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A default option to enhance nutrition within financial constraints: A randomized, controlled proof-of-principle trial

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Abstract

Objective—To examine the feasibility and initial efficacy of a novel default option intervention targeting nutritional quality of online grocery purchases within the financial constraints of food insecurity.

Method—Female undergraduates ($n = 59$) without eating disorder symptoms or dietary restrictions selected foods online with a budget corresponding to maximum Supplemental Nutrition Assistance Program benefits. Before completing the task again, participants were randomized to receive: (1) a \$10 incentive for selecting nutritious groceries ($n = 17$), (2) education about nutrition ($n = 24$), or (3) a default online shopping cart containing a nutritionally balanced selection of groceries ($n = 18$) to which they could make changes. Nutritional quality was quantified using the Thrifty Food Plan Calculator.

Results—Compared to education, participants in the default condition selected significantly more whole grains, fruits, and foods lower in cholesterol, saturated fats, sodium, and overall calories. There were no statistically significant differences in nutritional outcomes between the incentive condition and the other two groups.

Conclusions—Findings provide initial support for the efficacy of a default option in facilitating healthier food choice behaviors within financial constraints.

Keywords

default option; choice architecture; food choice; nutrition; food insecurity

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Trial Registration: This trial is registered with the National Institutes of Health ([ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT03248583) NCT03248583). This trial is registered at [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT03248583) (NCT03248583).

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Author Contributions: JAC and JMH designed the study and developed the study aims and hypotheses. JAC collected the data on which the present analyses are based. JAC and JMH conducted and interpreted the statistical analyses. Both authors were involved in the writing of the manuscript and approve of the submission in its current form.

Data Access and Responsibility: The principal investigator, JMH, has full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Introduction

Food insecurity, which affects an estimated 42 million Americans, is positively correlated with weight and obesity risk (1, 2), and implicated in weight-related chronic illnesses like type 2 diabetes mellitus and cardiovascular disease (3, 4). Food-insecure women and ethnic and racial minorities are especially affected by overweight and obesity (5). One in seven Americans receives nutrition assistance through the United States Department of Agriculture (USDA) Supplemental Nutrition Assistance Program (SNAP). SNAP participation effectively reduces food insecurity (6), but has been shown to exacerbate obesity risk (1, 2, 7). SNAP-Ed is an optional educational component of SNAP that encourages healthy eating (8). It effectively changes behavior in the short- and medium-term (9), but implementation is costly and long-term effectiveness remains uncertain. Popular alternatives for improving nutrition in SNAP focus on *incentives* to purchase nutrient-rich foods or *restrictions* on the procurement of nutrient-poor foods (10). Incentives are costly and often perceived as paternalistic (8). Restrictions on purchases are also controversial (8), and the USDA recently denied a request by New York State to pilot a program eliminating SNAP benefits for sugar-sweetened beverages (11).

Food-insecure individuals face financial and physical barriers to healthy eating. The diets of low-income consumers are relatively low in whole grains and high in fats and added sugars, in part due to the high cost of healthier alternatives (12). A lack of physical access to supermarkets forces many living with food insecurity to rely on infrequent purchases of shelf-stable foods of low nutritional value (13), or on local corner stores with limited availability of fresh foods (14). There is thus an urgent need for interventions that effectively facilitate healthy decision-making about food purchases, specifically within these unique constraints.

In behavioral economics, the default option refers to the option a consumer selects if s/he does not make an active choice (15). The notion of the default option is based on the concept of “asymmetrical” or “libertarian paternalism,” which seeks to subtly shift consumer behavior in a manner that promotes welfare, but without overtly interfering with the individual’s freedom to choose (15–17). The default option has been used successfully to change consumer behavior in a range of domains. For example, a default approach successfully increases rates of vaccinations in routine healthcare settings (18). The effectiveness of a default option is supported in part by psychological research on *loss aversion* (i.e., the loss associated with giving up something is generally perceived to be greater than the utility associated with acquiring it in the first place) and the *status quo bias* (i.e., people generally prefer the status quo to some uncertain alternative outcome) (19).

Prior studies that have employed default interventions specifically in the context of food choice behaviors have focused almost exclusively on commercially prepared meals eaten outside the home, either in a cafeteria or restaurant setting. For example, the availability of a more easily accessible healthy sandwich was previously shown to increase the likelihood that study participants chose a low-calorie lunch item (20). A more convenient default option also effectively nudged parents towards healthier breakfast foods for their children (21). Even though Americans consume an increasing proportion of meals outside the home (22),

the availability and ease of access to healthy foods in the home nevertheless remains a major determinant of diet-related health (23), including for those living with food insecurity (24). Interventions and policies targeting the nutritional quality of foods purchased at supermarkets have therefore been called for (25). To the best of our knowledge, the potential of a default option in enhancing dietary quality has not been examined beyond the context of a single meal or within the unique constraints on access to healthy food options faced by many, including those living with food insecurity and/or in food deserts. This proof-of-principle trial was designed to begin to fill this gap.

Objectives and Hypotheses

The primary aim of this randomized, controlled proof-of-principle trial was to examine the feasibility and initial efficacy of use of a default option to enhance nutritional quality of foods purchased specifically for preparation and consumption at home, and within the financial constraints typically faced by those living with food insecurity. We hypothesized that participants in the default condition would select groceries of higher nutritional quality, compared to those receiving monetary incentives or education about healthy eating.

Modern technology has profoundly changed consumer behavior in recent years and many everyday purchases are now completed online. Online grocery shopping is quickly gaining in popularity, putting meal kit delivery services like Blue Apron and Plated on the map as some of the most rapidly growing businesses in the food industry (26). Many grocery stores now offer the option to purchase foods online for home delivery, and use of these services is expected to increase significantly in the coming years (27). Access to the Internet has become essentially ubiquitous, including among low-income consumers (28), and several states are currently implementing pilot programs that make online grocery shopping available to SNAP participants (29). The utility of online platforms in disseminating interventions targeting diet- and weight-related health specifically to those with otherwise limited access to healthy food options has yet to be evaluated systematically. A secondary aim of this study was therefore to examine the feasibility of using online shopping and delivery services to make healthy foods available to those with difficulties accessing supermarkets and other commercial outlets.

Methods

All methods were reviewed and approved by the Institutional Review Board at the University at Albany, State University of New York (protocol #16-E-260-01). Study participants were informed of the nature and purpose of the research and consented prior to completion of questionnaires and the experimental task.

This clinical trial was registered with the National Institutes of Health ([ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT03248583) NCT03248583).

Participants

Female undergraduate students at a large northeastern university ($n = 60$) participated in a 1.5-hour laboratory visit in exchange for research participation credit. Additional inclusion

criteria were as follows: (1) age 18 or older, (2) fluent in written and spoken English, (3) able to provide informed consent (4) no dietary restrictions (i.e., no meat avoidance, food allergies, religious dietary restrictions, etc.) and (5) no current eating disorder diagnosis, as assessed via the SCOFF screening measure (with a score ≥ 2 considered indicative of the likely presence of an eating disorder) (30). Eligible participants were recruited from 03/07/2016 to 09/29/2016. Recruitment ended when the participant number reached 60. The target sample size of 60 was determined based on an a priori power analysis. Due to an experimenter error when downloading shopping cart data from the grocery store website, only 59 respondents were included in the analyses reported here.

Study Design and Randomization

We randomized participants into three parallel groups to compare the effects of education, monetary incentives, and a default option on the nutritional quality of foods selected using an online grocery shopping service. Participants were assigned to a condition using a simple randomization approach, with each participant having an equal probability of allocation across the three conditions. A computer-generated randomization table was used to assign participants to groups. Groups had somewhat uneven sample sizes (education, $n = 24$; incentives, $n = 17$; default, $n = 18$) because participants were randomized prior to eligibility screening. A total of 98 participants were screened to assess eligibility before the target enrollment of 60 participants was reached. Of those who were excluded, 10 endorsed current dietary restrictions and 28 received a score equal or greater than 2 on the SCOFF questionnaire, indicating the possible presence of an eating disorder diagnosis. Participants were kept blind to the existence of the other intervention conditions. After the intervention was complete, participants were debriefed about the nature and purpose of the experiment and were given the opportunity to ask questions about their participation.

Measures

Upon arrival at the laboratory, participants were consented by a research assistant and asked to complete a battery of self-report questionnaires via the secure online server SurveyMonkey. Baseline measures captured information about participants' demographics, mental health, eating behaviors, dietary preferences, current level of physical activity, and experience grocery shopping, budgeting, and meal planning. Participants reported on frequency of preparing their own meals on a scale ranging from 0 = "never" to 5 = "always." Participants provided information on current weight and height to calculate body mass index (BMI). To assess for group differences in factors that could potentially influence decision-making in the experimental task, participants completed the Depression Anxiety Stress Scales (DASS-21) (31), quantifying depressed (Cronbach's $\alpha = .71$), anxious ($\alpha = .81$), and stressed mood states ($\alpha = .84$); the Barratt Impulsiveness Scale (BIS-11) (32), measuring attentional ($\alpha = .64$), motor ($\alpha = .60$), and non-planning impulsivity ($\alpha = .62$); and the Binge Eating Scale (BES) (33), a measure of binge eating severity ($\alpha = .82$). They also completed the Dutch Eating Behavior Questionnaire (DEBQ) (34), a measure of emotional ($\alpha = .95$), external ($\alpha = .76$), and restrained eating styles ($\alpha = .91$); the Power of Food Scale (PFS) (35), a measure of responsiveness to the food environment ($\alpha = .94$); and the Food Neophobia Scale (FNS) (36), an assessment of the willingness to try novel foods ($\alpha = .91$) (see Table 1 for baseline characteristics).

Study Interventions

Participants were seated at an individual computer station in the laboratory to ensure privacy. They were instructed by a research assistant to fill an online shopping cart using a local grocery store's online shopping site and a budget of \$48.50, with the goal to "select nutritious, affordable, and tasty foods for a week." The amount of money available to participants to complete this task is the equivalent of 25% of the maximum monthly allowance for a single adult participant in SNAP in New York State and comparable to similar studies (13). This amount was chosen to assess the efficacy of the proposed default option intervention within the significant budget constraint faced by many individuals who are living with food insecurity and at a significantly increased risk for obesity and associated health problems. Participants did not purchase groceries, but were asked to make selections as if they were shopping for their own consumption. The only additional instructions participants were given were to (1) spend within \$5 dollars of \$48.50, (2) exclude any condiments (e.g., ketchup, olive oil, mayo), and (3) exclude any non-food or drink items (e.g., toilet paper, toothbrushes) to facilitate analysis of nutritional data. Once participants completed the initial grocery shopping task, a research assistant saved the content of the online shopping cart for subsequent analysis.

Participants were then instructed to repeat the shopping task with the same budget and instructions as before. Participants randomized to group 1 (incentives, 28.3%, $n = 17$) were informed that they would receive a \$10 gift card to a major retailer of their choice if they selected groceries that met recommended nutritional guidelines for macro- and micronutrient requirements. Participants were given examples of macro- and micronutrients to ensure that the instructions were clear. Participants in group 2 (education, 41.7%, $n = 25$) were instructed to read a brief educational brochure adapted from materials currently utilized by the New York State Office of Temporary and Disability Assistance ("Eat Smart New York;" see Table 2 for brochure topics). Participants in group 3 (default option, 30.0%, $n = 18$) were presented with a pre-filled online shopping cart containing a combination of groceries that met macro- and micronutrient requirements for their gender and age and told that they are free to delete, add, and exchange any item they wish to finalize their selections.

Thrifty Food Plan Calculator

The Thrifty Food Plan Calculator (TFPC) was used to quantify the nutritional quality of groceries selected by study participants. The TFPC was developed using U.S. Department of Agriculture nutrition and consumption data, and is made available by the Tufts University Gerald J. and Dorothy Friedman School of Nutrition Science and Policy (37). The TFPC is designed to have users input information about the relative amount of money spent on various categories of food and provides comprehensive information on caloric, macro-, and micronutrient content of the foods selected based on participant age and gender.

Statistical Analyses

An a priori power analysis, conducted using G*Power (38), indicated a minimum sample size of 42 for adequate power ($.80$) to detect medium-sized effects in mixed analysis of variance (ANOVA) with two assessment points and within-between interactions, assuming medium-sized correlations ($r = .5$) between repeated measures. Shopping data from one

participant in the default condition was missing due to an error downloading the data, resulting in a final sample size of 59. Responses to self-report measures and data from the experimental task were merged into a single database for analysis. All statistical analyses were conducted using SPSS version 24. If participants selected items that could not fit into any categories on the TFPC [i.e., toilet paper ($n = 1$), water ($n = 12$), and beef broth ($n = 1$)], those items were not entered into the TFPC.

Group differences in demographics and responses to self-report questionnaires were examined using chi-square and univariate and multivariate (for those measures containing multiple subscales) analyses of variance (ANOVA). Differences between the three groups in the primary outcome of interest, nutritional composition of food selections, were examined using one-way ANOVAs with group (i.e., incentives, education, and default option) as the between-subjects factor. Primary outcome variables were change scores (time 2 minus time 1) in indicators of nutritional quality of foods selected that have been linked to health outcomes, including servings of whole grains, percentage of budget allocated towards fruits and vegetables, average total daily calories, daily grams of saturated fat, and daily intake of sodium and cholesterol. We also examined changes in servings of milk, meat/beans, and grains selected, as well as daily grams of fats and percentage of calories derived from carbohydrates and protein as secondary outcomes.

Skewness fell between -2 and $+2$ for all dependent variables, with the exception of cholesterol content in the incentive condition (-2.29) and daily grams of fat in the education condition (2.43). Kurtosis values also fell between -2 and $+2$, with the exception of average daily calories (2.23), servings of milk (2.23) and meat/beans in the education condition (4.45), cholesterol content in the incentive condition (6.63), and percentage of daily calories derived from carbohydrates in the default condition (3.05). All Shapiro-Wilk tests of normality were non-significant ($p > .05$), with the exception of servings of meat/beans and daily grams of fat in the education condition ($p = .02$ and $p < .001$, respectively) and cholesterol content of foods in the incentive condition ($p < .001$), generally suggesting suitability of the data for analysis using ANOVA. In cases where normality was questionable (i.e., cholesterol content, daily grams of fat, and servings of meat/beans), between-group differences were examined using the rank-based Kruskal-Wallis H test. Parametric and non-parametric tests were followed up with Tukey HSD/pairwise post-hoc analyses of between-group differences.

Results

Demographics

Participants were on average twenty years old ($M = 20.15$, $SD = 5.24$, range: 18 – 53 years) with a wide range of BMIs ($M = 24.05$, $SD = 4.95$, range: 16.83 – 38.61; 19.6% overweight, 15.7% obese). There were no significant differences between the three groups in mean age ($p = .48$) or BMI ($p = .80$; see Table 1). Participants self-identified (in overlapping percentages) as white (36.7%, $n = 22$), black (31.7%, $n = 19$), Asian (16.7%, $n = 10$), and Hispanic/Latino (21.7%, $n = 13$) (see Table 1 for demographic information).

There were no significant differences between the three groups in reported frequency with which respondents shopped for groceries ($p = .93$) and cooked their own meals ($p = .45$), average weekly grocery budget ($p = .66$), or days per week exercising ($p = .95$). There were also no significant between-group differences in scores on the DASS-21, Barratt Impulsiveness Scale, Binge Eating Scale, Dutch Eating Behavior Questionnaire, Power of Food Scale, or Food Neophobia Scale (all $p > .05$) (see Table 1).

Default Condition

Participants in the default condition were instructed that they could keep all food items, exchange items, or change the quantity of items in their pre-filled shopping cart. All participants in the default condition (100%, $n = 18$) exchanged default food items for other items of their choice, and 38.9% ($n = 7$) changed the quantities of default food items to select more or less of that product. The average percent of default items deleted from the pre-filled shopping cart was 32.2%, and the average percent of default items in the pre-filled cart for which participants made adjustments in quantity was 3.2%. The average combined percent of items changed or deleted from the pre-filled shopping cart was 35.4%.

Nutrition Data

There were nominally significant group differences in change scores for servings of whole grains, percentage of budget allocated towards fruits, average daily calories consumed, daily grams of saturated fat consumed, and daily intake of sodium and cholesterol (see Table 3 for descriptives and statistics). Servings of whole grains selected on average decreased in the default group ($M = -.81$, $SD = 4.43$), compared to an increase in the education condition ($M = 5.48$, $SD = 7.19$, post-hoc $p = .003$). There was a significantly greater increase in percentage of budget allocated towards fruits in the default condition ($M = 11.56$, $SD = 16.65$), compared to the education group ($M = .50$, $SD = 11.18$, post-hoc $p = .02$). There was a significantly greater average decrease in daily calories selected in the default condition ($M = -852.50$, $SD = 640.85$), compared to the education condition ($M = -198.04$, $SD = 1012.08$, non-parametric post-hoc $p = .02$). Daily grams of saturated fat in the foods selected on average decreased significantly more in the default condition ($M = -16.67$, $SD = 12.54$), compared to the education condition ($M = -6.00$, $SD = 11.22$, post-hoc $p = .04$). Daily sodium and cholesterol intakes on average decreased to a significantly greater extent in the default condition ($M = -1538.61$, $SD = 1463.04$ and $M = -306.44$, $SD = 290.67$), compared to the education group ($M = -240.71$, $SD = 1140.00$, post-hoc $p = .01$ and $M = -42.50$, $SD = 361.42$, non-parametric post-hoc $p = .03$). There were no statistically significant differences in any of the additional food choice behaviors examined, with the exception of a greater decrease in servings of grains selected by the default group ($M = -8.18$, $SD = 7.94$), compared to the education condition ($M = -1.56$, $SD = 10.57$, post-hoc $p = .05$). There were no significant differences between the incentives group and the default or education conditions on any measures.

Discussion

This proof-of-principle study aimed to assess the feasibility and initial efficacy of using a default option to enhance dietary quality in the context of online grocery shopping and

within financial constraints that reflect the financial reality of many people living with food insecurity. Participants were able to follow instructions and indicated no difficulties utilizing the online shopping service to select groceries suitable for their personal consumption. Participants in the default condition made extensive changes to the pre-selected content of their online shopping cart, suggesting that they took the task seriously and made a deliberate effort to personalize selections to match their individual preferences.

In our initial test of efficacy, and considering nominal significance (i.e., $p < .05$), the default option successfully nudged participants to select foods lower in calories, saturated fat, sodium, and cholesterol, along with more whole grains and fruits, compared to those receiving education. Given the large number of statistical comparisons of nutritional outcomes, concerns about Type I error must be addressed. Applying the relatively conservative Bonferroni correction and a modified p -value of .01, only two of the group differences in primary outcomes (in servings of whole grains and sodium content of foods selected) remain statistically significant. The extent to which findings can be replicated and generalized to more diverse populations living with food insecurity and making actual grocery purchases should be examined in adequately powered future research. That being said, a primary aim of this proof-of-principle study was to assess the feasibility of the use of a default option to promote healthy eating. The data presented here suggest that the default option was successfully utilized by participants. Group differences in the nutritional quality of foods selected were all in the expected direction, with participants in the default option consistently making the healthiest choices. Although differences were small, these changes can add up to have a cumulative positive impact on diet-related health. Importantly, the default option was significantly more effective in targeting healthy decision-making than education, which is the current “gold standard” for promoting healthy eating among low-income consumers. There were no significant differences between the default and incentive conditions in their impact on nutritional quality, but the non-monetary default intervention is arguably more suitable for cost-effective and broad dissemination.

Taken together, findings suggest that the default approach may be a feasible, acceptable, and efficacious non-monetary intervention for promoting healthier food choice behavior when grocery shopping, including in the presence of significant financial limitations. The default option could thus represent an important alternative to current educational interventions targeting food choice behavior in participants in SNAP. Participants in the default condition all made significant adjustments to their cart suggesting that they understood the instructions and were able to customize selections, yet still chose healthier alternatives. Dissemination of the default approach via online platforms can help not only overcome financial obstacles to implementing positive dietary changes, but it can also minimize geographical barriers for those living in food desert or with otherwise limited access to traditional commercial food outlets.

There are several limitations to the present research that must be noted. For this proof-of-principle study, we recruited female psychology undergraduate students who were told to complete the experimental task as if they were actually shopping for groceries, but without ultimately purchasing them. Our sample consisted of only females because women continue to do the majority of grocery shopping and food preparation for the family (25, 39),

including among younger generations (40). Participants were not asked information about their socioeconomic status; however, they were asked to select groceries on a budget representative of SNAP. All questionnaire data was self-reported, including weight and height, making it subject to possible bias. Of note, previous research suggests that the differences between self-reported and objectively measured weight are typically not significant (41).

All available data suggest that participants took the experiment very seriously. All participants in the default condition made changes to their shopping carts, indicating that they did not simply accept the content of the default cart as is, but modified it to accommodate personal preferences and their actual eating behaviors (e.g., one participant exchanged whole wheat spaghetti for regular spaghetti and another participant exchanged chicken drumsticks for chicken breasts, citing personal preference). Future research should examine if the positive benefits of using a default menu while online grocery shopping would be sustained over repeated shopping experiences and improve diet-related health outcomes. Additionally, it will be important to consider the level of familiarity the food insecure population has with the technology required to broadly and sustainably implement the default approach.

Certain diets can aid in the effective management of weight-related diseases, and the default option has the potential to facilitate adherence to dietary changes and restrictions in clinical populations. For example, low-carbohydrate and high-protein diets have been shown to significantly improve markers of cardiovascular risk specifically in people with diabetes (42). Unfortunately, patients with weight-related conditions such as type 2 diabetes mellitus or cardiovascular disease often struggle with the successful implementation of these dietary changes (43, 44). The default option may present a novel opportunity for effective intervention with these population.

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What is already known about this subject?

- The default option is a behavioral economics construct that refers to the option a consumer selects if no active choice is made (e.g. opt-out 401K plans, which significantly increase enrollment, compared to active sign up).
- The effectiveness of the default option is supported by research on loss aversion and the status quo bias.
- A healthier default option was previously shown to positively impact food choice in individuals purchasing lunch and in parents selecting breakfast foods for their children.

What does your study add?

- The impact of the default option on food choice behavior has not yet been examined systematically beyond the context of a single meal or within the financial constraints of food insecurity.
- This proof of principle study provides preliminary evidence for the efficacy of a default option in enhancing the nutritional quality of online grocery purchases on a budget corresponding to typical Supplemental Nutrition Assistance Program benefits.
- Findings have implications for the development of non-monetary interventions targeting food choice behaviors in diverse populations, including those living with food insecurity and at increased risk of overweight/obesity and weight-related chronic illnesses.

Baseline Characteristics

Table 1

	Total Sample (<i>n</i> = 59) <i>M</i> (<i>SD</i>)	Education (<i>n</i> = 24) <i>M</i> (<i>SD</i>)	Incentive (<i>n</i> = 17) <i>M</i> (<i>SD</i>)	Default (<i>n</i> = 18) <i>M</i> (<i>SD</i>)	Statistic
Age (years)	20.15 (5.28)	21.17 (7.99)	19.47 (2.30)	19.44 (1.20)	$F(2, 56) = .74, p = .48, \eta_p^2 = .03$
BMI (kg/m ²)	24.09 (4.99)	24.11 (3.88)	24.73 (4.92)	23.48 (6.66)	$F(2, 50) = .22, p = .80, \eta_p^2 = .01$
Non-White	62.7% (<i>n</i> = 37)	58.3% (<i>n</i> = 14)	58.8% (<i>n</i> = 10)	72.2% (<i>n</i> = 13)	$\chi^2 = 1.00, p = .61, \phi = .13$
DASS: Depression	1.96 (1.97)	1.95 (1.99)	1.94 (2.38)	2.00 (1.58)	$F(2, 53) = .004, p = 1.00, \eta_p^2 < .001$
DASS: Anxiety	2.96 (3.64)	3.91 (4.65)	2.53 (3.41)	2.18 (1.85)	$F(2, 53) = 1.28, p = .29, \eta_p^2 = .05$
DASS: Stress	4.13 (3.64)	4.14 (4.18)	4.12 (3.08)	4.12 (3.62)	$F(2, 53) < .001, p = 1.00, \eta_p^2 < .001$
BIS: Attentional	1.88 (.42)	1.86 (.47)	1.96 (.42)	1.82 (.34)	$F(2, 52) = .47, p = .63, \eta_p^2 = .02$
BIS: Motor	1.83 (.33)	1.83 (.29)	1.90 (.38)	1.74 (.34)	$F(2, 52) = .98, p = .38, \eta_p^2 = .04$
BIS: Nonplanning	2.22 (.40)	2.28 (.39)	2.18 (.33)	2.17 (.46)	$F(2, 52) = .50, p = .61, \eta_p^2 = .02$
Binge Eating Scale	8.67 (5.31)	9.43 (5.90)	7.53 (4.43)	8.78 (5.36)	$F(2, 55) = .63, p = .54, \eta_p^2 = .02$
DEBQ: Emotional	2.00 (.79)	1.95 (.73)	2.03 (1.02)	2.05 (.68)	$F(2, 47) = .07, p = .93, \eta_p^2 = .003$
DEBQ: External	2.95 (.50)	2.86 (.50)	3.09 (.45)	2.96 (.55)	$F(2, 47) = .85, p = .44, \eta_p^2 = .04$
DEBQ: Restrained	2.22 (.80)	2.33 (.67)	2.08 (.76)	2.20 (1.01)	$F(2, 47) = .41, p = .67, \eta_p^2 = .02$
PFS: Available	1.92 (.88)	1.93 (.94)	1.80 (.76)	2.00 (.96)	$F(2, 55) = .22, p = .81, \eta_p^2 = .01$
PFS: Present	2.71 (1.06)	2.34 (1.01)	2.96 (1.11)	2.94 (.99)	$F(2, 55) = 2.45, p = .10, \eta_p^2 = .08$
PFS: Tasted	2.53 (1.01)	2.37 (1.12)	2.46 (.95)	2.80 (.90)	$F(2, 55) = .96, p = .39, \eta_p^2 = .03$
Food Neophobia Scale	47.68 (13.51)	47.91 (13.63)	49.71 (13.62)	45.35 (13.72)	$F(2, 54) = .44, p = .65, \eta_p^2 = .02$

Table 2

Education Brochure- Topic Areas

Title	Example
1. Small changes can make a large difference	"Instead of choosing sweet breakfast cereals, choose whole-grain cereals that don't have frosting or added sugars"
2. Tips for healthier choices	"If you usually buy chorizo sausage, try these turkey sausage or vegetarian sausage (made with tofu)"
3. 10 tips of healthy meals	"Make half your plate veggies and fruit"
4. GO, SLOW, and WHOA foods	"WHOA foods (once in a while foods) include whole milk, full-fat American, cheddar, Colby, Swiss or cream cheese; whole milk yogurt"

Nutritional composition of foods selected at Time 1 and at Time 2 by participants in the incentive, education, or default conditions

Table 3

	Time 1		Time 2		One-Way Anova/Kruskal-Wallis H Test (Time 2 – Time 1 Change Scores)
	Total Sample (br/)(n = 59)(br)/M (SD)	Education (br/)(n = 24)(br)/M (SD)	Incentive (br/)(n = 17)(br)/M (SD)	Default (br/)(n = 18)(br)/M (SD)	
Whole Grains (servings)	5.20 (5.05)	10.78 (6.66)	6.52 (3.89)	5.23 (3.54)	$F(2, 56) = 5.93, p = .01, \eta_p^2 = .18$
Fruits (percentage)	13.31 (11.12)	12.92 (9.94)	14.06 (7.63)	26.56 (11.69)	$F(2, 56) = 4.16, p = .02, \eta_p^2 = .13$
Vegetables (percentage)	15.61 (10.52)	18.08 (11.66)	22.47 (14.70)	29.94 (9.40)	$F(2, 56) = 1.11, p = .34, \eta_p^2 = .04$
Average daily calories	3810.42 (723.81)	3701.13 (930.62)	3328.06 (770.49)	2846.89 (841.51)	$F(2, 56) = 3.54, p = .04, \eta_p^2 = .11$
Saturated fat (daily g)	43.90 (12.29)	36.96 (12.55)	36.65 (14.21)	24.61 (9.18)	$F(2, 56) = 3.25, p = .05, \eta_p^2 = .10$
Sodium (daily mg)	4598.05 (1413.05)	4269.42 (1097.82)	4379.94 (1492.94)	2841.67 (1057.47)	$F(2, 56) = 5.03, p = .01, \eta_p^2 = .15$
Cholesterol (daily mg)	842.61 (396.79)	835.58 (494.95)	749.29 (353.91)	484.56 (345.89)	$\chi^2(2) = 7.89, p = .02$
Fat (daily g)	138.19 (38.54)	126.54 (50.90)	121.59 (59.32)	81.56 (25.09)	$\chi^2(2) = 5.42, p = .07$
Milk (servings)	3.64 (2.50)	4.14 (3.61)	3.43 (2.11)	2.69 (1.58)	$F(2, 56) = .54, p = .58, \eta_p^2 = .02$
Meat/beans (servings)	12.40 (6.73)	14.32 (7.68)	12.24 (5.14)	9.92 (4.92)	$\chi^2(2) = .56, p = .76$
Grains (servings)	17.16 (8.09)	16.64 (7.37)	12.91 (6.22)	8.77 (3.28)	$F(2, 56) = 3.14, p = .05, \eta_p^2 = .10$
Carbohydrates (percentage)	50.75 (10.36)	51.73 (8.59)	51.51 (9.78)	58.36 (8.55)	$F(2, 56) = .43, p = .66, \eta_p^2 = .02$
Protein (percentage)	17.87 (4.11)	19.82 (3.42)	19.15 (3.70)	19.29 (4.70)	$F(2, 56) = .46, p = .63, \eta_p^2 = .02$
Fiber (daily g)	38.44 (13.02)	49.77 (12.83)	44.14 (11.19)	46.10 (10.73)	$F(2, 56) = .64, p = .53, \eta_p^2 = .02$