

# Preferred Healthy Food Nudges, Food Store Environments, and Customer Dietary Practices in 2 Low-Income Southern Communities

Stephanie B. Jilcott Pitts, PhD<sup>1</sup>; Qiang Wu, PhD<sup>2</sup>; Patricia A. Sharpe, PhD, MPH<sup>3</sup>; Ann P. Rafferty, PhD<sup>1</sup>; Brian Elbel, PhD, MPH<sup>4</sup>; Alice S. Ammerman, DrPH<sup>5</sup>; Collin R. Payne, PhD<sup>6</sup>; Beth N. Hopping, PhD<sup>7</sup>; Jared T. McGuirt, MPH<sup>8</sup>; Elizabeth D. Wall-Bassett, PhD, RDN<sup>9</sup>

## ABSTRACT

**Objective:** To examine how food store environments can promote healthful eating, including (1) preferences for a variety of behavioral economics strategies to promote healthful food purchases, and (2) the cross-sectional association between the primary food store where participants reported shopping, dietary behaviors, and body mass index.

**Methods:** Intercept survey participants (n = 342) from 2 midsized eastern North Carolina communities completed questionnaires regarding preferred behavioral economics strategies, the primary food store at which they shopped, and consumption of fruits, vegetables, and sugary beverages.

**Results:** Frequently selected behavioral economic strategies included: (1) a token and reward system for fruit and vegetable purchases; and (2) price discounts on healthful foods and beverages. There was a significant association between the primary food store and consumption of fruits and vegetables ( $P = .005$ ) and sugary beverages ( $P = .02$ ).

**Conclusions and Implications:** Future studies should examine associations between elements of the in-store food environment, purchases, and consumption.

**Key Words:** diet, food store, nutrition, health behavior, obesity, fruit, vegetable (*J Nutr Educ Behav.* 2016; ■ :1-8.)

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## INTRODUCTION

In the US, a majority of foods and beverages are purchased from supermarkets (63% to 70%),<sup>1</sup> which makes supermarkets an important component of the community (geographic proximity to food venues) and consumer (promotion of products within food venues) food environments.<sup>2</sup> To improve community food environments and increase healthy food access, federal and state initiatives have financially supported building new supermarkets in food deserts.<sup>3,4</sup> Studies are inconclusive with regard to new supermarkets' effects on residents' diets<sup>5-10</sup>; some suggest modest improvements in perceptions of healthful food availability and diet.<sup>5,9</sup> Based on their study findings that a new supermarket did not appreciably improve local residents' diets, Elbel et al<sup>8</sup> concluded:

*It is possible that a more "healthful" supermarket, one that devotes prime supermarket real estate to*

<sup>1</sup>Department of Public Health, Brody School of Medicine, East Carolina University, Greenville, NC

<sup>2</sup>Department of Biostatistics, East Carolina University, Greenville, NC

<sup>3</sup>Prevention Research Center, Arnold School of Public Health, University of South Carolina, Columbia, SC

<sup>4</sup>NYU School of Medicine and NYU Wagner School of Public Service, New York, NY

<sup>5</sup>Center for Health Promotion and Disease Prevention; Department of Nutrition, Gillings School of Global Public Health and School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC

<sup>6</sup>Marketing Department, College of Business, New Mexico State University, Las Cruces, NM

<sup>7</sup>Center for Advanced Hindsight, Social Science Research Institute, Duke University, Durham, NC

<sup>8</sup>Department of Nutrition, University of North Carolina at Chapel Hill, Chapel Hill, NC

<sup>9</sup>Nutrition & Dietetics Program, School of Health Sciences, Western Carolina University, Cullowhee, NC

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Address for correspondence: Stephanie B. Jilcott Pitts, PhD, Department of Public Health, Brody School of Medicine, East Carolina University, 600 Moye Blvd, MS 660, Lakeside Annex 7, Greenville, NC, 27834; Phone: (252) 744-5572; Fax: (252) 744-4008; E-mail: [jilcotts@ecu.edu](mailto:jilcotts@ecu.edu)

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*healthier options, offers discounts for smaller package sizes, and replaces candy and soda with fresh fruits and vegetables at cash registers could have a larger impact on health [than building a new supermarket] ...*

This points to the need to examine positive elements of the consumer (within-store) food environment further. Because obesity prevalence is higher in the southern US than in the rest of the country,<sup>10</sup> more research is needed to determine what strategies can be employed within supermarkets in the southern US to promote healthier purchases and consumption.<sup>11-13</sup> Furthermore, there may be characteristics of supermarkets that are more or less health promoting, because supermarkets with higher prices tend to have customers with lower body mass indexes (BMIs).<sup>6</sup> Further study is needed to determine specific supermarket characteristics that promote more healthful purchases.

Also, at the consumer food environment level, behavioral economics strategies can promote healthful food and beverage purchases. Contrary to traditional economic theories that suggest that consumers make rational choices to maximize health, behavioral economics suggests that consumers make quick decisions that maximize short-term pleasure over long-term health gains.<sup>14,15</sup> Behavioral economics strategies nudge individuals to make healthier choices by making the healthier choice the easier one. Such strategies include using stoplight colors to indicate healthful and less healthful foods and beverages<sup>16,17</sup> and placement of healthier options at eye level.<sup>18</sup> Behavioral economics strategies have been examined in supermarkets,<sup>11,19,20</sup> with researchers calling for more rigorous evaluations of effectiveness.<sup>20,21</sup> To date, no studies have examined customer preference for the types of behavioral economics strategies to promote healthful food purchase in retail settings. Learning about the strategies that customers view as acceptable and potentially successful for promoting healthful food purchasing can guide future interventions. Therefore, the purpose of this study was to examine elements of food store environments that promote healthy eating, including (1) participants' preferences for a variety of behavioral economics strategies to promote healthful food purchases;

(2) the availability and price of fruits, vegetables, and sugary beverages in food stores; and (3) the cross-sectional association between the primary food store where participants reported shopping, dietary behaviors (fruit, vegetable, and sugary beverage consumption), and BMI.

## METHODS

### Study Setting

In 2014, a discount supermarket (Save-A-Lot) was awarded municipal funds from the City of Greenville (Pitt County, eastern North Carolina) to locate in an underserved, low-income area. In a broader effort to examine the impact of a new supermarket on residents' diets, a baseline survey was conducted among a cross-sectional sample of Greenville residents and residents of a comparison community (Kinston, Lenoir County). The current study is a cross-sectional analysis of the baseline data. In Pitt County (estimated population of 170,485), 34.1% of residents are African American, 24% live below the poverty level, and 37% are obese. In Lenoir County (estimated population of 59,277), 40.5% of residents are African American, 24% live below the poverty level, and 35% are obese.<sup>22-24</sup> Both Southern communities have limited public transportation opportunities, which further reduce underserved residents' transportation options to obtain groceries. Limited public transportation systems differentiate the settings of the current study from other studies in urban settings (with many public transportation options) where new supermarkets have opened.

### Design and Sample

In April to May, 2015, an intercept survey of Greenville residents was conducted, with recruitment occurring at public libraries and other public locations near the new supermarket, all within 2 of the lowest-income census blocks in Greenville (n = 170). In August, 2015, intercept surveys were also conducted in the 2 lowest-income census blocks in Kinston (n = 172), in a public library, a community health center, and other public locations. Eligibility requirements included being aged > 18 years and an English speaker. As an incentive, participants were offered a chance to win 1 of 4

\$100 Walmart gift cards. All surveys were self-administered, except for 2 that were interviewer-administered at the respondents' request. This study was approved by the East Carolina University Institutional Review Board.

## Measures

The *Bridging the Gap Food Store Observation Form*<sup>25</sup> (BTG-FSOF) was used in food stores in the 2 study communities. The BTG-FSOF includes an assessment of fruit, vegetable, and sugary beverage availability and price, 2 important elements of the consumer food environment. Two trained observers completed the BTG-FSOF in 5 stores within 5 miles of the new supermarket (June, 2015) in Greenville and in 4 comparable food stores (September, 2015) in Kinston. In each location, 3 of the stores were of the same 3 large regional or national chains. In other words, 1 store A in Greenville and 1 store A in Kinston, 1 store B in Greenville and 1 store B in Kinston, and 1 store C in Greenville and 1 store C in Kinston were audited. The BTG-FSOF sections B (fresh fruit/vegetables), B8, B9, (number of fresh fruit and vegetable options), E (canned fruit and vegetables), E7, E8 (number of canned fruit and vegetable options), F (beverages), H (frozen vegetables), H7, and H8 (number of frozen vegetable options) were used for the current study. Availability was operationalized as the sum of availability (available = 1; not available = 0) of 8 fresh fruits and vegetables (apples, bananas, oranges, grapes, carrots, tomatoes, broccoli, and lettuce), canned tomatoes, canned green beans, frozen green beans, and frozen corn (possible range, 0–12). Availability for sugary beverages included juice drinks < 50% juice (family and individual size), juice box/pouches ≤ 10% juice, regular soda (family and individual size), energy drinks, and isotonic sports drinks (possible range, 0–7). Price was operationalized as the mean prices of fruits, vegetables (per pound), and sugary beverages (per unit). For price, fruits and vegetables were excluded from the calculation when they had different units for pricing. For fruits, mean price per pound included apples, bananas, and grapes; and for vegetables, mean price included tomatoes, lettuce, and frozen green beans.

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