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Salient beliefs about eating and buying dark green vegetables as told by Mid-western African–American women[☆]

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Abstract

Vegetables in the dark green group are the most nutritious, yet intake is low. Studies suggest that an increase in fruit and vegetables may improve diet-related health outcomes of African Americans. The aim of this exploratory study was to use the Reasoned Action Approach (RAA) to qualitatively assess salient, top-of-the-mind, beliefs (consequences, circumstances and referents) about eating and buying more dark green leafy vegetables each week over the next 3 months. Adult ($n = 30$), Midwestern African–American women, who buy and prepare food for their household participated in a face-to-face salient belief elicitation. A content analysis of verbatim text and a descriptive analysis were conducted. Findings suggest that the RAA can be used to identify salient consequences, circumstances and referents about eating and buying more dark green leafy vegetables. The use of the RAA allowed for the extraction of specific beliefs that may aid in the development of nutrition education programs that consider the varying priorities, motivators and barriers that subgroups within the population have in regard to buying and consuming dark green leafy vegetables.

Keywords

Nutrition; Food choice; Vegetable; African American; Women's health; Health behavior; Reasoned Action Approach; Ecological model

Introduction

The United States Department of Agriculture (USDA) (2010) has identified five subgroups of vegetables: (1) dark green, (2) starchy, (3) red and orange, (4) beans and peas, and (5) other. Dark green vegetables (e.g., romaine lettuce, bok choy, spinach, kale, collard and mustard greens, etc.) are leafy, cruciferous, and the most nutritious subgroup (USDA, 2010). For example, they contain high amounts of vitamins A, B, and C, fiber, lutein and phytochemicals (Butt & Sultan, 2011; Johnston, Taylor, & Hampl, 2000; Tomita, Roteli-Martins, Villa, Franco, & Cardoso, 2011; Venzon & Izzy, 2012). Regular consumption of vegetables in the dark green group is strongly associated with reduced risk of chronic diseases, such as cardiovascular disease (Chaoyang et al., 2010; Van Duyn & Pivonka, 2000). Given their benefits, the 2010 Dietary Guidelines for Americans (2010) provides

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weekly recommendations for dark green leafy vegetables (i.e., calorie-based, 0.5 cup to 2.5 cups per week). Yet, regardless of the benefits and recommendations, dark green vegetables are the least consumed subgroup along with orange vegetables (Bachman, Reedy, Subar, & Krebs-Smith, 2008; Kimmons, Gillespie, Seymour, Serdula, & Blanck, 2009; Johnston, Taylor, & Hampl, 2000). In an effort to increase consumption their relative importance has been prioritized nationally, with Healthy People 2020 (US Department of Health and Human Services, 2010) calling for an "...increase in the proportion of dark green vegetables" consumed. Research efforts aimed at uncovering factors influencing their consumption is limited (Izumi, Zenk, Schulz, Mentz, & Wilson, 2011; Wenrich, Brown, Miller-Day, Kelley, & Lengerich, 2010).

Most Americans are not meeting nationally recommended food intakes (USDA, 2010; Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012). However, some segments of the population, such as low-income individuals and minorities, have poorer diet quality ratings relative to others (CDC, 2009; Celentano, 2009; Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012). African American diets are often characterized by lower intakes of fruits and vegetables, for example (Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012; CDC, 2009; Celentano, 2009). Studies argue that lifestyle changes, such as increased fruit and vegetable intake may improve health and well-being (Celentano, 2009). A recent analysis of NHANES (2001–2004) data, revealed that vegetable intake among African Americans is particularly low and that it would be advantageous for minority populations (i.e., Mexican American and African American) to consume more dark green vegetables (Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012). Further, health benefits associated with an increase in fruit and vegetable intake may help reduce nutrition-related health disparities that persist among African Americans, such as cardiovascular disease (Celentano, 2009). As the evidence suggests, the diets of African Americans are complex and influenced by individual, social, cultural, and environmental factors (Ard et al., 2007; Casagrande, Whitt-Glover, Lancaster, Odoms-Young, & Gary, 2009; Celentano, 2009; James, 2004), which has resulted in researchers advocating for an exploration of diet-related beliefs held by African Americans (Kumanyika et al., 2007).

Reasoned Action Approach

Theoretical models of behavior change have been used to assist in identifying and understanding nutrition behaviors (Guillaumie, Godin, & Vézina-Im, 2010). The current study utilizes the Reasoned Action Approach (RAA), which is the latest statement of the Theory of Planned Behavior (Fishbein & Ajzen, 2010). The RAA proposes that intention is the immediate determinant of behavior and is predicted by a weighted combination of three global constructs: (1) attitude towards performing the behavior, (2) perceived norms related to the performance of the behavior and, (3) self-efficacy to perform the behavior. The relative importance of the three global constructs is determined by a set of underlying salient beliefs (i.e., consequences, circumstances, and referents) about performing the behavior and their evaluation of those beliefs. Major elements (i.e. intention, attitude, perceived norm, and self-efficacy) of the RAA have been used to explore diet-related behaviors, including fruit and vegetable consumption (Blanchard et al., 2009; Brug, de Vet, de Nooijer, & Verplanken, 2006; Fuemmeler, Masse, Yaroch, et al., 2006; Middlestadt, 2012), and in turn often provide insight on buying behaviors.

Evidence of factors influencing African American fruit and vegetable consumption are reported in the literature (Casagrande et al., 2009; Lucan, Barg, & Long, 2010; Watters, Satia, & Galanko, 2007). However, the current pilot study aimed to explore a less sought out area of the literature by examining salient, or top-of-the-mind, beliefs related to African-American women's dark green vegetable buying and consumption practices. African-American women were selected as the study's target audience because historically, they

have been responsible for the purchasing and preparation of household meals (McIntosh & Zey, 1989) – ultimately playing a major role in the household availability of fruit and vegetables (Ard et al., 2007).

The RAA will be used to theoretically identify and independently assess the salient consequences, circumstances, and referents underlying the consumption and purchasing of more dark green leafy vegetables each week over the next 3 months, respectively, among a sample of African–American women responsible for buying and preparing food for their household. In accordance with the RAA, behaviors are defined in terms of the action, target, context, and time (Ajzen, 2010). The behaviors of interest (i.e. eating and buying) are action elements, with “more” dark green leafy vegetables as the target for each behavior. The context is “week,” as national recommendations for the dark green group are week-based. “Three months” was selected as the length of time to initiate behavior change, which has been used previously (Middlestadt, Sheats, Geshnizjani, Sullivan, & Arvin, 2011). Finally, for the purpose of this study, vegetables in the dark green group will be referred to as “dark green leafy vegetables.”

Method

Eligibility, setting and recruitment

Data were collected from 30 African–American women living in Marion, County, Indiana (mean age, 47.8 years, $SD = 13.1$). Eligible participants were African–American, female, at least 21 years of age, self-identified as the primary individual responsible for buying and preparing food in their household, and a resident of Marion County, Indianapolis, Indiana. With the assistance of community informants, participants were recruited from predominantly African–American faith-based institutions and community-serving organizations. Each participant was given a \$20 supermarket gift card for participation. Study protocols were approved by the university Institutional Review Board.

Survey instrument

A theory-based quantitative and qualitative survey with demographic, health status, health behavior, contextual, and salient belief elicitation questions (Ajzen & Fishbein, 1980; Middlestadt, 2012) was developed by the research team. A combination of complimentary methods was used to develop survey items including: a review of the literature; formative research (i.e., interviews) with the priority population; and research findings highlighting the need for an examination into psychosocial, environmental, and contextual factors influencing the diets of African Americans in the current study’s geographic area (Sheats, Gates, & Ona, 2010).

Six open-ended elicitation questions for each behavior were created to identify salient consequences, circumstances, and referents. Eating questions included: (1) what are the ADVANTAGES, or good things that might happen if you eat more cups of dark green leafy vegetables each week over the next 3 months?; (2) what are the DISADVANTAGES, or bad things that might happen if you eat more cups of dark green leafy vegetables each week over the next 3 months?; (3) what would make it EASIER for you to eat more cups of dark green leafy vegetables each week over the next 3 months?; (4) what would make it DIFFICULT, or harder for you to eat more cups of dark green leafy vegetables each week over the next 3 months?; (5) which people or groups APPROVE, or support, you eating more dark green leafy vegetables each week over the next 3 months?; and finally (6) which people or groups DISAPPROVE of you eating more dark green leafy vegetables each week over the next 3 months? Four open-ended elicitation questions regarding salient consequences and circumstances were asked about the behavior of buying and included: (1) what are the

ADVANTAGES, or good things that might happen if you eat more cups of dark green leafy vegetables each week over the next 3 months?; (2) what are the DISADVANTAGES, or bad things that might happen if you eat more cups of dark green leafy vegetables each week?; (3) what would make it EASIER for you to eat more cups of dark green leafy vegetables each week?; (4) what would make it DIFFICULT, or harder for you to eat more cups of dark green leafy vegetables each week?

Semi-structured interviews

Semi-structured face-to-face interviews were conducted at sites (e.g., churches, community rooms) where participants could speak openly and felt at ease. The trained interviewer read the questionnaire to each participant and took detailed notes of open-ended responses.

Analysis

Using RAA methods described in the literature (Middlestadt, 2012; Middlestadt, Bhattacharyya, Rosenbaum, Fishbein, & Shepherd, 1996), a content analysis of verbatim text was conducted to independently assess open-ended questions about salient consequences, circumstances, and referents for each behavior of interest. Trained researchers with experience coding data from salient belief elicitation met to discuss similarities and differences observed across the response set, which resulted in the verbatim text being organized into categories of similar responses. The categories were discussed to verify them as being “believable, accurate, and right” (Creswell, 1998, p. 193) and organized into a coding manual. Labels for the categories were created in the language of the priority population, with each participant scoring 1 for every open-ended response that fit into the categories. If a response did not fit into a category, a 0 was recorded for that particular category. Frequency analyses were performed with SPSS, 20.0 (IBM Corp., 2011) to determine the percentage of participants that had a 1 and 0 for each category.

Results

Sample and household characteristics

Nearly three-quarters (73.4%) of women in the study attended “some college or more.” Although 40% of participants lived with three or more adults and/or children (mean household, 2.5 individuals); 36.7% fed additional individuals not living in their household in the last 7 days (e.g. other relatives, children, friends, etc.). Participants buy dark green leafy vegetables from a variety of food stores (i.e. convenience stores, general stores, discount stores, farmers markets, specialty stores and wholesale clubs), with each participant frequenting at least two types of stores. However, most (90%) buy dark green leafy vegetables from full-service supermarkets and grocery stores.

Elicitation for eating more dark green leafy vegetables

Results from the salient belief elicitation for eating more dark green leafy vegetables each week over the next 3 months are summarized in Table 1. When asked about their perceived consequences of eating more cups, 60% felt of participants felt that a major benefit was that it would “make me have a regular bowel movement.” Another advantage was improvement of participants’ health (53.3%). Half of the women (50%) felt that eating more cups would “give me vitamins and minerals” or “help me lose weight” (23.3%). While it was not a predominant category, some noted that the benefits of eating more dark green leafy vegetables would transcend to other family members, with one woman stating that “...the health of myself and my family improves. I look out for the long-term health of my husband.” More than half (56.7%) of participants did not report any perceived disadvantages to eating more dark green leafy vegetables each week over the next 3 months. However,

some did mention that eating more cups would “make me gassy” (43.4%) and “cost more” (16.7%).

Women in the study were also asked about perceived salient circumstances that make it easy and difficult to eat more cups over the next 3 months. The most frequently mentioned salient circumstance that makes eating more dark green leafy vegetables each week over the next month easier were “having them already prepared” (33.3%), “having them in a food store close to where I live” (26.7%) and “knowing how to prepare them” (20%) “Being at a good price” was also mentioned (20%). One participant explained that *“Healthy vegetables are costly...so you have to be economic. I don’t make the healthy choice because of what is in my pocket book.”* Finally, “being fresh” (13.3%) was cited as a salient circumstance that makes increased consumption easier. While they were not the most frequent responses among this sample, both “having food stamps,” and “having money to buy” dark green leafy vegetables were noted as well. In regard to perceived salient circumstances that made it difficult, or harder, to eat more dark green leafy vegetables each week over the next month, “time” (30%) was the most frequently mentioned circumstance. The “time” category had multiple meanings and was representative of preparation time, cooking time and having time in one’s schedule. One woman’s statement is exemplary of this connotation of “time” as she explained her rationale for not being able to eat more cups of dark green leafy vegetables: *“Time. My schedule doesn’t permit me to eat them. I gotta buy it, clean it, cook it, and store it.”* “Not knowing how to prepare them” (26.7%) and “cost” (26.7%) were also frequently mentioned, as was dark green leafy vegetables “not being available in the food store close to where I live” (16.7%), with one participant declaring *“There is a lack of variety in my store, which is why I lack knowledge on how to cook it...In my neighborhood we don’t have bok choy...and spinach is probably in a can.”*

The final category of salient beliefs was concerned with perceived referents that approve or disapprove of the participant eating more dark green leafy vegetables each week over the next 3 months. “Family” (e.g., children, spouse, mother) was the most frequently mentioned referent (70%), followed by “healthcare provider” (e.g., physician, nutritionist) (33.3%) and friends (26.7%) among participants. Other approving referents included “employer” (20%) and “myself” (13.3%). Most women felt that “no one” (83.3%) would disapprove of them eating more cups of dark green leafy vegetables. However, a small percentage (10%) felt that their family would disapprove. Disapproving family in most cases were children, as one woman noted that *“My kids disapprove. If I eat them, then that means they have to eat them too.”*

Elicitation for buying more dark green leafy vegetables

Two categories of perceived salient circumstances were created from the salient belief elicitation for buying more dark green leafy vegetables each week over the next 3 months. Results are similar to those found for the behavior of eating and are summarized in Table 2. Frequently mentioned categories of perceived advantages of buying more that differed from the eating elicitation included “will eat more dark green leafy vegetables” (33.3%), “help me eat healthier meals” (26.7%), “help my family eat more dark green leafy vegetables” (16.7%) and “improve the health of my family” (13%). Like the behavior of eating, most participants reported that there were no perceived disadvantages of buying more dark green leafy vegetables (46.7%). However, a third of participants did mention that a disadvantage of buying more would be that they “will spoil or go bad” (33.3%). For example, one participant argued that *“If I waste them and don’t cook them it goes bad and I lose all of my money.”* Women also felt that buying more would make them “get tired of eating them” (13.3%). The most frequently mentioned perceived salient circumstances that differed from the behavior eating was that “not being fresh or of good quality” (13.3%) made it difficult to buy more dark green leafy vegetables. According to one woman, *“...if they were cheaper*

and a better quality in my neighborhood... I have to go all out to the suburbs to get good veggies."

Discussion

The current study used a theory-based approach to independently investigate beliefs about both eating and buying more dark green leafy vegetables each week over the next 3 months. Findings suggest that the RAA can be used to identify salient consequences, circumstances, and referents about performing the behaviors of interest among a sample of Mid-western African-American women responsible for buying and preparing food for their household. Data obtained from this elicitation can be conceptualized further using the social-ecological framework whose components have been cited as being required to improve overall fruit and vegetable consumption, particularly among African Americans (Robinson, 2008). The perceived consequences for the performance of both behaviors included interpersonal, interpersonal and environmental factors, with advantages of eating more dark green leafy vegetables generally being about a specific health outcome. The advantages for buying them dealt more with the performance of health behaviors (eating more cups) and health improvements not only for the participant, but their family as well. Findings such as this, to our knowledge, have not been reported in the literature. Disadvantages for perceived consequences focused primarily on cost which has been cited in the food access literature as being a barrier relevant to purchasing and consumption of healthy foods (Odoms-Young, Zenk, Karpyn, Ayala, & Gittelsohn, 2012; Booth et al., 2001). Participants' perceived salient circumstances for eating and buying more dark green leafy vegetables included intrapersonal, community, and environmental factors. These elements generally dealt more with the absence of knowledge and skills to prepare them; the location of neighborhood food stores relative to households; and the cost and quality of dark green leafy vegetables. These factors are important for overall fruit and vegetable consumption as well (Robinson, 2008; Wenrich, Brown, Miller-Day, Kelley, & Lengerich, 2010; Hillier et al., 2011; Ard et al., 2007). Similar results were found in regard to circumstances for buying. Finally, "family" was mentioned in both salient referents (approve and disapprove) and salient consequences (advantages and disadvantages).

The relative importance, influence, and concern for family was expressed in the elicitation results for both eating and buying. This finding was not surprising given that 40% of participants reported living with three or more individuals; and over one-third prepared food in the last 7 days for people who *did not* live in their household (i.e. up to 10 people). Thus, these factors in combination with the significance of the "extended family" in African American culture (including blood kin and fictive kin) (McAdoo & Younge, 2008) may have impacted participants' beliefs. Findings in this regard are consistent with studies reporting that social support, including that of spouses and other family members, influence the availability and consumption of healthy foods, such as fruits and vegetables, in African-American households as well (Ard et al., 2007; James, 2004; Shankar & Klassen, 2001).

Throughout the literature, level of education is positively associated with higher income and the practice of positive health behaviors (e.g., increased fruit and vegetable consumption), respectively (Ard et al., 2007). As such, women in the study had relatively high levels of education (e.g., 75% attended at least one year of college) – but they made statements about determinants of consumption that have been reported by African Americans with diverse socioeconomic levels and circumstances (Ard et al., 2007; James, 2004; Shankar & Klassen, 2001). Evans, McNeil, Laufman, and Bowman (2009) found that Mid-western African-American women who had higher education levels did not have better dietary habits than those with lower-incomes. Thus, our findings may support the notion that African-American

women in the sample, regardless of education level, could potentially benefit from nutrition interventions informed by the elicitation results.

Strengths and limitations

A major strength of the current study was the use of theory to investigate behaviors surrounding one of the least consumed yet most nutritious subgroup of vegetables. No study has examined African–American women’s salient beliefs about eating and/or buying vegetables from the dark green group. Thus, findings presented here may provide variables upon which to examine further.

While study results may not be generalizable to other African American females, they may provide a “road map” from which future studies could work from. Second, the sample had a relatively high level of education. But as previously noted, this fact could further make the case for the development of nutrition education programs for all, regardless of socioeconomic status. Third, income was not assessed by the study survey, which may have provided further insight into the interpretation of beliefs associated with buying. Fourth, data obtained is self-reported, thus findings may be influenced by a social desirability response set.

Conclusions and implications

Use of the Reasoned Action Approach allowed for the extraction of categories of specific salient consequences, circumstances, and referents in regard to eating and buying dark green leafy vegetables from the perspective of Mid-western African–American women. Identifying and understanding these culturally specific beliefs may help fulfill the expressed need for the development of nutrition education programs that consider the varying priorities, motivators, and barriers that subgroups within the population have in regard to consumption of healthy foods (Pollard, Kirk, & Cade, 2002). Future quantitative evaluations of these beliefs may determine the relative importance of factors essential for African–American women in this sample to consume and purchase more dark green leafy vegetables. Replication of the study in other populations may be useful in determining belief differences by race/ethnicity, gender, and/or age.

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Table 1

Percent mentioning salient consequences, circumstances and referents for eating dark green leafy vegetables.^a

Salient consequence	No. (%) ^b	Salient circumstance	No. (%) ^b	Salient referent	No. (%) ^b
Advantages		Easy		Approve	
Make me have a regular bowel movement	18 (60.0)	Having them already prepared	10 (33.3)	Family	21 (70.0)
Improve my health	16 (53.3)	Having them in a food store close to where I live	8 (26.7)	Healthcare provider	10 (33.3)
Give me vitamins and minerals	15 (50.0)	Knowing how to prepare/cook them	6 (20.0)	Friends	8 (26.7)
Help me lose weight	7 (23.3)	Being a on sale	6 (20.0)	Employer	6 (20.0)
		Being fresh or of good quality	4 (13.3)	Myself	4 (13.3)
Disadvantages		Difficult		Disapprove	
None	17 (56.7)	Time (preparation, cooking, schedule)	9 (30.0)	No one	25 (83.3)
Will make me gassy	3 (43.3)	Not knowing how to prepare them	8 (26.7)	Family	3 (10.0)
Cost more	5 (16.7)	Cost	8 (26.7)		
		Not available in the food store close to where I live	5 (16.7)		

^aThere are instances where respondents did not provide a response, therefore actual counts of responses may be less than 30 (i.e., “disadvantages” and “disapprove”).

^bPercentages sum to more than 100% because women could give more than one response.

Table 2Percent mentioning salient consequences and circumstances for buying dark green leafy vegetables.^a

Salient consequence	No. (%) ^b	Salient circumstance	No. (%) ^b
Advantages		Easy	
Improve my health	18 (60.0)	Being a good price	12 (40.0)
Will eat at more broccoli and dark green leafy vegetables	10 (33.3)	Having them in a food store close to where I live	9 (30.0)
Help me eat healthier meals	8 (26.7)	Being already prepared	5 (16.7)
Help me lose weight	6 (20.0)	Being fresh or of good quality	4 (13.3)
Help my family eat more broccoli and dark green leafy vegetables	5 (16.7)	Knowing recipes	3 (10.0)
Improve the health of my family	4 (13.0)		
Disadvantages		Difficult	
None	14 (46.7)	Not available in the food store close to where I live	7 (23.3)
Will spoil or go bad	10 (33.3)	Being a high price	7 (23.3)
Will spend more money	5 (16.7)	Not being fresh or of good quality	6 (20.0)
Will get tired of eating them.	4 (13.3)	Not knowing how to cook or prepare them	4 (13.3)
		Time (to buy, cook)	4 (13.3)

^aThere are instances where respondents did not provide a response, therefore actual counts of responses may be less than 30 (i.e., "difficult").

^bPercentages sum to more than 100% because women could give more than one response.