)		
Graduate/Professional School	37 (5.4%)		

Church Prestige Question from Survey (Study II Church Variable)

How would you describe the social position of the following churches? Think of this 10 point scale as representing where a church stands in the Midlands. Churches you would give a ranking of 10 are the most prestigious churches with congregations having the most money, most education and the most resources. A church getting rating a 1 on the scale would be perceived by you as the less prestigious and more likely to have congregations with the least money, least education, and least resources. Having heard about church is enough for you to rate it.

If you have never heard of a particular church, please check the “Don’t Know” box. Please place the number between 1 and 10 that represents where you think the following churches stand compared to in the Midlands.

	1	2	3	4	5	6	7	8	9	10	Don't Know
1. Mt. Nebo Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Brookland Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Bethlehem Baptist Church Columbia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Trinity Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Ridgewood Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Zion Canaan Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. New Life Outreach Ministries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I. Dequincy Newman United Methodist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Bibleway Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. St. John Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Rehoboth Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Gill Creek Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Stedfast Christian Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Bethlehem Baptist Church Ridgeway	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Francis Burns United Methodist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1	2	3	4	5	6	7	8	9	10	Don't Know
18. Camden First	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Coptic Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Mt Olive Christian Methodist Episcopal Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Wesley United Methodist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Mt. Zion Missionary Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Mount Pilgrim Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Bluff Road United Methodist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Jones Memorial African Methodist Episcopal Zion Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. Right Direction Church International	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. Pleasant Hill Baptist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. Antioch African Methodist Episcopal Zion Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Abyssinian Methodist Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Reid Chapel African Methodist Episcopal Church	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>