INTENTIONS TO EAT A HEALTHY DIET: APPLYING THE THEORY OF PLANNED BEHAVIOR IN AN AFRICAN AMERICAN FAITH-BASED POPULATION

A THESIS IN
Clinical Psychology

Presented to the Faculty of the University
of Missouri - Kansas City in partial fulfillment of
the requirements for the degree

MASTER OF ARTS

by

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Kansas City, Missouri
2016

INTENTIONS TO EAT A HEALTHY DIET: APPLYING THE THEORY OF PLANNED BEHAVIOR IN AN AFRICAN AMERICAN FAITH-BASED POPULATION

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ABSTRACT

Diabetes and heart disease are two major health concerns for African Americans, who tend to have worse nutritional intake than Whites. Black churches, which serve primarily African Americans, are influential institutions in the African American community that can assist with promotion of healthy eating behaviors. Although church involvement has been associated with healthier dietary beliefs and behaviors, church settings can also impede healthy eating due to social pressure to consume unhealthy foods. To contribute to better design of church-based dietary intervention studies, there is a need to understand psychosocial influences, particularly beliefs and intentions to eat a healthy diet. Yet, there is a gap in the literature on studies that have examined this key predictor of dietary behaviors among church-affiliated African American populations. The Theory of Planned Behavior (TPB) is an established theory that has been demonstrated to explain the relationships between behavioral beliefs, normative beliefs, control beliefs, intentions to perform a health behavior and the behavior itself. The purpose of the current study is to examine intentions to eat a healthy diet and dietary behaviors (i.e., F/V and fat intake) in a sample of African-American church and affiliated community members using the TBP. Participants (N = 352)

were recruited from six Black churches in the Kansas City metropolitan area and completed surveys exploring TPB constructs and health behaviors. Participants were primarily female (68%), with an average age of 54 years (*SD* = 13.1). Findings indicated behavioral and normative beliefs predicted intentions to eat a healthy diet, even when controlling for covariates (i.e., age, sex, BMI, religiosity, baseline fat or F/V intake). Control beliefs predicted fat intake, but this was attenuated after controlling for covariates. Intentions predicted fat and F/V intake, but these effects were moderated by covariates. These findings provide support for the use of the TPB in examining dietary behaviors among church-affiliated African Americans and suggest church-based healthy diet interventions should emphasize promotion of behavioral and normative beliefs. This study represents an opportunity to understand dietary beliefs and behaviors in the African-American faith community, with potential to inform dietary interventions in key African American faith-based settings.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the College of Arts and Sciences have examined a thesis titled, "Intentions to Eat a Healthy Diet: Applying the Theory of Planned Behavior in an African American Faith-Based Population," presented by Alexandria G. Booker, candidate for the Master of Arts degree, and certify that in their opinion it is worthy of acceptance.

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ACKNOWLEDGMENTS

The author would like to extend special thanks to Carole Bowe-Thompson, BS, Andrea Bradley-Ewing, MPA, MA, Kathy Goggin, PhD, Marvia Jones, PhD, Traci Ruhland-Petty, MA, and Marcie Berman, MA, for their contributions to the development of this project. This project was completed under Grant 1R24MD007951-01.

CHAPTER I

INTRODUCTION

Heart disease and diabetes are among the top health concerns in the United States. Heart disease ranks as the leading cause of death in the United States, and diabetes is the seventh leading cause of death for all Americans (CDC, 2011; CDC, 2015a). African Americans are disproportionately burdened by these diseases. For example, African Americans have slightly higher rates of coronary heart disease compared to Whites (6.3% and 6.1%, respectively; Mozaffarian et al., 2015), and over 44% of African American men and 49% of African American women are living with a cardiovascular disease (e.g., coronary artery disease, arrhythmia, heart failure; American Heart Association, 2013). Furthermore, African Americans are more likely to experience out-of-hospital deaths at earlier ages related to heart disease than Whites (Clark et al., 2001). Additionally, diabetes is the fourth leading cause of death for African Americans (CDC, 2014b), who are twice as likely to be diagnosed with diabetes as Whites (15% and 9%, respectively; Mozaffarian et al., 2015). African Americans also have a higher risk of developing diabetes-related complications (e.g., vision problems and blindness, kidney disease, amputations; American Diabetes Association, 2014; Office of Minority Health, 2014).

Many health risk factors that contribute to the development of diabetes and heart disease are particularly prevalent among African Americans, including high blood pressure, high cholesterol, and being overweight/obese, compared to Whites (American Heart Association, 2014; CDC, 2015b; Gillespie & Hurvitz, 2013; May, Freedman, Sherry, & Blanck, 2013). Studies also indicate African Americans are more likely to engage in low

levels of physical activity, which increases risk of developing diabetes and heart disease (CDC, 2014a). Additionally, diabetes is a risk factor for heart disease, therefore the high rates of diabetes among African Americans is a contributing factor to their high rates of heart disease (American Heart Association, 2012; CDC, 2015a).

Diet is a risk factor of particular concern; it considerably increases disease risk for diabetes and heart disease in the African American community (International Diabetes Federation, 2015; National Heart, Lung, and Blood Institute, 2014; Satia, 2009). It is recommended that most adults limit their dietary fat intake and consume a fiber-rich diet that includes five or more servings of fruits and vegetables per day (Department of Health and Human Services, 2010). Previous studies have shown that a healthy diet (e.g., high-fiber, low-fat, low-salt, lots of fruits and vegetables) is associated with lower diabetes and heart disease risk (e.g., lower blood pressure and cholesterol, lower body weight) compared to a diet with more saturated fat, trans fat, and other dietary choices (e.g., sodium, added sugar, cholesterol), even after adjusting for BMI (Chiuve, Sampson, & Willett, 2011).

Despite the known benefits of a healthy diet on managing risk for diabetes and heart disease, African Americans are less likely to consume a healthy diet than Whites (Basiotis, Lino, & Anand, 1998; Casagrande, Wang, Andersen, & Gary, 2007; Ervin, 2011). Healthy Eating Index (HEI) scores based on the National Health and Nutrition Examination Survey revealed that African Americans had significantly lower scores for total vegetable intake and significantly higher scores for saturated fat compared to non-Hispanic Whites (Ervin, 2011). This study also showed that African Americans had a higher score for sodium intake and lower scores for intake of whole fruit and total grains compared to Whites. Furthermore, traditional African American cooking typically includes unhealthy additions, such as high-fat

meats, added salt, and fried foods (Malpede et al., 2007). Due to the magnitude of these dietary deficiencies, it is crucial to examine factors that influence dietary behaviors in the African American community.

The Influence of Religiosity and the Black Church on Diet in the African American Community

African Americans are more likely to report being moderately to very spiritual (e.g., feeling God's presence, looking to God for strength and support) and more frequently engage in religious behaviors (e.g., church attendance, scripture reading, prayer) than Whites (Harvey & Silverman, 2007; Pew Research Center, 2009). Studies have found key associations between religiosity and dietary intake among African Americans. For example, a study by Holt, Haire-Joshu, Lukwago, Lewellyn, and Kreuter (2005) showed that African American women with strong religious beliefs and behaviors believed more strongly in the importance of eating fruits and vegetables, had more interest in a healthy diet, and reported more daily servings of fruits and vegetables than women who were low in both religious dimensions. Previous research has also found that African Americans were more likely to have both intrinsic and extrinsic religiosity than Hispanic, Asian, or non-Hispanic White participants, and extrinsic religiosity was associated with more healthy dietary behaviors (Hart, Tinker, Bowen, Satia-Abouta, & McLerran, 2004). Despite these findings, other studies of the African American community have found that although church attendance and religious practice (i.e., using religion or beliefs to solve problems in life) were associated with better eating habits, time spent in prayer and importance of religion predicted worse dietary habits (e.g., more fast food; Dodor, 2012).

Black churches are a key influential institution in the African American community and a fundamental source of leadership, social support, and guidance for their members. Although studies have shown that Black churches can have a significant, positive influence on the dietary choices of African Americans (e.g., Baruth & Wilcox, 2013; Davis-Smith, 2007; Dodani & Fields, 2010; Faridi et al., 2010; Resnicow et al., 2001; Resnicow et al., 2004; Resnicow et al., 2005; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001), it has been suggested that Black churches may be missing opportunities to promote healthy dietary regimens, and they may even reinforce negative dietary habits, including high-fat, high-sugar, and high-sodium foods that increase health risks for African Americans (LaVeist, 2012). For example, focus groups conducted with African American female members of a church health ministry revealed participants felt social pressure to consume large amounts of high-fat foods at church events and pressure to consume unhealthy foods prepared by other church members to avoid showing disrespect (Drayton-Brooks & White, 2004). Similar studies have found that church social events led to increased consumption of food, particularly unhealthy options (Hargreaves, Schlundt, & Buchowski, 2002).

Despite these mixed findings, there is a large body of literature indicating the benefits of tapping the influence of the Black church to promote healthy eating among African American church populations. Several health promotion interventions in African American churches have been designed to promote dietary change (e.g., increase fruit/vegetable intake, reduce fat/kcal), many of which included counseling (e.g., motivational interviewing, MI) from professionals or peers, such as trained church members (Allicock et al., 2010; Allicock et al., 2013; Resnicow et al., 2001; Resnicow et al., 2004; Resnicow et al., 2005). Other effective components included pastoral sermons and educational brochures, bulletins,

cookbooks, videos, health food church policies, cooking classes, and health fairs. Many of these components were religiously tailored, including use of spiritual themes, prayer, scriptural discussion, and gospel music (Allicock et al., 2013; Resnicow et al., 2001; Resnicow et al., 2004; Resnicow et al., 2005).

Measures of Dietary Behaviors and Inclusion of Psychosocial Measures

Several church-based diet and nutrition interventions have been effective at increasing fruit and vegetable (F/V) and decreasing fat intake with African Americans (Allicock et al., 2010; Allicock et al., 2013; Campbell et al., 2004; Resnicow et al., 2001; Resnicow et al., 2004; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001). In these studies, participants consumed an average of three to four servings of fruits and vegetables per day at baseline. The daily percentage of calories from fat at baseline ranged from 31 to 39%, more than triple the recommendation by Department of Health and Human Services (2010). At follow-up (ranging from six months to one year), participants consumed as much as five servings of fruits and vegetables per day (Resnicow et al., 2001) and decreased fat intake from 39% to 37%, declining as much as eight grams per day (Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001).

In some cases, effectiveness of church-based interventions for African Americans depended on what F/V intake measure was used. For example, studies by Allicock et al. (2010, 2013), Fuemmeler et al. (2006), and Resnicow et al. (2001, 2004) demonstrated that two-item food frequency questionnaires captured dietary change with equal or better effectiveness than longer questionnaires (i.e., nine items or more). Specifically, a two-item measure captured more significant increases in F/V intake than a ten-item measure, following exposure to a peer counselor and MI conversations (Allicock et al., 2010). Brief, two-item

measures also detected greater improvement in F/V intake, and larger effect size estimates of this improvement, than longer measures (ranging from seven to thirty-six items) after interventions that included MI counseling, a religiously-tailored cookbook, and church-wide events (e.g., kickoff events, policy changes, and nutrition education events; Allicock et al., 2013; Fuemmeler et al., 2006; Resnicow et al., 2001; Resnicow et al., 2004). Measures of fat intake used in the African American church include longer measures (e.g., Block Food Questionnaire), designed to describe participants' typical dietary patterns (Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001).

Several church-based studies have examined psychosocial influences on F/V intake, including social support, self-efficacy, and motivation (e.g., autonomous, controlled); Fuemmeler et al., 2006; Campbell et al., 1998; Resnicow et al., 2004; Thrasher, Campbell, & Oates, 2004). A study by Fuemmeler et al. (2006) found that social support and self-efficacy mediated the relationship between a church-based, religiously tailored intervention and F/V intake. Studies examining these or other psychosocial variables related to fat intake within African American church populations are limited. The existing studies have demonstrated that social support, self-efficacy, and self-regulation were associated with decreased fat intake (Andersen, Winett, & Wojcik, 2007). Still, there is limited literature examining the influence of intentions (O'Neal et al., 2012) – a key behavioral predictor, on F/V and fat intake with African American church populations. To further understand dietary behaviors and possible influential factors in the African American faith community, further examination of rarely studied faith-based psychosocial predictors, such as church members' beliefs and intentions to consume a healthy diet, is needed.

The Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was developed by Icek Ajzen (1985, 1991) and postulates that there is a direct relationship between behavioral intentions and engagement in a particular behavior, such that greater intentions predict a greater likelihood of achievement of the behavior. The TPB has demonstrated strong efficacy for predicting health-related behaviors (e.g., healthy eating, exercise, smoking, condom use) among the general population (Andrykowski, Beacham, Schmidt, & Harper, 2006; Armitage & Conner, 2001; Bassett-Gunter et al., 2015; Blue, 2007; Godin & Kok, 1996; Kothe, Mullan, & Butow, 2012; White, Terry, Troup, Rempel, & Norman, 2010; Wyker & Davison, 2010). The three higher order TPB constructs are composed of primary components (i.e., behavioral beliefs, normative beliefs, control beliefs) and secondary components (i.e., attitudes toward the behavior, subjective norms, and perceived behavioral control, respectively), which predict behavioral intentions and subsequent behavioral outcomes. Figure 1 illustrates the relationship between the TPB constructs, intentions, and behaviors. Behavioral beliefs include an individual's expectation of a particular behavior and the individual's perceptions of the potential outcomes of engaging in the behavior. Subjective norms are driven by an individual's perception of the perceived endorsement of a particular behavior among their significant others (e.g., friends, family members) and the individual's inclination to comply with referents' opinions. Perceived behavioral control is conceptualized as the resources and barriers that an individual perceives will facilitate or inhibit engaging in a particular behavior, to what degree those factors can influence behavioral engagement, and the individual's ability to utilize resources to overcome barriers to perform the behavior. Perceived behavioral control has been demonstrated to add predictive value to the TPB

model on outcome behavior (Armitage & Conner, 2001; Madden, Ellen, & Ajzen, 1992). Elicitation interviews with the population of interest should be conducted to shape the constructs of the TPB for the targeted behavior and given population (Glanz, Rimer, & Viswanath, 2008). For the purposes of this study, in lieu of elicitation interviews, previous studies were used as a foundation for culturally tailored, relevant TPB items (Blanchard et al., 2009; Drayton-Brooks & White, 2004; O'Neal et al., 2012).

The TPB and Intentions to Follow a Healthy Diet among African Americans

The TPB has been used to explain dietary intake among the general African American population. A study by Blanchard et al. (2009) examined the TPB with Black and White participants and found that attitudes, subjective norms, and perceived behavioral control significantly predicted intentions to eat fruits and vegetables for Black participants; intentions then predicted F/V intake.

There are limited studies examining F/V intake of African Americans in faith-based settings using the TPB. A church-based study of 211 older African American men and women found that positive attitudes, stronger subjective norms, and greater perceived behavioral control towards eating fruits and vegetables predicted greater intentions to consume these elements of a healthy diet (O'Neal et al., 2012). Greater intentions were also predictive of behaviors related to fruits and vegetable preparation and consumption. In another study, focus groups were conducted with 26 African American women who were active members of a faith-based health ministry, in order to qualitatively describe how each of the TPB constructs were perceived regarding F/V intake (Drayton-Brooks & White, 2004). This study found that participants described negative attitudes toward healthy eating, including healthy foods being uninteresting and inconvenient. Participants also reported

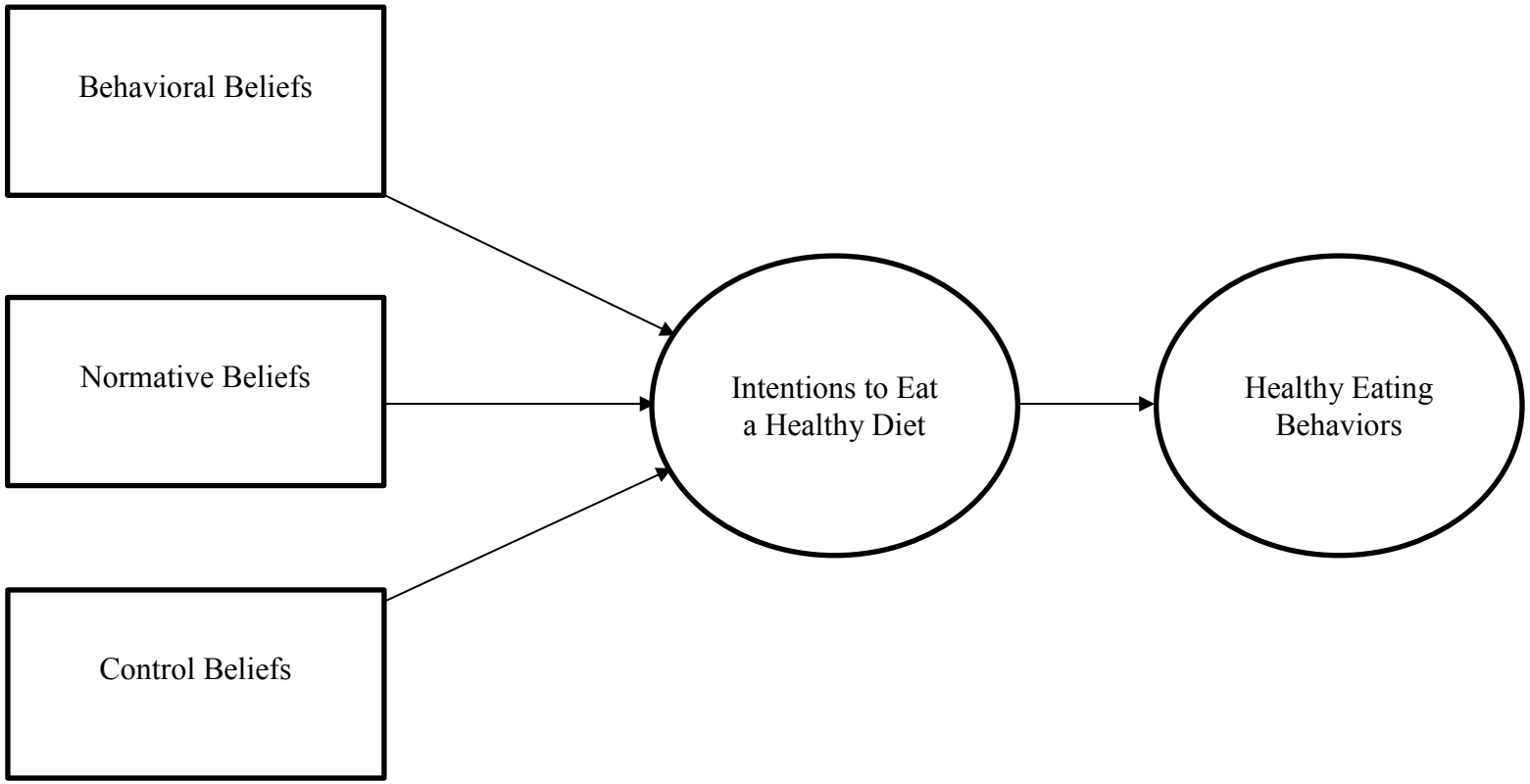

Fig 1. *The influence of higher-order TPB constructs on healthy eating intentions and behaviors.*

referents for subjective norms on eating healthy, which included physicians and family in addition to faith-based referents, such as God, church members, the pastor, and the congregation's nurse. However, they also reported that unhealthy eating practices at churchevents had an influence on their consumption of an unhealthy diet. Also, perceived behavioral control was positively influenced by many faith-based activities, including prayer, relationships between church members, receiving support from the pastor, and feeling included within the church community. Overall, participants acknowledged the importance of nutrition and weight control, but endorsed very low intentions to eat a healthy diet. These findings suggest that faith-based factors (e.g., faith-based referents, prayer, church-based relationships) have a unique influence on the TPB constructs within the African American community, including intentions to eat a healthy diet and healthy eating behaviors (e.g., preparation and F/V intake). There are no church-based studies examining the TPB for fat intake in the faith-based African American community.

As the number of church-based dietary intake intervention studies continues to grow, examinations of intentions to engage in healthy dietary behaviors in the African American faith community may become more important for intervention design and efficacy. The few existing studies have focused on qualitative designs, limited dietary measures, or restricted populations of African Americans (e.g., either men or women, older adults). Additionally, there are no faith-based studies examining the TPB with church members and church-affiliated community members.

The purpose of the current study was to use the TPB model to examine intentions to eat a healthy diet and dietary behaviors (i.e., fat and F/V intake) in a sample of church-

affiliated African Americans. This sample participated in an 8-month health promotion intervention in African American church settings. Analyses focused on the primary TPB constructs (i.e., behavioral beliefs, normative beliefs, control beliefs), since previous literature has established a predictive TPB model based on primary constructs alone (Blanchard et al., 2009). It was hypothesized that (1) behavioral beliefs would positively predict intentions to eat a healthy diet, as would (2) normative beliefs, and (3) control beliefs. It was also hypothesized that intentions to eat a healthy diet would (4) negatively predict fat intake and (5) positively predict F/V intake at 8-month follow-up. Previous studies examining the TPB have demonstrated a direct effect of control beliefs on behavioral outcomes (Ajzen, 1991; Armitage & Conner, 2001; Connor, Norman, & Bell, 2002; Louis, Chan, & Greenbaum, 1992; Madden, Ellen, & Ajzen, 1992). Thus, it was hypothesized that there would be a direct effect of control beliefs on (6) reduced fat intake and (7) increased F/V intake at 8-month follow-up. This study represents an opportunity to understand key psychosocial factors related to dietary intentions and behaviors among African American church-affiliated populations and is an important step in designing theoretically-based, religiously-appropriate healthy eating interventions in African American faith-based settings.

CHAPTER II

METHODOLOGY

Participants and Procedures

This study used previously collected data from Project FIT (Faith Influencing Transformation), a clustered, randomized faith-based pilot two-arm study comparing a diabetes and heart disease/stroke prevention, screening, and linkage to care intervention to a health education arm in African American churches over 8 months. Participants (N = 352) from six African American churches (randomized to either arm; average membership of 150 adult members) in the Kansas City metropolitan area were recruited for participation. Participants were church members (n = 311) who attended church services at least once per month and community members (n = 34) who used church outreach services (e.g., daycare services, food programs) at least four times per year. Eligibility criteria for Project FIT included: a) being self-identified African American, b) being between 18 and 80 years of age, c) having willingness to participate in two surveys and health screenings held at church services, d) having the ability to complete the survey without assistance and with fluency in English, e) having willingness to provide contact information, f) not currently being pregnant (or planning to become pregnant over the next year), and g) not having sickle cell anemia.

Participants were recruited during church service and community outreach events. All announcements were made in church services and at outreach events (e.g., food pantry) by African American members of the research team and each church's pastor. Individuals who showed interest in Project FIT received further information about the study, were screened for eligibility, and received informed consent while still in church settings. Consented

participants volunteered to complete a survey on health beliefs and behaviors, including dietary intake behavioral and psychosocial measures, and a health screening. For the purposes of the current study, only the survey procedures will be described. Baseline and 8-month follow-up survey events were held on-site at the church with opportunities for participants to complete the survey before, during, or after church services. Survey completion took approximately 30-45 minutes, and all participants were compensated $20. Study procedures were approved by the University of Missouri-Kansas City Institutional Review Board.

Survey Measures

Personal Characteristics

Demographic items included age, gender at birth, and marital status. Other items asked about education level, health insurance coverage, housing status, sources of support (e.g., working part-time, working full-time, no income), and average monthly income. A sample copy of all demographic items can be found in Appendix A. Height and weight, both without shoes, were measured by a member of the research team and used to calculate BMI. Religiosity was measured using a seven-item scale that was developed for the current study (Cronbach's $\alpha = .758$, average inter-item correlation = .372). The first item asked participants to describe their level of religiosity, with response options ranging from 1 = *Atheist* to 5 = *Religious*. Six additional items asked participants to rate how often they thought of God, prayed, meditated, attended church services, read Scriptures or holy writings, or had direct experiences with God. Response options ranged from 1 = *never* to 8 = *more than once a day*.

Items were summed to create a total measure of religiosity, with total scores ranging from 7 (*low religiosity*) to 53 (*high religiosity*).

Dietary Intake Behaviors

Fat intake was assessed at baseline and at eight months follow-up. Eighteen items asked participants to report how often they ate or drank several foods or drinks over the past 12 months (e.g., fast foods, sausage or bacon, fried chicken and/or fried fish, skim milk). This measure was adapted from the National Cancer Institute's Percentage Energy from Fat Screener, which has demonstrated an R^2 as high as 35% with dietary intake in diverse, community-based studies (Thompson et al., 2008). Furthermore, this measure has been demonstrated to be significantly associated with true fat intake, which was modeled as a latent variable (Thompson et al., 2008). Although previous estimates of internal consistency were not available, Cronbach's $\alpha = .915$ for the current study (average inter-item correlation = .401). Response options included 1 = *never*, 2 = *less than once a month*, 3 = *one to three times a month*, 4 = *one to two times a week*, 5 = *three to four times a week*, 6 = *five to six times a week*, 7 = *once a day*, and 8 = *two or more times a day*. Responses to healthy items (e.g., fruit) were reverse scored, so that higher scores on each item indicated worse dietary behaviors. Overall, items were summed, so that the total range of scores was 18 to 144.

F/V intake was also measured at baseline and follow-up at eight months. Two items asked participants how often they consumed either fruits or vegetables over the past seven days. These items were drawn from previous studies, which utilized a single item to assess F/V intake in diverse populations (Peterson et al., 2008; Thompson et al., 2002) and two-item measures to assess F/V in African American populations (Allicock et al., 2010; Allicock et

al., 2013; Fuemmeler et al., 2006; Resnicow et al., 2001; Resnicow et al., 2004). Two-item F/V measures were also significantly correlated with longer, established measures from the National Cancer Institute (Fuemmeler et al., 2006). Although previous estimates of internal consistency were not available, Cronbach's α = .805 for the current study (inter-item correlation = .676). For both items, response options included 1 = *never*, 2 = *one to two times per week*, 3 = *three to four times per week*, 4 = *five to six times per week*, 5 = *one time per day*, and 6 = *two or more times per day*. Fruit and vegetable items were summed to create a total F/V score, ranging from 2 to 12, with higher scores indicating more F/V intake.

Intentions to Eat a Healthy Diet

Baseline dietary intention was measured with a single item that was based on previous research, which utilized a single intention item and specified a definitive span of time for behavior change (Schwarzer, 2008). Quantitative, faith-based studies that examined the TPB for intentions to eat healthy among African Americans used a five-item measure of intentions (i.e., Processes of Change Questionnaire, Cronbach's α = .75; O'Neal et al., 2012). However, this measure also captures other constructs (e.g., stages of change) and areas of intention (e.g., using healthy preparation methods), which were not the focus of the current study. An eight-month timeline was used for intentions since Project FIT was an eight-month intervention study. The intention item asked, *"To what degree do you intend to eat healthy over the next 8 months?"* This was followed by a Likert-type scale which stated, "*I intend to eat as healthy as possible (low-fat, low salt, lots of vegetables)*" with response options ranging from 1 = *not true at all*, to 4 = *somewhat true*, to 7 = *very true*. The total range of scores was 1 to 7. Higher scores indicated greater intentions to eat a healthy diet.

Behavioral Beliefs

Behavioral beliefs about consuming a healthy diet were measured using 13 Likert-type items (Cronbach's α = .950; inter-item correlation = .608). These items were adapted from previous research on the Health Action Process Approach, which recommended the use of both positive and negative outcome beliefs (Schwarzer, 2008). Participants were asked to rate how true each consequence of eating a healthy diet was for them, with responses ranging from 1 = *not at all true* to 4 = *exactly true*. Potential beliefs related to a healthy diet included: "*I'll feel more physically attractive,"* and *"That will be good for my blood pressure."* Negative outcomes (e.g., *"Food won't taste as good*") were reverse coded, so that higher scores indicated more positive beliefs. The total possible range of scores for this measure was 13 to 52, with higher scores indicating more positive behavioral beliefs toward eating a healthy diet.

Normative Beliefs

To assess normative beliefs regarding significant referents, five items asked participants to rate how much encouragement to eat a healthy diet they received from family, friends or work colleagues, church members, pastor, and doctor (Cronbach's α = .857; inter-item correlation = .594). Response options included 1 = *none*, 2 = *a little*, 3 = *some*, or 4 = *a lot*. These items were adapted from previous research, which demonstrated good reliability (Cronbach's α = 0.88; Resnicow et al., 2000). Items were summed in order to obtain a total score, with higher scores indicating greater beliefs. The total possible range of scores was 5 to 20.

Control Beliefs

Control beliefs related to eating healthy foods was measured using 12 dichotomous (0 = No, 1 = Yes) items (Cronbach's α = .936, average inter-item correlation = .560). Sample items included, "*I saw my pastor eating healthy*," "*My church regularly discussed the importance of eating healthy foods*," and "*I regularly talk to others in my church about eating healthy foods*." These items were developed for the current study. Items were summed to create a total score, with higher scores indicating greater perceived behavioral control. The total range of scores was 0 to 12.

Data Analysis

Descriptive statistics were used to examine participant characteristics, including demographics and dietary intake behaviors. Path modeling was used to examine relationships between TPB constructs and intentions to eat a healthy diet at baseline with F/V and fat intake at 8-month follow-up. Age, sex, BMI, religiosity, and baseline dietary behaviors were examined as covariates, so that their respective effects could be controlled for in the model. Figure 2 illustrates the hypothesized path analysis model being tested in this study. Given the cross-sectional design of the study, inferences of causality were not possible. The model's overall fit was assessed with the root mean squared error of approximation (RMSEA) and comparative fit index (CFI), with acceptable fit values approaching 0.08 and 0.9, respectively. Overall fit was also be evaluated using PCLOSE, which evaluates the RMSEA value and is ideally non-significant. Local model fit was evaluated by examining the magnitude and significance of path coefficients. Previous estimates of power and effect size were unavailable, so an a priori power analysis was not possible. However, the sample size

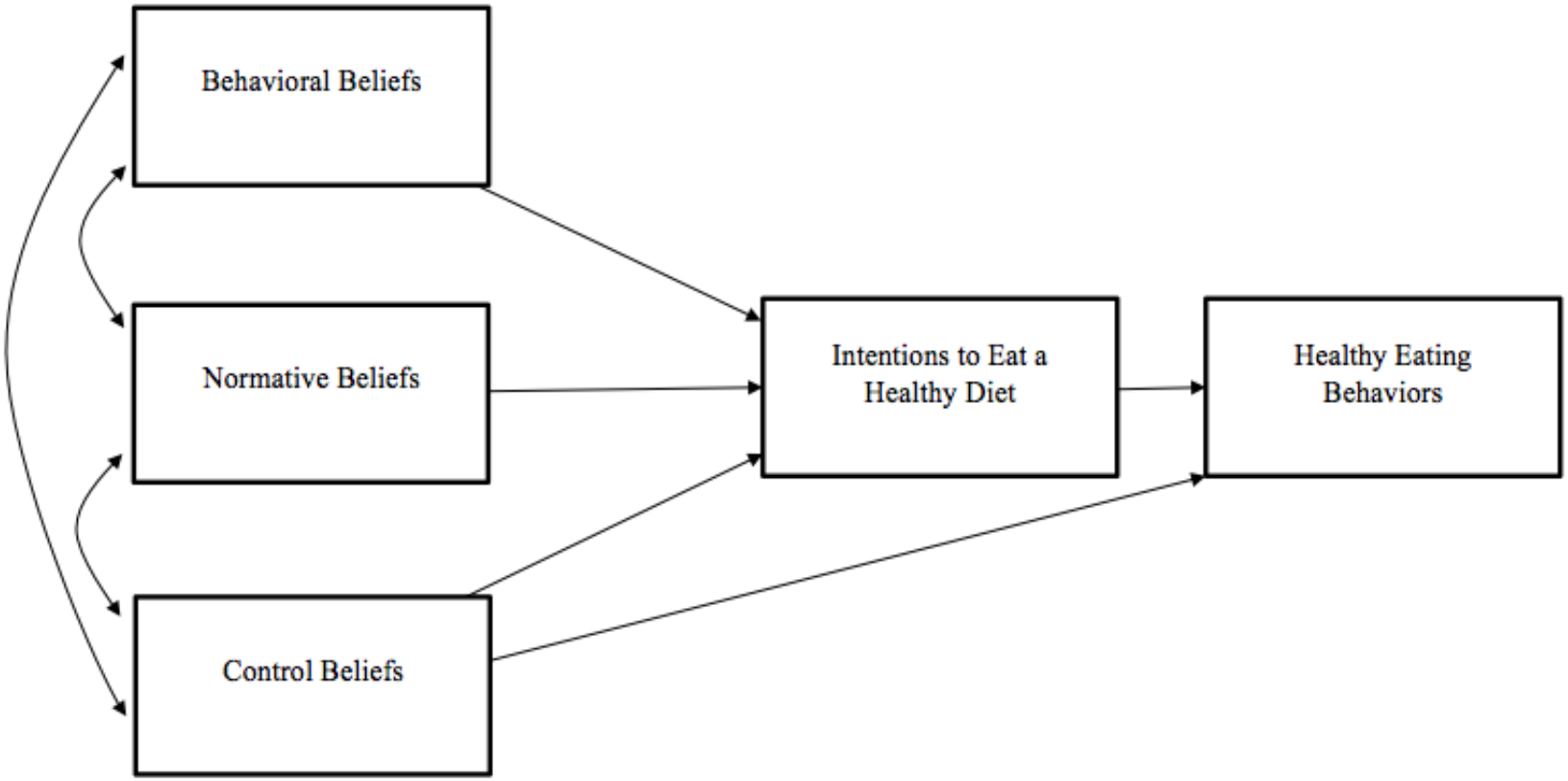

Fig 2. *Basic path analysis being tested between the constructs of the TPB and intentions to eat a healthy diet.*

for all models tested in this study met the minimum 10:1 ratio of observations to parameter estimates recommended by Kline (1998). Furthermore, this study exceeded the previously recommended minimum sample size of 200 observations for SEM analyses (Jackson, 2003). Previous literature has demonstrated that a greater ratio of observations to parameter estimate resulted in smaller RMSEA values (Jackson, 2003). Thus, it is likely that the sample size did not restrict data analysis.

CHAPTER III

RESULTS

Personal Characteristics

Participants' ages ranged from 18 to 80 years (M = 53.6, SD = 13.1). They were primarily female (68%, n = 238) and commonly reported being married, working full-time, and owning a home, as shown in Table 1. Participants' responses indicated high levels of religiosity, M = 45.5, SD = 6.5. BMI ranged from 18.6 (normal weight) to 60.9 (Class III obesity), with an average of 32.97 (SD = 7.5), which is Class I obesity. The majority of participants (88%) was overweight or obese, and there were no participants who were underweight.

Dietary Behaviors

At baseline, participants reported moderate fat intake, as shown in Table 2. Scores ranged from 40 to 105, from a possible range of 18 to 144. Although average fat intake decreased at follow-up, the difference was not significant (T[108] = 1.71, p = .09). Follow-up scores ranged from 63 to 101. The most common sources of fat consumed regularly included snack foods (e.g., chips, crackers, cookies), fast foods, fried chicken or fried fish, and fried potatoes (e.g., French fries, home fries, hash browns). Participants also commonly reported consuming margarine, butter, or oil on rice, pasta, or vegetables. Participants reported slightly better than moderate F/V intake at baseline. The majority of participants reported consuming fruit between 1 and 4 times per week and consuming vegetables between 3 and 6 times per week. Although there was a slight improvement in F/V intake at follow-up,

the difference was not significant (T[165] = - 1.53, p = .128). At follow-up, the majority of participants reported consuming both fruit and vegetables 3 to 6 times per week.

Intentions to Eat a Healthy Diet

Overall, there was slightly more than moderate intention at baseline to eat a healthy diet, as shown in Table 2. Nearly half of participants' (46%) intention scores were at the highest end of the scale.

TPB Constructs

Participants had somewhat high behavioral beliefs toward healthy eating at baseline, as shown in Table 2. One of the most salient behavioral beliefs endorsed included having to make an effort to buy the right products. Also, the majority of participants described healthy eating as being good for blood pressure and cholesterol, without decreasing quality of life or impairing one's social life. The majority of participants also felt that they would be treating their body like the temple of God by eating healthy foods.

Participants reported very strong normative beliefs regarding their doctor's encouragement to eat a more healthy diet. Although support from other sources (i.e., family, friends or work colleagues, pastor, church members) was not as strongly endorsed, many participants reported support from family or their pastor following doctors' encouragement. Participants had slightly less than moderate healthy eating control beliefs. The most commonly endorsed control items were sharing healthy meals with family, friends, or church members; attending workshops at church that shared information on healthy eating; wanting to be a good example for family; and using healthy recipes and other materials provided by the church. Despite these positive findings, most participants did not report that they had seen their pastor eat healthy, attended cooking classes at their church, or regularly talked to others

Table 1. Demographic characteristics of participants.

	N	%[a]
Gender		
Female	240	69
Male	106	31
Education		
11th grade or less	18	5
High school graduate or GED	49	14
Post high school technical training	10	3
Some college (but no degree)	97	28
Associates Degree (AA) or tech school certificate	43	12
Bachelor's degree (BA, BS)	47	14
Some graduate school or graduate degree	82	24
Marital Status		
Single, never married	84	24
Living with partner, but not married	8	2
Married	132	38
Separated	18	5
Divorced	80	23
Widowed	24	7
Monthly household income		
0-1000	33	11
1,001-2,000	62	21
2,001-3,000	74	25
More than 3,000	114	38
Don't know	17	6
Health Insurance		
Medicare	86	24
Medicaid	26	7
Private insurance	178	51
Other insurance	46	13
No insurance	51	15
Sources of Support		
Working part-time	52	15
Working full-time	157	45
Self-employed in your own business	18	5
Social Security/Private disability insurance	82	23
Unemployment compensation	11	3
No income	19	5
Other	46	13

Table continued.

Table 1 Continued

	N	%[a]
Housing Status		
Own a home	158	50
Renting	121	38
Staying with family or friends	29	9
Living in temporary/emergency housing	1	0.3
Homeless	5	2
Other	4	1
BMI		
Underweight (< 18.5)	0	0
Normal (18.5-24.9)	39	13
Overweight (25.0-29.9)	86	28
Obese class I (30.0-34.9)	77	25
Obese class II (35.0-39.9)	53	17
Obese class III (40.0+)	56	18

[a]Some percentages add up to > 100 because categories were not mutually exclusive. Some variables add up to slightly < 100 due to rounding error.

Table 2. Descriptive statistics of diet, intentions,[a] and TPB constructs.

	M	*SD*
Fat Intake		
Baseline	68.1	13.1
Follow-up	64.1	11.3
F/V Intake		
Baseline	7.3	2.6
Follow-up	7.8	2.6
Intention to eat a healthy diet[a]	5.7	1.2
Behavioral beliefs[a]	40.5	4.3
Normative beliefs[a]	13.0	3.8
Control beliefs[a]	5.3	3.1

[a]Measured at baseline.

in church about eating healthy foods. Additionally, fewer participants endorsed having a healthy food policy at church or seeing other people eat healthy foods at church events.

Preliminary Model Assessment

Preliminary multilevel models revealed very little effect of clustering (i.e., churches) on either F/V intake or fat intake (ICC = < .001 in both cases). For both F/V and fat intake, multilevel models were unable to converge due to low variance within clusters. A follow-up one-way analysis of variance (ANOVA) was performed, which revealed no significant differences by church for either fat intake [$F(5, 123) = .863$, $p = .508$] or F/V intake [$F(5, 160) = 1.15$, $p = .337$]. Thus, subsequent models were tested using only a single level for analysis.

Path Analysis

Four path analysis models were run in IBM AMOS version 23.0. For each path analysis, maximum likelihood estimation was used. The first two models tested the three constructs of the TPB in relation to fat intake (Model 1), and controlled for covariates (i.e.,

age, gender, BMI, religiosity, baseline dietary behavior; Model 2). Similarly, models 3 and 4 tested TPB constructs in relation to F/V intake (Model 3) and controlled for covariates (Model 4). Path coefficients are displayed in Figures 3 through 6. Model 1 showed good overall fit (RMSEA = .017 and CFI = .998). This is supported by the PCLOSE (.596), which tests the null hypothesis that the RMSEA is a good fit. This was supported by the chi-square test comparing the over-identified model fit and the just-identified model fit [χ^2 (2, 352) = 2.2, p = .33]. The squared multiple correlation for fat intake in Model 1 was .076. There was significant covariance between behavioral and normative beliefs, and between normative and control beliefs. Behavioral beliefs and normative beliefs were significant, positive predictors of intentions to eat healthy, and the latter was the strongest predictor of intentions. Control beliefs were not a significant predictor of intentions to eat healthy, but control beliefs had a direct, inverse relationship with fat intake at follow-up. Intentions at baseline had a significant negative relationship with fat intake at follow-up. After controlling for covariates, including baseline fat intake (Model 2), behavioral and normative beliefs remained significant, positive predictors of intentions to eat healthy. However, the direct effects of control beliefs and intentions on fat intake at follow-up were attenuated.

Model 3 also showed good overall fit (RMSEA = < .001, PCLOSE = .963 and CFI = 1.0). This was supported by the chi-square statistic [χ^2 (2, 352) = .180, p = .914]. The squared multiple correlation for F/V intake in Model 3 was .098. Covariance patterns between the TPB constructs were identical to the first model. Similar to Model 1, behavioral beliefs were the strongest positive predictor of intentions to eat healthy, followed by normative beliefs. Control beliefs were not a significant predictor of intentions to eat healthy or F/V intake.

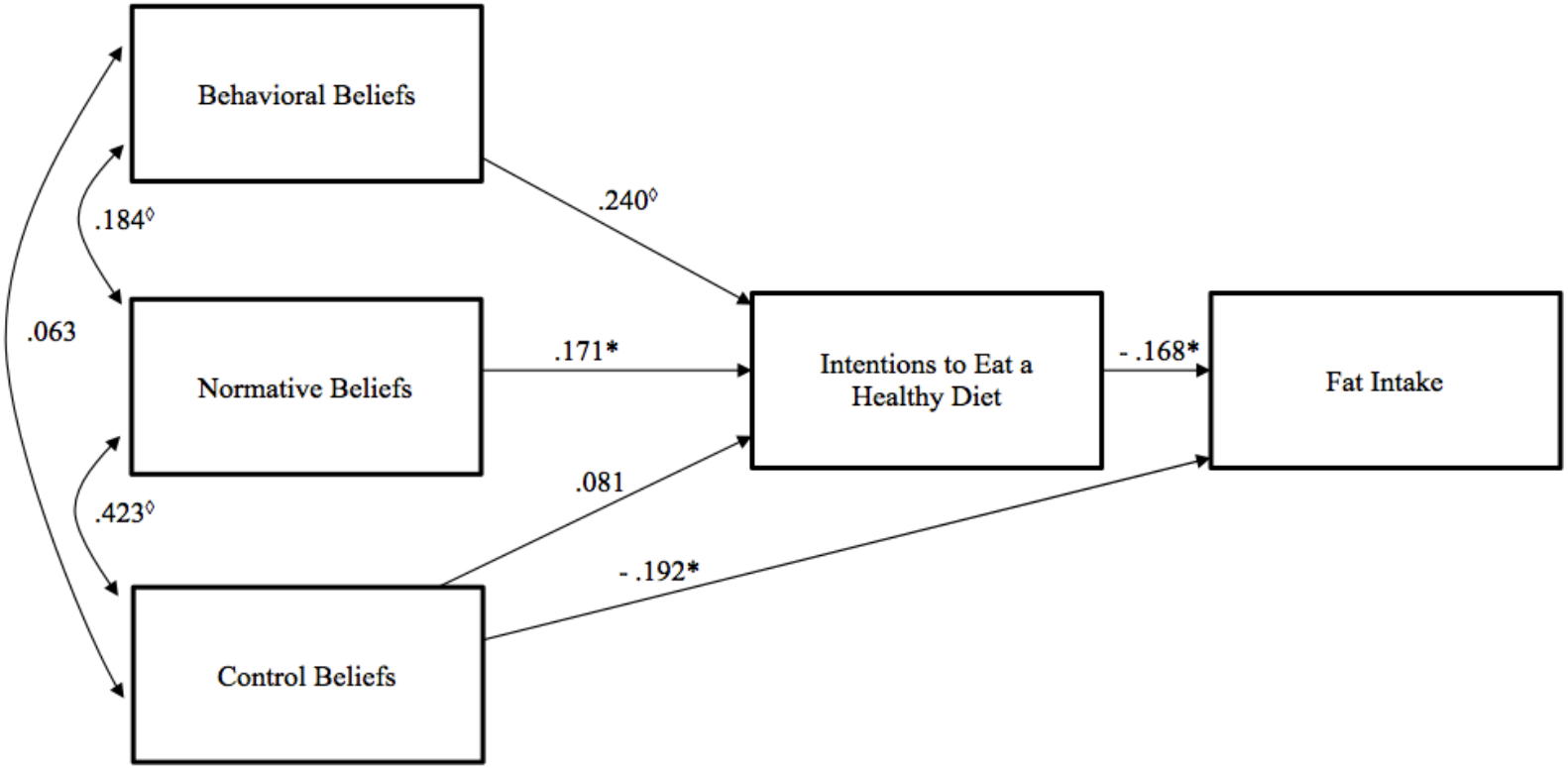

Fig 3. *Standardized path coefficients and covariances for Model 1.*
*$p < .05$ and $^{◊}p \leq .001$

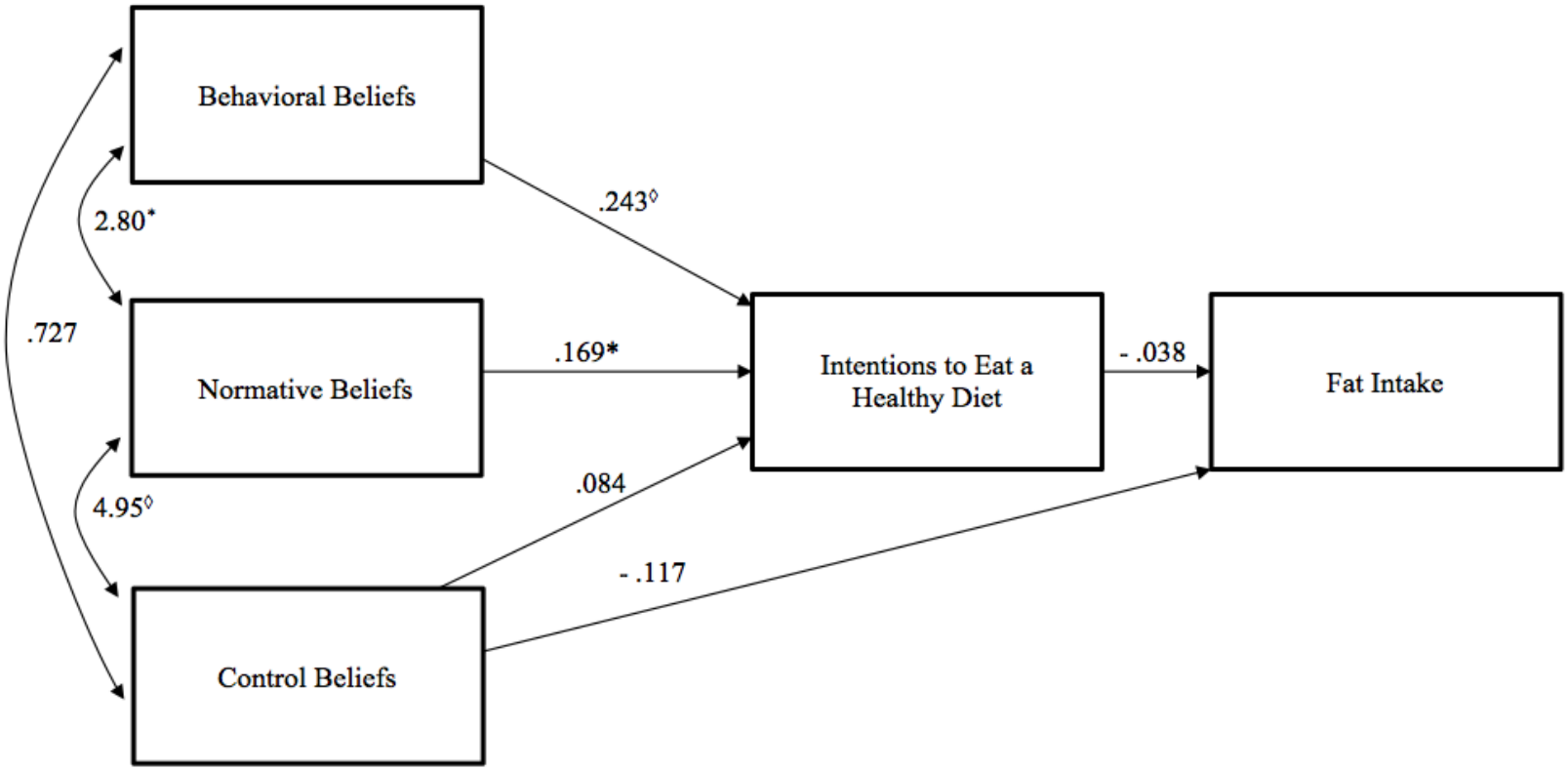

Fig 4. *Standardized path coefficients and covariances for Model 2, which controlled for age, gender, BMI, religiosity, and baseline fat intake.*
*$p < .05$ and $^{◊}p \leq .001$

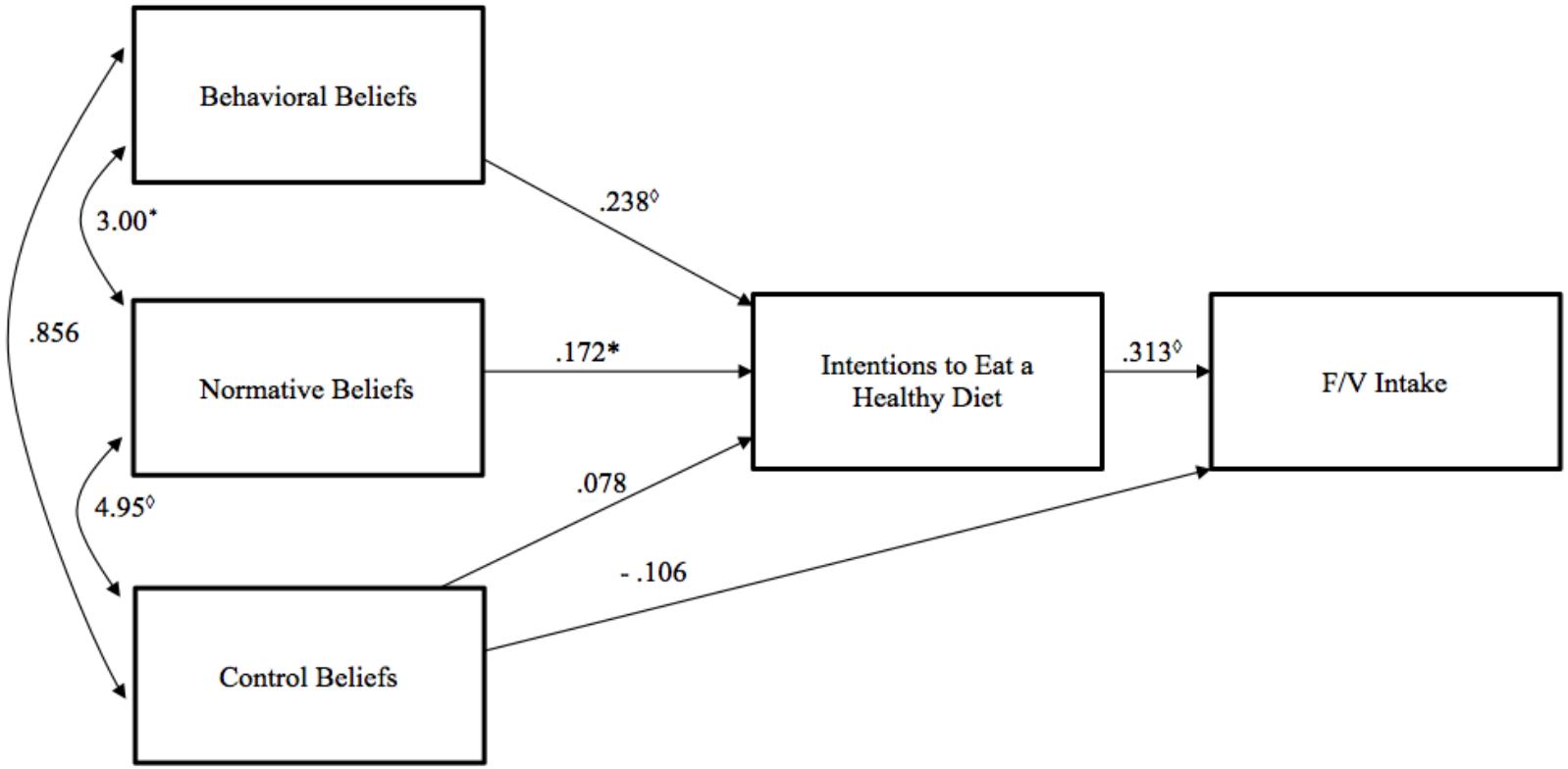

Fig 5. *Standardized path coefficients and covariances for Model 3.*
*$p < .05$ and $^{◊}p \leq .001$

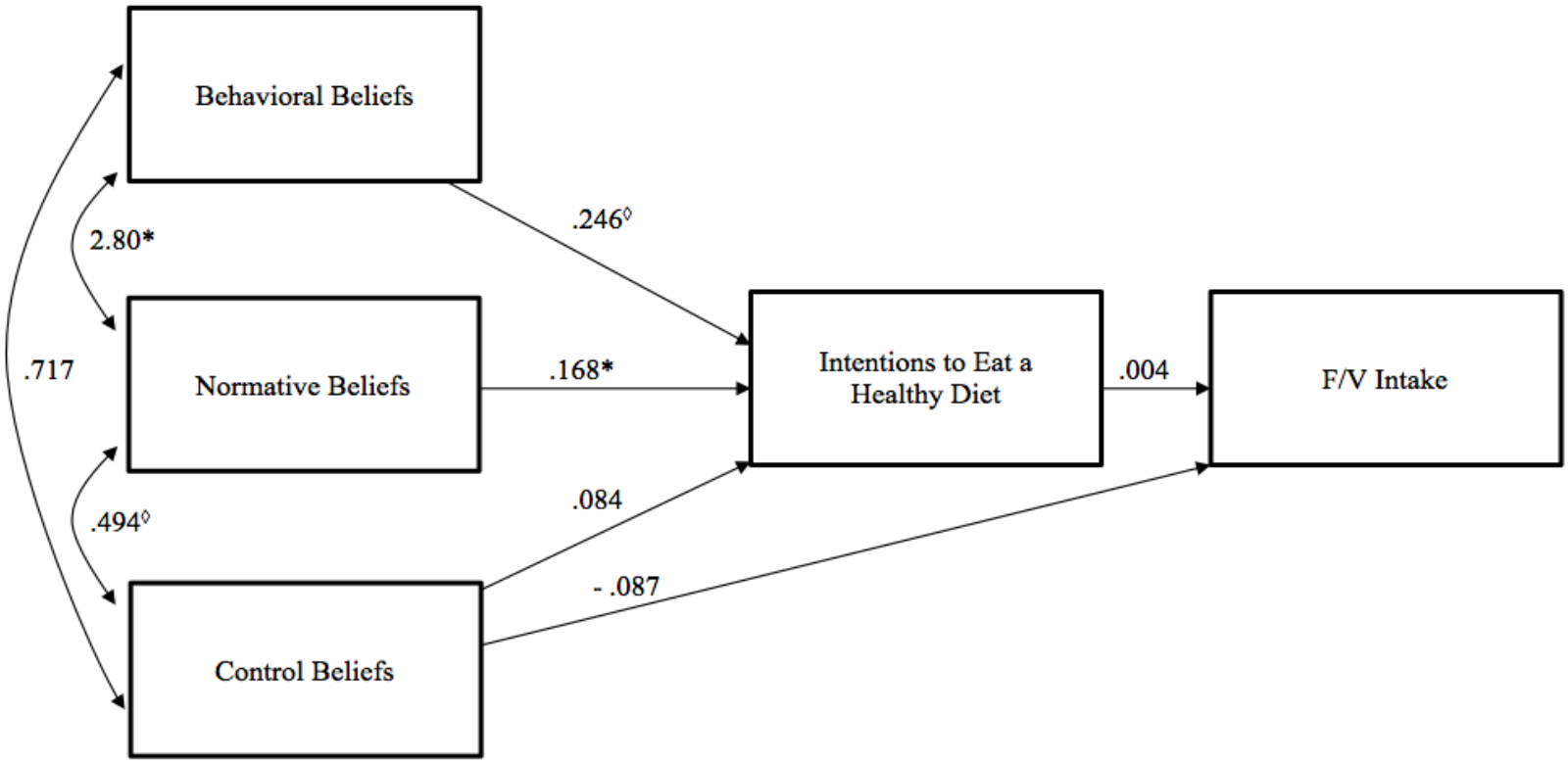

Fig 6. *Standardized path coefficients and covariances for Model 4, which controlled for age, gender, BMI, religiosity, and baseline F/V intake.*
*$p < .05$ and $^{◊}p \leq .001$

Intentions to eat healthy at baseline significantly positively predicted F/V intake at follow-up. After controlling for covariates, including baseline F/V intake (Model 4), behavioral and normative beliefs remained significant positive predictors of intentions to eat healthy. However, the relationship between intentions to eat healthy and F/V intake at follow-up was attenuated.

CHAPTER IV

DISCUSSION

This is among the first quantitative TPB studies to examine dietary behaviors, particularly fat and F/V intake among church-affiliated African Americans. Examining these influences in faith-based settings is particularly important for the African American community, given the potential of Black churches to address healthy dietary intake disparities. Additionally, it is crucial to understand the psychosocial influences of dietary behaviors, including intentions to eat healthy, due to the high rate of overweight and obese weight levels among African Americans. The majority of the sample was overweight/obese (average BMI = 33), which is consistent with previous estimates from the CDC (2013). Similar to national studies (Pew Research Center, 2009), participants also reported high levels of religiosity, with an average of 45.5 on a summed 53-point scale. The levels of BMI and religiosity reported in this church population study reinforce the need for church-based, religiously tailored interventions designed to promote healthy eating among African Americans (Campbell, Hudson, Resnicow, Blakeney, Paxton, & Baskin, 2007; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001).

Fat intake was moderate, and did not significantly decrease at follow-up. One of the most common sources of fat was snack food, which participants reported consuming once or twice per week. Participants also reported consumption of fast foods and fried foods (e.g., chicken, fish, potatoes) one to three times per month. Measures of intake of grams of fat/day and percentage kcal/fat were not used, so direct comparison to similar studies is limited. F/V intake was moderately high at baseline. Although there was a slight improvement at follow-

up, the difference was not significant. On average, participants reported consuming fruits and vegetables approximately 3 to 6 times per week. This is much less than the recommendations of 5 or more per day established by the Department of Health and Human Services (2010). Although it is not certain how many servings were consumed in each sitting, it is very likely that participants consumed fewer regular servings of F/V than previous studies with African Americans, which found 3-4 servings of fruits and vegetables per day (Allicock et al., 2010; Allicock et al., 2013; Campbell et al., 2004; Resnicow et al., 2001). Previous studies have emphasized disparities in diet between African Americans and other groups, particularly high fat intake and low F/V intake (Basiotis, Lino, & Anand, 1998; Ervin; 2011; Satia, Galanko, & Siega-Ritz, 2004; Satia, 2009).

All models were tested using a single level of analysis, similar to previous dietary studies conducted in the African American church (Allicock et al., 2010; Allicock et al., 2013; Campbell et al., 2004; Resnicow et al., 2001; Resnicow et al., 2004; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001). Fit statistics showed that TPB models evaluating fat and F/V intake had good model fit, compared to previous studies of the TPB with African Americans (O'Neal et al., 2012).

Behavioral beliefs consistently predicted intentions, even when covariates (i.e., age, sex, BMI, religiosity, and baseline dietary behavior) were controlled for in models 2 and 4. Thus, Hypothesis 1 was supported. This is consistent with previous TPB literature, particularly in applications of the TPB for healthy eating among African Americans (Blanchard et al., 2009; O'Neal et al., 2012). Behavioral beliefs toward healthy eating were somewhat high. The literature is replete with studies of African Americans who have expressed negative attitudes about healthy diets (Blanchard et al., 2009; Davis, Clark,

Carrese, Gary, & Cooper, 2005; Drayton-Brooks & White, 2004; James, 2004). Additionally, preparation of high-fat foods and large portion sizes have been attributed to the cultural cooking practices of African Americans (Barnes, Goodrick, Pavlik, Markesino, Laws, & Taylor, 2007; Davis, Clark, Carrese, Gary, & Cooper, 2005; Malpede et al., 2007). However, focus groups of African American men and women have suggested an awareness of the risks of a high-fat diet and a willingness of participants to make healthier changes to cultural dishes (Airhihenbuwa, Kumanyika, Agurs, Lowe, Saunders, & Morssink, 1996; James, 2004). Furthermore, participants in this study reported many positive perceptions of healthy eating, including healthy eating benefitting health without lowering quality of life. Participants also felt that eating a healthy diet would not be detrimental to their social lives.

Normative beliefs consistently predicted intentions to eat healthy across all four models, as in previous studies (Hypothesis 2; Blanchard et al., 2009; O'Neal et al., 2012). Participants reported that doctors were the primary source of encouragement to eat a more healthy diet. Although other TPB studies with African Americans found that church members and the pastor were key referents (Drayton-Brooks & White, 2004), it is unclear to what degree those individuals modeled a healthy diet for others in the congregation. Additionally, previous studies have demonstrated social pressure to eat poorly in church settings (Davis, Clark, Carrese, Gary, & Cooper, 2005). Thus, faith-based intervention strategies that include promotion of social acceptability of healthy eating and to encourage dietary change within social contexts (e.g., families, congregations) should be considered. Many churches have health ministries (Berkley-Patton et al., 2010; The National Black Church Initiative, 2012; The African American Lectionary, 2011) that may be able to support these efforts during church services, group ministries, and outreach ministry events.

Control beliefs were moderate but did not predict intentions to eat healthy, which did not support Hypothesis 3 and contrasts with the TPB (Armitage & Conner, 2001; Madden, Ellen, & Ajzen, 1992). Control beliefs were predictive of fat intake in Model 1, but this relationship was attenuated when covariates were controlled for in Model 2. Thus, Hypothesis 6 was not supported. Furthermore, control beliefs did not predict F/V intake, as predicted in Hypothesis 7. Although previous TPB studies have demonstrated a direct relationship between control beliefs and dietary behaviors (Ajzen, 1991; Armitage & Conner, 2001; Connor, Norman, & Bell, 2002; Louis, Chan, & Greenbaum, 1992; Madden, Ellen, & Ajzen, 1992), studies that have examined the TPB and F/V intake among African Americans have found no relationship (O'Neal et al., 2012). Participants endorsed sharing healthy meals with others (e.g., family, friends, church members) as a facilitator of control beliefs, but did not similarly endorse many church-based facilitators (e.g., healthy food policy at church, seeing their pastor or other members eat healthy at church events, regularly talking about healthy foods to others in church). There is a need to understand factors that contribute to control beliefs and to identify facilitators and barriers to healthy eating for African Americans in church-community settings. Previous studies have suggested that some barriers to healthy eating are church-based (e.g., social pressure, lack of dietary programs, tradition among church members; Drayton-Brooks & White, 2004, Kegler, Escoffery, Alcantara, Hinman, Addison, & Glanz, 2012). Furthermore, African Americans have additional community barriers to dietary control compared to other racial/ethnic groups, including density of fast foods in their environment, limited access to healthy foods in urban areas, prohibitive cost, and inconvenience of food preparation (Beaulac, Kristjansson, & Cummins, 2009; Casagrande, Whitt-Glover, Lancaster, Odoms-Young, & Gary, 2009; Drewnowski &

Darmon, 2005; Lovasi, Hutson, Guerra, & Neckerman, 2009; Pawlak & Colby, 2009). However, there is substantial evidence that Black churches and their health ministries (Berkley-Patton et al., 2010; The National Black Church Initiative, 2012; The African American Lectionary, 2011), are key settings with potential to address psychosocial and environmental barriers to control beliefs and promote healthy dietary behaviors among church-affiliated African Americans (Hart, Tinker, Bowen, Satia-Abouta, & McLerran, 2004; Holt, Haire-Joshu, Lukwago, Lewellyn, & Kreuter, 2005; Kegler, Escoffery, Alcantara, Hinman, Addison, & Glanz, 2012).

As seen in previous TPB studies focused on diet (Connor, Norman, & Bell, 2002; O'Neal et al., 2012) intentions to eat a healthy diet predicted fat intake (Model 1) and F/V intake (Model 3). However, these relationships were attenuated when controlling for covariates (Models 2 and 4), which were examined in previous studies of dietary intentions (Andrykowski, Beacham, Schmidt, & Harper, 2006; Brug, de Vet, de Nooijer, & Verplanken, 2006; Fila & Smith, 2006; Lytle et al., 2003; O'Neal et al., 2012). Hypothesis 4 and 5 were not supported. It may be that the stability in fat and F/V intake between baseline and follow-up mitigated the influence of intentions. Additionally, these findings may suggest that personal characteristics (i.e., age, gender, BMI, religiosity) have a substantial role in explaining intentions to engage in healthy dietary behaviors and should be considered when designing interventions in church-based settings.

There are some limitations to this study. Average inter-item correlations were somewhat high. This is an indicator that that there may have been some issues with redundancy, particularly with the TPB measures. It is likely that TPB measures will need to be culturally tailored to accurately capture TPB-related beliefs among faith-based African

American populations. Measures of fat and F/V intake relied on self-report and recall, which are subject to bias. Objective measures of percentage kcal/fat or intake of g/fat per day were not available, which limited direct comparison to other studies. The fat intake measure also asked about participants' consumption over the past 12 months at both baseline and 8-month follow-up, which may have increased stability between the time points due to overlap in assessment. Additionally, previous studies have shown that brief (e.g., one- or two-item) measures have underestimated true F/V intake (Peterson et al., 2008), or had weak, albeit significant, relationships with objective F/V measures (Fuemmeler et al., 2006). Finally, the measure of control beliefs used did not allow for examination of access to healthy dietary resources or level of exposure to dietary facilitators (e.g., pastor eating healthy). However, this study provides some support for the use of the TPB in developing faith-based dietary interventions targeted at the African American community. In particular, behavioral beliefs and normative beliefs are important predictors of early intentions to eat a healthy diet. Given the high level of religiosity of African Americans and the church's interconnection to health, dietary interventions should be implemented in church settings with consideration to promoting spiritually tailored behavioral beliefs (e.g., treating one's body like a temple of God by eating healthy) and normative beliefs (e.g., support from other church members, encouragement from pastor) among church members. It is likely that this may improve feasibility and acceptability, and possibly efficacy, of church-based dietary interventions, as well as accounting for the important diet-related social aspects of religious settings. In addition to intervention development, future research should continue to examine psychosocial dietary influences and established health theories in relation to nutritional disparities affecting African Americans, who are at a high risk for diabetes and heart disease.

APPENDIX A

This section includes items used to measure demographics, fat and F/V intake, behavioral beliefs, normative beliefs, and control beliefs.

Demographics (BL)

1. How old are you?

Enter age _____

2. What was your gender at birth?

☐ Male

☐ Female

3. Do you identify your ethnicity as being of Hispanic or Latino origin?

☐ No, not of Hispanic or Latino origin

☐ Yes, Mexican, Puerto Rican, Cuban, or another Hispanic, Latino, or Spanish origin *(For example, Argentinian, Columbian, Dominican, Puerto Rican, Nicaraguan, Salvadorian, Spaniard, etc.)*

☐ Unknown

☐ Refuse to answer

4. Do you identify your race as: *(Check One)*

☐ Black or African American

☐ White or Caucasian

☐ American Indian or Alaska Native

☐ Asian

☐ Native Hawaiian or other Pacific Islander

☐ More than one race

☐ Other race

☐ Unknown

☐ Refuse to answer

5. What is your highest level of education completed?

☐ 11th grade or less

☐ High school graduate or GED

☐ Post high school technical training

☐ Some college (but no degree)

☐ Associate's degree (AA) or technical school certificate

☐ Bachelor's degree (BA, BS)

☐ Some graduate school or graduate degree

6. What is your current marital status?

☐ Single, never married

☐ Living with partner, but not married

☐ Married

☐ Separated

☐ Divorced

☐ Widowed

7. a. Do you have any children?

☐ Yes

☐ No

b. If yes, how many of your children are currently living in your household?

_____

8. What is the denomination of your church? *(Check One)*

☐ Baptist
☐ Church of God in Christ
☐ Methodist
☐ Lutheran
☐ Pentecostal
☐ Catholic
☐ African Methodist Episcopal
☐ Jehovah's Witness
☐ Muslim
☐ Seventh Day Adventist
☐ Non-Denominational
☐ Other (please list): _____

9. a. Are you a member of this church?

☐ Yes
☐ No

b. If yes, how long have you been a member or attended services at this church?

# of Years _____ and/or
# of Months_____

10. If you are not a member, how are you connected to this church? *(Check all that apply)*

☐ Guest
☐ Person who received health screening or participated in a health fair
☐ Person who received food, clothing, or utility assistance (like for electric or gas bill) services
☐ Person who received support services (like a support group, recovery program)
☐ Parent of a child in church daycare, summer school, or after-school program
☐ Other (please list): _____

11. How do you support yourself?

☐ Working part-time
☐ Working full-time
☐ Self-employed in your own business
☐ Social Security/Private disability insurance
☐ Unemployment compensation
☐ No income
☐ Other

12. Do you have health insurance or coverage that helps pay for part of your medical bills?

☐ Yes, Medicare
☐ Yes, Medicaid
☐ Yes, Private insurance (e.g., Blue Cross/Blue Shield, Kaiser, United Healthcare)
☐ Yes, Some other insurance
☐ No, I do not have health insurance

13. What is your current housing status?

☐ Own a home
☐ Renting
☐ Staying with family or friends
☐ Living in temporary/emergency housing
☐ Homeless
☐ Other

14. For the past 12 months, please estimate the average monthly income of your household:

☐ $0 - $1,000
☐ $1,001 - $2,000
☐ $2,001 - $3,000
☐ More than $3,000
☐ Don't know
☐ Refuse to answer

Fat Intake

Think about your eating habits <u>over the past 12 months</u>. About how often did you eat or drink each of the following foods? Remember breakfast, lunch, dinner, snacks, and eating out. *Blacken in one bubble for each food.*

TYPE OF FOOD	Never	Less than Once a Month	1-3 Times a Month	1-2 Times a Week	3-4 Times a Week	5-6 Times a Week	1 Times a Day	2 or More Times a Day
1. Cold cereal	O	O	O	O	O	O	O	O
2. Skim milk-on cereal or to drink	O	O	O	O	O	O	O	O
3. Eggs-fried or scrambled in margarine, butter, or oil	O	O	O	O	O	O	O	O
4. Sausage or bacon – regular-fat	O	O	O	O	O	O	O	O
5. Margarine or butter on bread, rolls, or pancakes	O	O	O	O	O	O	O	O
6. Orange juice or grapefruit juice	O	O	O	O	O	O	O	O
7. Fruit (not juices)	O	O	O	O	O	O	O	O
8. Fried chicken and/or fried fish	O	O	O	O	O	O	O	O

9. Beef or pork hotdogs - regular-fat	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
10. Cheese, cheese spread, Velveeta - regular-fat	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
11. French fries, home fries, or hash brown potatoes	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
12. Margarine or butter on vegetables, including potatoes	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
13. Mayonnaise and Miracle Whip – regular-fat	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
14. Salad dressings - regular-fat	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
15. Snack foods (potato chips, crackers, cookies, and cakes/pies)	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
16. Margarine, butter, or oil on rice or pasta	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**

17. Fast foods (Popeye's, Churches McDonalds, Burger King, Pizza Hut, KFC, Taco Bell)	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**
18. How often do you drink regular soda pop, such as Coca-Cola, Pepsi, Dr. Pepper, Sprite, and Orange Crush? **This does not include diet soda pop.**	**O**	**O**	**O**	**O**	**O**	**O**	**O**	**O**

F/V Intake

1. Over the past 7 days, how many times per day or week did you eat fruit, not including vegetables?

Never	1-2 Times Per Week	3-4 Times Per Week	5-6 Times Per Week	1 Time Per Day	2 or More Times Per Day
O	O	O	O	O	O

2. Over the past 7 days, how many times per day or week did you eat vegetables, not including fruit?

Never	1-2 Times Per Week	3-4 Times Per Week	5-6 Times Per Week	1 Time Per Day	2 or More Times Per Day
O	O	O	O	O	O

Intentions

To what degree do you intend to eat healthy over the next 8 months?

Respond on a scale of 1 – 7, with 1 = "Not true at all" to 4 = "Somewhat true" to 7 = "Very true."

	1	2	3	4	5	6	7
1. I intend to eat as healthy as possible *(low-fat, low salt, lots of vegetables)*.	O	O	O	O	O	O	O

Behavioral beliefs

What do you think will be the consequences if you change your food intake to low-fat or low-salt food? *(Check a response for each statement below.)*

If I eat healthy foods *(low-fat, low salt, lots of vegetables):*	**Not at all true**	**Barely true**	**Mostly true**	**Exactly true**
1. I'll feel physically more attractive.	**O**	**O**	**O**	**O**
2. I won't have weight problems (anymore).	**O**	**O**	**O**	**O**
3. Food won't taste as good.	**O**	**O**	**O**	**O**
4. That will impair my social life (at parties, with friends).	**O**	**O**	**O**	**O**
5. That will be good for my blood pressure.	**O**	**O**	**O**	**O**
6. I'll feel more comfortable mentally.	**O**	**O**	**O**	**O**
7. I'll have to make an effort of buying the right products.	**O**	**O**	**O**	**O**
8. That will be good for my cholesterol level.	**O**	**O**	**O**	**O**
9. I'll have to spend more time on preparing meals.	**O**	**O**	**O**	**O**
10. That will mean a loss of life quality for me.	**O**	**O**	**O**	**O**
11. That will be a burden for my financial situation.	**O**	**O**	**O**	**O**
12. Other people will appreciate my willpower.	**O**	**O**	**O**	**O**
13. I'll feel like I am treating my body like a temple of God.	**O**	**O**	**O**	**O**

Normative Beliefs

The following questions relate to who encourages you to eat a healthy diet. Please respond to each question regarding to what degree each group of people encourages you to eat a more healthy diet.

	None	A little	Some	A lot
1. How much encouragement do you get from your family to eat a more healthy diet?	**O**	**O**	**O**	**O**
2. How much encouragement do you get from your friends or work colleagues to eat a more healthy diet?	**O**	**O**	**O**	**O**
3. How much encouragement do you get from your pastor to eat a more healthy diet?	**O**	**O**	**O**	**O**
4. How much encouragement do you get from your church members to eat a more healthy diet?	**O**	**O**	**O**	**O**
5. How much encouragement do you get from your doctor to eat a more healthy diet?	**O**	**O**	**O**	**O**

Control beliefs

What has made it easier for you to eat healthy foods? *(Check "Yes" or "No" for each statement below.)*

	Yes	***No***
1. I shared healthy meals with family, friends, or church members.	**O**	**O**
2. I saw my pastor eating healthy.	**O**	**O**
3. My church has a healthy food policy that includes serving healthy meals and snacks at church events.	**O**	**O**
4. I saw other people eating healthy foods at church events.	**O**	**O**
5. My church regularly discussed the importance of eating healthy foods.	**O**	**O**
6. The pastor or other church leaders asked church and community members to eat healthy.	**O**	**O**
7. I attended workshops or weekly sessions at my church that shared information on how to eat healthy.	**O**	**O**
8. I regularly talk to others in my church about eating healthy foods.	**O**	**O**
9. I attended healthy cooking classes at my church	**O**	**O**
10. I wanted to eat healthy to be a good example for my family.	**O**	**O**
11. I had a health "buddy" or someone who I could talk to almost daily about cooking and eating healthy.	**O**	**O**
12. I used healthy recipes and other print materials on healthy foods provided by my church.	**O**	**O**

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VITA

Alexandria Gabrielle Booker was born October 5, 1989, in San Diego, California. She attended Riverside Community College, where she earned a Dean's List position, and Grossmont Community College, where she earned Vice President's List and became a member of Phi Theta Kappa National Honor Society. After transferring to San Diego State University, Ms. Booker earned Dean's List honors and became a member of Psi Chi International Honor Society. She became a member of the Ronald E. McNair Baccalaureate Achievement Program as well as the Minority Biomedical Research Support program. Ms. Booker graduated magna cum laude in 2013 and was named Outstanding Student in Psychology.

After working for three years at the Moores UCSD Cancer Center in La Jolla, California, Ms. Booker began a doctoral program in Clinical Psychology at the University of Missouri-Kansas City. Her research and clinical interests focus on chronic health issues and health disparities involving racial/ethnic minorities. Ms. Booker is particularly interested in the development, implementation, and dissemination of health promotion interventions for racial/ethnic minorities who are at high risk for chronic illnesses, such as heart disease and diabetes. Ms. Booker has received the Ms. Booker is a current member of the American Public Health Association, Society of Behavioral Medicine, and American Psychological Association, and previous member of the Western Psychological Association and American Association for Cancer Education.