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Purpose: The study applies the theory of planned behavior to explain the fruit and vegetable eating behaviors, a broad construct consisting of preparing, self-monitoring, and consuming fruits and vegetables, of older African Americans. Design and Methods: Structural equation modeling was used to examine the applicability of the theory of planned behavior with data from 211 older African American women and men (73% women, 26% men; median age range of 57–63 years) participating in a larger intervention study. Results: Attitudes about eating fruit and vegetables, subjective social norms, and perceived behavioral control were related to older African Americans’ intentions to consume fruits and vegetables. Social norms and behavioral intentions were associated with fruit and vegetable eating behaviors. Perceived control did not moderate the influence of behavioral intentions on actual behavior. Implications: Results indicated that the theory of planned behavior can be used to explain variation in older African Americans’ eating behavior. This study also emphasizes the value of considering broader behavioral domains when employing the theory of planned behavior rather than focusing on specific behaviors. Furthermore, social service programs aimed at reducing the incidence of diseases commonly associated with poor eating behaviors among older African Americans must consider promoting not only fruit and vegetable consumption but also related behaviors including preparing and self-monitoring by eliminating structural, cognitive, and normative constraints.

Key Words: Attitudes, Nutrition, Subjective norms, Perceived behavioral control

Increasingly, research indicates that eating behaviors are related to various preventable health problems including obesity, cardiovascular disease, and diabetes (Flegal, Carroll, Kit, & Ogden, 2012; Roger et al., 2011). In particular, compared with other racial/ethnic groups, the eating behaviors of African Americans, including lower consumption of fruits and vegetables, are associated with these health problems (Fulgoni et al., 2007; Rooks & Whitfield, 2004). However, intra-individual
processes leading to the eating behaviors of African Americans are less understood.

The theory of planned behavior (Ajzen, 1985, 1991) has been successfully used to explain variability in a variety of health behaviors including exercise, nutrition, and sexual activity (e.g., Albarracín, Johnson, Fishbein, &Muellerleile, 2001; Blanchard et al., 2003; Conner, Norman, & Bell, 2002). In short, the theory of planned behavior proposes that behavioral intentions, determined by one's attitudes, perceived social norms, and perceived control, predict behavior. However, the few studies that have examined minority and aging populations suggest that variation exists in the efficacy of this model depending on the specific behavior studied (Blanchard, Fisher, et al., 2009; Walker, Courneya, & Deng, 2006). This study examines the efficacy of the planned behavior model for explaining eating behavior, as broadly captured by multiple indicators, for an older African American sample (N = 211).

**Theory of Planned Behavior**

The theory of planned behavior proposes that behavioral intentions predict behavior. Behavioral intentions can be explained by the individual's (a) attitudes, (b) perceived social norms, and (c) perceived behavioral control about the behavior of interest (Fishbein & Ajzen, 2010) (see Figure 1). An attitude is defined as an individual’s disposition or tendency to respond with some degree of favorableness, or unfavorableness, to a psychological object, in this case fruits and vegetables (Fishbein & Ajzen, 2010). Similarly, an individual's perceived norms are based on the beliefs they hold about what is acceptable or permissible behavior within their group or society (Fishbein & Ajzen, 2010). Research has also shown that one's sense of control over their behavior (also referred to as self-efficacy and, henceforth, perceived behavioral control) plays an important role in behavioral intentions and behavior performance. In addition, as shown in Figure 1, perceived behavioral control may moderate the influence of behavioral intention on behavior performance such that intentions lead to behavior performance only when the individual perceives that they have a high level of control over the behavior (Fiske & Taylor, 1991; Rodin, 1986; Thompson & Spacapan, 1991).

**Applying the Theory of Planned Behavior to African Americans**

Based on existing research, there is reason to believe the associations between planned behavior constructs may vary depending on race/ethnicity. In studies comparing two or more racial/ethnic groups on two different health behaviors, subjective norms influenced behavioral intentions of African Americans, but not other groups (Blanchard, Kupperman, et al., 2009; Hanson, 1997). Ashing-Giwa (1999) has suggested the centrality of subjective norms in explaining African Americans’ behaviors may be due to the salience of social connectedness within the African American culture. Drawing from studies of other health behaviors, findings also suggest that perceived behavioral control may be a particularly strong determinant of the health behaviors of African Americans. Blanchard and coworkers (2008) found that intentions influenced the physical activity of African Americans until accounting for their perceptions of control. When including both constructs in the model, only perceived control explained physical activity.

**Applying the Theory of Planned Behavior to Older Adults**

Although few studies have examined differences in the validity of the theory of planned behavior based on age, one study indicates that subjective norms are more influential in explaining the physical activity intentions of older individuals than younger individuals (Nigg, Lippke, & Maddock, 2009). Similar results may apply to eating behaviors as well, and numerous mechanisms may explain this difference. Perhaps younger adults are less motivated by subjective norms because other sources, such as enjoyment, are a stronger source of inspiration (Salmon, Owen, Crawford, Bauman, & Sallis, 2003). Older individuals are also more likely to hold public roles within society, which may increase their sensitivity to societal norms (Goerres, 2007).

**Eating Behavior as a Broader Construct**

We contend that eating behaviors closely associated with actual dietary consumption, such as planning and preparing meals in advance and self-monitoring dietary intake, may also be compelling indicators of eating behavior (Boutelle, Birnbaum, Lytle, Murray, & Story, 2003; Helsel, Jakicic, & Otto, 2007). Thus, we argue that a broadly defined construct incorporating these closely related behaviors may be a more valid measure of eating behavior than merely consumption.
Behaviors related to dietary intake may be particularly relevant for African Americans as they are at increased risk for structural constraints, which affect food access and availability and, in turn, food preparation (Marmot, 1989; Popkin, Siega-Riz, & Haines, 1996). For instance, disadvantaged neighborhoods with a high concentration of racial/ethnic minorities often lack nearby options for healthy food compared with other communities (Morland, Wing, Diez Roux, & Poole, 2002; Williams, Yu, Jackson, & Anderson, 1997; Zenk et al., 2005). Thus, researchers have acknowledged that although eating behavior is often conceptualized as a single behavior consisting solely of food consumption, it is actually a multifaceted construct consisting of numerous related behaviors, such as buying, preparing, and monitoring food selections, in addition to consumption (Bogers, Brug, Assema, & Dagnelie, 2004). Based on this research, we examine fruit and vegetable preparation, self-monitoring, and consumption as three indicators of a broader concept termed “eating behaviors.” The primary objective of this study is to examine the ability of the theory of planned behavior to explain a broader construct of fruit and vegetable eating behaviors, as reflected by fruit and vegetable consumption and food preparation and self-monitoring, using a sample of older African Americans.

**Previous Research on Eating Behavior Using the Theory of Planned Behavior**

Studies examining fruit and vegetable consumption have primarily supported the theory of planned behavior. For instance, two studies using vastly different samples (health clinic attendees and older adults with a mean age of 75) and examining different dietary behaviors (fruit and vegetable and dairy intake) found attitudes and perceived behavioral control to be associated with consumption intentions (Conner et al., 2002; Kim, Reicks, & Sjoberg, 2003). Thus, individuals with more positive attitudes toward consumption and those who felt that they had more control over their consumption behavior were more likely to have favorable intentions toward consuming items within the food group examined. However, the findings of these two studies diverge when examining the variables associated with consumption. Kim and colleagues (2003) found both perceived behavioral control and intentions to influence consumption, whereas Conner and colleagues (2002) found intentions to be the only statistically significant predictor of subsequent consumption.

Another study concluded perceived control explained the fruit and vegetable behavior of Dutch women (Bogers et al., 2004). This study also found that attitudes, subjective norms, and perceived control were linked to intentions, and control was the most influential variable for explaining both behavioral intentions and dietary intake. Thus, as shown in Figure 1, we expect that attitudes, subjective norms, and perceived behavioral control will be positively associated with older African Americans’ intentions to consume fruit and vegetables. Furthermore, we expect that these behavioral intentions and perceived behavioral control will explain variation in their fruit and vegetable behaviors including preparation, self-monitoring, and consumption.

Although the theory of planned behavior does not hypothesize that attitudes and norms are directly associated with behavior, at least one study examining healthy eating has tested these influences and found evidence of direct associations (Fila & Smith, 2006). Thus, although the theory of planned behavior only addresses direct
associations between perceived behavioral control and intentions with behavior, we expect that attitudes and subjective norms may also directly influence fruit and vegetable behavior after accounting for their influence of behavioral intention.

The theory of planned behavior includes an interaction hypothesis suggesting that behavioral intention determines behavior performance only to the extent that the individual has control over the behavior (Ajzen, 1991), but very little research using the theory of planned behavior has empirically examined this possibility. In fact, we were unable to locate any studies addressing fruit and vegetable consumption that have tested this association. However, as shown in Figure 1, following the theory of planned behavior, we expect that perceived behavioral control will moderate the influence of intentions on eating behavior.

### Social Support and Demographic Variables

The theory of planned behavior includes key dimensions that likely explain variations in older African Americans’ eating behaviors; however, we also acknowledge that other factors likely influence these behaviors as well. For instance, demographic variables, such as age, gender, education, and general health status, are also important variables to consider. In addition to demographic variables, existing research has shown social support to be a key determinant of African Americans’ initiation and maintenance of health behaviors (Ralston, Cohen, Wickrama, & Kwag, 2011; Thrasher, Campbell, & Oates, 2004) and adults’ fruit and vegetable intake (Shaikh, Yaroch, Nebeling, Yeh, & Resnicow, 2008). Social support may contribute to the consumption of a healthy diet by increasing motivation and providing encouragement and the necessary instrumental support to purchase, prepare, cook, and eat healthy foods. Thus, we control for social support and other demographic variables including age, gender, education, and general health status.

### Methods

#### Sample

Baseline data from individuals at six churches participating in a National Institutes of Health–funded project to reduce cardiovascular risk in community-dwelling, older African Americans (Ralston, Illich-Ernst, Wickrama, & Harris, 2008) in North Florida were used for the current study. Respondents were 211 older African American women and men (73% women, 26% men) with a median age range of 57–63 years (n = 53; 25.4%). Respondents lived in counties in which both the poverty rates and the percentage of African Americans are higher than the state averages. Having a “high school diploma” (31.6%) and “some college” (30.6%) were the most common educational levels. On average, respondents were married (45.5%) with two children (29.8%) and reported fair to good health (m = 3.57 on a five-point scale). The percentage of missing responses per variable ranged from 0 to 3.3, with a mean missing percentage of 0.58. Full information maximum likelihood, which provides more efficient parameter estimates compared with other procedures for handling missing data, was used to estimate missing data (Enders, 2001).

### Measures

**Outcome Variable: Fruit and Vegetable Behavior.**—Three observed indicators assessed behaviors related to fruits and vegetables using a latent construct. These indicators captured preparing fruits and vegetables, self-monitoring fruit and vegetable consumption, and consuming fruits and vegetables (factor loadings of .62, .54, and .47, respectively).

**Preparing fruits and vegetables.** A sum score was created using two highly correlated items (r = .61) assessing older African Americans’ preparation of fruits and vegetables from the Processes of Change instrument (Greene et al., 2008). These items included, “I peeled fruits and vegetables ahead of time so I could eat them whenever I wanted to” and “I cut up vegetables ahead of time to add to meals during the week.” Responses ranged from 1 (never) to 5 (repeatedly). Higher values indicate engagement in more preparation of fruits and vegetables for consumption.

**Self-monitoring fruit and vegetable consumption.** A single item from the Processes of Change instrument (Greene et al., 2008) assessed respondents’ self-monitoring behavior for fruits and vegetables. Respondents reported their agreement on a five-point scale ranging from 1 (never) to 5 (repeatedly) to the following statement: “I kept track of the number of fruits and vegetables I ate each day.”
Higher values indicate greater self-monitoring behavior.

**Fruit and vegetable consumption.** Two items were summed to assess older African American respondents’ fruit and vegetable consumption behaviors. Respondents reported how often in the past month they snacked on vegetables or fruits instead of going hungry from 1 (never) to 5 (repeatedly). This item was drawn from the Processes of Change instrument (Greene et al., 2008). Respondents also reported how many servings of fruits and vegetables they usually eat each day ranging from 1 (zero or one servings per day on average) to 5 (five or more servings per day on average). These two items were correlated \((r = .30)\). Higher sum scores reflect more fruit and vegetable consumption.

**Specific Fruit and Vegetable Attitudes.**—Using five items from the Processes of Change instrument (Greene et al., 2008), respondents indicated how frequently they held specific attitudes pertaining to fruit and vegetable consumption. Sample items include the following: “Health care costs could be reduced if more seniors ate enough fruits and vegetables” and “I thought that seniors would benefit from eating more vegetables and fruit.” Response categories ranged from 1 (never) to 5 (repeatedly). Sum scores were computed with higher scores indicating favorable attitudes towards the importance of consuming fruits and vegetables. As a scale, these items demonstrated good internal consistency \((\alpha = .76)\).

**Subjective Norms Pertaining to Fruits and Vegetables.**—Five items from the Processes of Change instrument (Greene et al., 2008) assessed respondents’ perceptions of others’ expectations and likely response regarding fruit and vegetable consumption. Sample items include “I thought other people would be pleased if I ate more vegetables and fruits” and “I expected other people to praise me when I ate vegetables and fruits.” Item responses ranged from 1 (never) to 5 (repeatedly), with higher values indicating stronger social norms to consume fruits and vegetables. A sum score was computed. Internal consistency was high \((\alpha = .76)\).

**Perceived Behavioral Control Regarding Fruits and Vegetables.**—In this study, perceived control of fruit and vegetable behavior was conceptualized as respondents’ confidence in their ability to eat fruits and vegetables in challenging situations using five items from a brief measure of decision making for fruit and vegetable consumption (Rossi et al., 2001). For instance, respondents reported their confidence in their ability to eat fruits and vegetables when “it’s hard to get to the store to buy fruits and vegetables” and “you have had a hard day and are not feeling good about yourself.” Item response categories ranged from 1 (not at all confident) to 5 (completely confident), and higher scores reflect more confidence. The scale exhibited good internal consistency \((\alpha = .78)\).

**Fruit and Vegetable Intentions.**—Five items from the Processes of Change instrument (Greene et al., 2008) assessed the frequency of respondents’ intentions to eat and prepare fruits and vegetables in the past month ranging from 1 (never) to 5 (repeatedly). Sample items include the following: “I planned my meals in advance so I would be able to eat more vegetables and fruits” and “I made a promise to myself to eat more vegetables and fruits.” Using these five items, a sum score was computed with higher values indicating more intentions to eat and prepare fruits and vegetables. These items demonstrated good internal consistency \((\alpha = .75)\).

**Social Support.**—Fruit and vegetable social support in the past month was assessed using three items from the Processes of Change instrument (Greene et al., 2008) on a five-point scale ranging from 1 (never) to 5 (repeatedly). Items included the following: “I tried to eat with people who are also eating more fruit and vegetables,” “I had someone to talk to about eating more vegetables and fruit,” and “I associated with other seniors who like eating vegetables and fruits.” Sum scores were computed with higher values indicating more domain-specific social support. The scale had good internal consistency \((\alpha = .75)\).

**Demographic Control Variables.**—Age, gender, education, and general health status were also included as control variables that may account for variation in older African Americans’ fruit and vegetable behaviors. Age was assessed using eight categories from “43–49” to “more than 91 years.” Gender was assessed using a dichotomous variable with 1 indicating women and 2 indicating men. Education was indicated on a six-point scale.
ranging from 1 (some high school) to 6 (PhD, MD, or Law degree). Respondents reported their overall health status on a five-point scale from 1 (poor health) to 5 (excellent health).

**Analyses**

Structural equation modeling (SEM) with Amos 17.0 was used to test the hypothesized model. The interactive effect of perceived behavioral control and behavioral intentions on fruit and vegetable behavior was examined using a centered product term to determine whether the association between behavioral intentions and fruit and vegetable behaviors differed depending on older African Americans’ perceived behavioral control. Goodness of fit was assessed using the chi-square statistic, comparative fit index (CFI), and root mean square error of approximation (RMSEA).

**Results**

Descriptive statistics and bivariate zero-order correlations among all study variables are shown in Table 1. On average, in the last month, respondents’ positive attitudes toward fruit and vegetable consumption occurred between “occasionally” and “often” (M = 17.07, SD = 4.10). Subjective fruit and vegetable norms were less frequent with their average falling between “seldom” and “occasional” occurrences (M = 12.87, SD = 4.38). Overall, older African Americans within the sample were “confident” about their ability to control their fruit and vegetable intake (M = 20.47, SD = 5.71) and reported “occasional” fruit and vegetable social support (M = 8.39, SD = 3.04). On average, respondents “occasionally” held intentions to consume fruits and vegetables in the last month (M = 16.64, SD = 3.93). Preparation of fruits and vegetables in advance and self-monitoring behaviors were generally “seldom” occurrences in the past month (M = 4.48, SD = 2.05 and M = 2.04, SD = 1.12, respectively), whereas fruit and vegetable consumption was, on average, described as “occasional” (M = 5.59, SD = 1.70).

Overall, the bivariate correlations were in the expected direction. Excluding associations involving the demographic control variables, all constructs were significantly correlated with each other in the anticipated direction with the exception of perceived fruit and vegetable behavioral control, which was not associated with attitudes, subjective norms, or two of the behavior variables.

<table>
<thead>
<tr>
<th>Study variables</th>
<th>F/V attitudes</th>
<th>F/V subjective norms</th>
<th>F/V perceived behavioral control</th>
<th>F/V social support</th>
<th>F/V intentions</th>
<th>F/V self-monitoring</th>
<th>F/V consumption</th>
<th>Age</th>
<th>Men</th>
<th>Education</th>
<th>Health status</th>
<th>Mean</th>
<th>Standard deviation</th>
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</thead>
<tbody>
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<td>-0.12</td>
<td>-0.11</td>
<td>0.47**</td>
<td>0.43</td>
<td>0.25</td>
<td>0.05</td>
<td>-0.12</td>
<td>-0.14*</td>
<td>0.07</td>
<td>17.05</td>
<td>4.10</td>
</tr>
<tr>
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<td>-0.11</td>
<td>0.47**</td>
<td>0.43</td>
<td>0.25</td>
<td>0.05</td>
<td>-0.12</td>
<td>-0.14*</td>
<td>0.07</td>
<td>17.05</td>
<td>4.10</td>
</tr>
<tr>
<td>3. F/V perceived behavioral control</td>
<td>-0.12</td>
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<td>1.00</td>
<td>-0.11</td>
<td>0.47**</td>
<td>0.43</td>
<td>0.25</td>
<td>0.05</td>
<td>-0.12</td>
<td>-0.14*</td>
<td>0.07</td>
<td>17.05</td>
<td>4.10</td>
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<tr>
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<td>-0.11</td>
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<td>0.39**</td>
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<td>0.47**</td>
<td>0.47**</td>
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<td>0.05</td>
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<td>1.00</td>
<td>17.05</td>
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<td>12. Mean</td>
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</table>

*p < .05, **p < .01.
(preparation and self-monitoring). Statistically significant correlations indicated fairly strong associations ($r$ ranging from .15 to .65). Regarding the demographic control variables, age was associated with more perceived fruit and vegetable norms, social support, consumption intentions, and fruit and vegetable preparation behaviors ($r$ ranging from .16 to .21). On average, more educated respondents were younger and reported less fruit and vegetable subjective norms ($r = -.14$ and $-.28$, respectively). Surprisingly, age was positively associated with subjective general health status ($r = .14$).

SEM was used to examine the role of domain-specific attitudes, subjective social norms, perceived behavioral control, and behavioral intentions in explaining older African Americans’ fruit and vegetable behaviors (including preparation, self-monitoring, and eating behaviors) after controlling for age, gender, education, and general health status. The moderating role of perceived behavioral control on the association between intentions and actual behavior and the direct influence of social support was also assessed. Within the model, fruit and vegetable attitudes were positively associated with subjective norms such that those with more positive attitudes toward the benefits of fruit and vegetable consumption also reported greater fruit and vegetable societal norms ($r = .65$, $p < .001$). Available fruit and vegetable social support among older African Americans was positively associated with having more positive fruit and vegetable attitudes ($r = .47$, $p < .001$), perceiving stronger societal norms toward fruit and vegetable consumption ($r = .61$, $p < .001$), and having more control over fruit and vegetable behaviors ($r = .15$, $p < .05$).

Other statistically significant paths from the model are shown in Figure 2. Older African Americans with more positive fruit and vegetable attitudes and stronger social norms to consume fruits and vegetables reported greater intentions to perform healthy fruit and vegetable behaviors ($\beta = .37, p < .001$ and $\beta = .32, p < .001$). Compared with older African Americans who felt that they had little control over their fruit and vegetable behaviors, those with greater perceptions of control also reported more fruit and vegetable behavior intentions ($\beta = .16, p < .001$). In turn, fruit and vegetable behavioral intentions were positively associated with actual fruit and vegetable behaviors ($\beta = .63, p < .001$).

Furthermore, we also examined the potential direct effects of attitudes, social norms, and perceived control on fruit and vegetable behaviors after accounting for the influence of behavioral intentions. Although attitudes and perceptions of behavioral control were not directly related to fruit and vegetable behavior, those who believed there were greater societal norms, or expectations, related to fruit and vegetable consumption engaged in more fruit and vegetable behaviors ($\beta = .31, p < .01$). The behavioral intentions and control product term were not statistically significant indicating that, for fruit and vegetable behavior, the association between behavioral intentions and behavior performance was not dependent on older African Americans’ perceptions of control over their fruit and vegetable behaviors ($\beta = .08, p = .31$). Thus, inconsistent with the theory of planned behavior, the influence of behavioral intentions on behavior was not moderated by perceived behavioral control. Social support is not shown in Figure 2 because after controlling for the predictors hypothesized by the theory of planned behavior, older African Americans’ domain-specific social support was only marginally related to their fruit and vegetable behavior ($\beta = .16, p = .08$).

Regarding the demographic control variables within the model, older respondents, those with higher levels of educational attainment, and those

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**Figure 2.** Explaining older African Americans’ fruit and vegetable eating behaviors (standardized coefficients with $t$ values in parentheses). **$p < .001$. *$p < .01$.**

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reporting better overall health were more likely to report intentions to consume fruits and vegetables \((\beta = .11, p < .05, \beta = .12, p < .05, \text{and } \beta = .11, p < .05, \text{respectively})\). None of the demographic variables exerted a direct influence on fruit and vegetable behavior. Although the RMSEA value was slightly high, overall, this model fit the data reasonably well \((\text{CFI} = .95, \text{RMSEA} = .08, \text{and } \chi^2 = 2.22)\).

**Discussion**

This study addressed two main objectives. First, we examined the efficacy of a planned behavior model of eating behaviors for older African Americans. Overall, results were consistent with the theory and indicated that fruit and vegetable attitudes, subjective norms, and perceived behavioral control influenced behavioral intentions and actual behavior, we anticipated that such an effect may exist based on the model conceptualized in the theory of planned behavior \((\text{Ajzen, 1991})\). However, using a mean-centered product term, we found no evidence for such moderation. The lack of evidence indicating a moderating effect of perceived behavioral control suggests that the strong association between behavioral intentions and actual behavior \((\text{standardized } \beta = .63)\) is not dependent upon the availability (or lack) of psychological resources. In other words, behavioral intentions influence actual fruit and vegetable behavior at all levels of psychological control. More importantly, perceived behavioral control does not directly influence fruit and vegetable behavior. A possible reason for the lack of direct and moderating effects of perceived behavioral control is the high level of perceived control within the current sample of older African Americans as they, on average, were “confident” in their ability to control their fruit and vegetable intake \((M = 20.47, SD = 5.71)\).

Addressing our second aim, results from this study provide support for the use of this theory to explain a broader behavioral construct rather than focusing solely on a narrow measure of dietary consumption. Our constructs of fruit and vegetable preparation, self-monitoring, and consumption were adequate indicators of a larger behavioral domain of fruit and vegetable behaviors. Although others have suggested that the theory of planned behavior effectively explains greater amounts of variance when narrow and specific behaviors are considered \((\text{Kim et al., 2003})\), we were able to explain a considerably large amount of variance in the broadened eating behavior construct \((R^2 = .80)\).

Furthermore, in addition to research and interventions addressing fruit and vegetable consumption, these findings provide support for the importance of considering other essential, closely related behaviors, such as fruit and vegetable preparation and intake self-monitoring. We argue that the broader construct of eating behavior is a more valid and reliable measure than measures of consumption. Following the theory of planned behavior, our analyses also included demographic and contextual variables that existing research has shown to be related to fruit and vegetable behaviors. We were particularly interested in the inclusion of domain-specific social support \((\text{i.e., social support related to fruit and vegetable consumption})\) within the model because previous studies have shown this to be a key determinant of African Americans’ dietary quality \((\text{Ralston et al., 2011; Thrasher et al., 2004})\). However, after controlling for the determinants of fruit and vegetable behavior included in the theory of planned behavior, social support was not associated with fruit and vegetable behavior and only marginally associated with fruit and vegetable intentions. As indicated by a significant correlation of moderate strength \((\text{see Table 1})\), there is some overlap between our measurement of subjective norms, which may assess aspects of social connectedness and community interconnectedness that are particularly prevalent within the African American community, and social support \((\text{Ashing-Giwa, 1999})\). Another possibility is that the influence of social support on eating behavior operates through the variables acknowledged by the theory of planned behavior such that social support leads to more positive attitudes, greater societal norms, and increased perceived behavioral control toward fruit and vegetable behavior.

Although the current study did not conduct race or age comparative analyses, these findings are, overall, consistent with existing comparative studies. For instance, race comparative studies have indicated the importance of subjective norms for
African Americans more so than for other racial/ethnic groups (Blanchard, Kupperman, et al., 2009; Hanson, 1997), and others have suggested that younger adults are less motivated by subjective norms compared with older individuals (Nigg et al., 2009). Thus, based on age and race/ethnicity, we anticipated that subjective norms may be a particularly influential determinant of fruit and vegetable behaviors for the current sample. As expected, we found subjective norms regarding fruit and vegetable consumption to be strongly influential in explaining both older African Americans’ fruit and vegetable intentions and behavior.

This study has several limitations that should be noted. First, the data came from baseline measures completed by older African American churchgoers participating in a larger intervention study. How findings from this sample generalize to others outside of this religious and demographic grouping is unknown. Second, our use of secondary data somewhat limited our ability to fully assess each construct. For instance, more comprehensive measures of fruit and vegetable consumption, such as 24-hr recall data, may provide more precise and accurate information for dietary intake. Similarly, we lacked important information, such as respondents’ income, that would allow for a more detailed assessment of the factors that likely contribute to older African Americans’ fruit and vegetable consumption.

Despite these limitations, this study provides valuable findings to the existing literature by indicating the usefulness of the theory of planned behavior within a sample of older African Americans. This study also emphasizes the value of considering broader behavioral domains when employing the theory of planned behavior rather than continuing to focus on specific behaviors. This is particularly important because health risk behaviors rarely exist in isolation and are often linked to the performance of other risky health behaviors (Miller, Naimi, Brewer, & Jones, 2007).

These findings also have practical implications for intervention and prevention programs aimed at reducing the incidence of diseases commonly associated with poor eating behaviors among older African Americans. For instance, practitioners and programs seeking to improve eating behaviors should consider the processes involving attitudes, perceived behavioral control, and subjective norms that lead to fruit and vegetable behavior. Interventions may be most successful when they address these underlying processes first, such as building participants’ sense of personal control, before integrating information focused specifically on improving health behaviors.

In addition to providing pertinent information about the importance of healthy foods, programs are likely to be most beneficial when they aim to enhance positive societal norms about eating behavior, including components of domain-specific social support, as these norms may operate as structural and cognitive constraints that limit older African Americans’ healthy food consumption. More specifically, interventions for this demographic group may be most successful when they successfully incorporate activities that aid in the development of strong positive norms related to eating behaviors among African American family members and in African American community groups, such as neighborhoods and churches. Finally, these findings indicate that interventionists and practitioners should expand their focus of dietary behaviors to incorporate other related behaviors, such as fruit and vegetable preparation and self-monitoring, in order to develop a more comprehensive understanding of individuals’ dietary behaviors.

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**References**


