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The Effect of Guilt Free Claims on Restrained and Non-Restrained Eaters' Purchase Intention, Perception of Product Healthfulness, and Amount Willing to Pay for a Novel Product

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*The Effect of Guilt Free Claims on Restrained and Non-Restrained Eaters'
Purchase Intent, Perception of Product Healthfulness, and Amount Willing to Pay
for a Novel Product*

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B.S., University of Connecticut, 2017

A Thesis

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

At the

University of Connecticut

2019

2019

APPROVAL PAGE

Master of Science Thesis

The Effect of Guilt Free Claims on Restrained and Non-Restrained Eaters' Purchase Intent, Perception of Product Healthfulness, and Amount Willing to Pay for a Novel Product

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University of Connecticut

2019

Acknowledgements

First and foremost, I would like to give thanks to my major advisor, Dr. Jennifer Harris. Without this incredible graduate research assistantship at the Rudd Center for Food Policy and Obesity, I would not be here to write this thesis. She has guided me throughout this entire process while allowing me to grow into an independent graduate researcher. Her encouragement and expertise has only pushed me into becoming the best version of myself, researcher, and dietitian.

Thank you also to my associate advisors, Dr. Tricia Leahey and Dr. Michael Copenhaver who have also helped guide me through this process and have offered their own areas of expertise throughout the last two years.

Thank you also to Amy Dunham at Student Health and Wellness for the other half of my funding while also believing in me two years ago to be a part of the outpatient Registered Dietitian team. My thesis would not be what it was without furthering my passion for eating disorders and disordered eating.

Thank you also to the researchers at the Rudd Center for Food Policy and Obesity. Many of you have pushed me into becoming a better researcher. I have also been able to be a part of various areas of research studies that has furthered my passion for nutrition in general.

Lastly, I would like to thank all of my family and friends who have supported me throughout this process. I don't know how I would have made it through this process without you all. Especially this last month that I have asked countless people to listen to my defense.

TABLE OF CONTENTS

Tables List

Figures List

Figure 1. Pretesting Products

Figure 2. Main Study Products

Figure 3. T-Test analysis of perception of healthfulness and purchase intention by condition

Figure 4. T-Test analysis of amount willing to pay by condition

Figure 5. MANOVA analysis of perception of healthfulness of guilt free versus control products between restrained and non-restrained eaters

Figure 6. MANOVA analysis of purchase intention of guilt free versus control products between restrained and non-restrained eaters

Figure 7. MANOVA analysis of amount willing to pay for guilt free versus control products between restrained and non-restrained eaters

Abstract

Products with health-related claims that are perceived to be tasty are more likely to be purchased by consumers than products without a claim. Restrained eaters rely more on external cues such a food packaging rather than internal cues such as hunger signals in a way to control their caloric intake.[1,2] Restrained eaters may be more susceptible to misleading marketing and food claims compared to non-restrained eaters. We propose a guilt free message will affect perception of healthfulness. We also propose a guilt free message and eating restraint will affect purchasing decisions. Lastly, perception of healthfulness and valuing nutritious products mediates the relationship between condition and restraint on purchase intention. According to a two (restrained or non-restrained) by two (guilt free versus control) factorial design, an online sample of 318 females in the United States between the ages of 30-60 were recruited to participate in a survey. Herman and Polivy's Revised 1980 Eating Restraint Scale was used to categorize participants as a restrained or non-restrained eater.[3] Participants were randomly assigned to view a novel product with a guilt free claim or the control. The survey included questions about perception of healthfulness, purchase intention, and amount willing to pay (main outcome variables). After t-test analysis, participants rated guilt free as more healthful than the control $t(316)=2.22$, $p=0.03$. MANVOAs were used to assess the effect of restraint and condition on the purchase intention and amount willing to pay. The interactions were nonsignificant. Perception of healthfulness of the product and valuing nutritious products were mediators of restraint and condition on purchase intention ($R^2= 0.28$). These finding inform that guilt free messages are misleading to consumers and may influence perceived healthfulness, purchase intention, and the amount willing to pay.

Introduction

Food products with low content claims are marketed to make the product seem more healthful however they have been found to not significantly healthier than comparable products. [12] Restrained eating has been mostly studied with college age women and limited research has been done with older women. Level of eating restraint has also been associated with increased levels of guilt after eating.[10,11] The food industry may promote restrained eating and guilt associated with food and beverages by marketing guilt free claims. Guilt free is a marketing term used my companies and is not regulated by a third party which may make it more misleading. The term "free" on food packaging means that a food must have the lowest amount of that nutrient in the product and may make the term "guilt free" more confusing to consumers that are trying to find more healthful choices. [13] Therefore, package messages that are not regulated such as guilt free may be more confusing to a consumer who is trying to make more healthful choices. The purpose of this study is to examine how guilt free messages may influence perception of healthfulness, purchase intention, and amount willing to pay for a novel product for United States women between the ages of 30-60 years old.

Literature Review

Food Claims

Unhealthful products that have nutrition claims on them that have no meaning may influence the perception of healthfulness. Numerous studies have found that the addition of a health claim on food packaging may prime individuals to believe they provide excessive health benefits and view more positivity compared to a product without a claim (positivity bias). [15] The "health halo effect" has shown that consumers may overgeneralize the healthfulness of a product from an individual claim, especially when the nutrients are already more positively correlated to health benefits.[16] The perception of healthfulness of products with nutrient or health claims can deceive consumers. One study from the Rudd Center for Food Policy and Obesity found that when children viewed advertisements with nutritionally poor foods with implied messaged about product healthfulness, the children and the parents both rated the product as more healthful.[10,11,17] Food claims have been a more accepted way to make consumers more aware of their brands. A "low-content" claim describes the level of a nutrient in the product that has been reduced to a threshold governed by the Food and Drug Administration.[18] One study found that thirteen percent of food and over a third of beverage purchases analyzed in a United States study had a "low-content" claim. Low-fat claims were the most predominant for both food and beverages.[1] However, one study found foods that had health-related claims only had marginally better nutritional profiles compared to products that did not have a claim.[2] Another study found that when a food was labeled as "healthy" consumers were found to eat 35% more of the food and believe this was less fattening than a food that was labeled "unhealthy".[1]

Perception of Healthfulness

Numerous studies have shown that the perception of healthfulness of a product specifically from a health-related claim can influence a consumer's intention to purchase a product.[19,20] In one study, it was found that the sales of breakfast oats increased after a health-related claim was added to the package.[21] Another study found, front-of-package nutrition claims most often influenced the overall perception of healthfulness of the product for children.[17] Products with front of package health-related claims were also found to be 75% more likely to be chosen by consumers than the same product without the health-related claim.[10] If consumers also believed that the product with the health claim would be also tasty this increased the purchase intention of the product.[18]

Guilt Free Foods

An estimated 45 million Americans will go on a diet each year and spend roughly $33 billion on weight loss products.[22] The feeling of guilt, is an unpleasant emotion that may be used as a motivating corrective action to prevent a behavior from happening again, such as deviating from a restrictive diet.[23] In one study that consisted of non-probability quota sample of United Kingdom residents, first were asked about their own definition "guilt free food", the vast majority of participants regarded guilt free as being health, diet, or body image related. Participants also reported that they were willing to pay more for guilt free message rather than a comparable product with no message.[24] In the same study more than 80% of individuals who reported previously purchasing products with guilt free claims had intentionally purchased the products for "health reasons".[24] Specific foods also may elicit higher amounts of food related guilt. Chocolate- related guilt was associated with self-reported dysfunctional eating patterns,

high anxiety, depression, body dissatisfaction, and low self-esteem.[25] In March 2019, a researcher went to a local Connecticut grocery store to explore products with a guilt free label. Products that were found with guilt free products include seltzers, air popped popcorn, prepackaged products with an additional low content claim, and vegan ice creams.

Restrained Eating

Another factor that may additionally influence purchasing decisions and perception of healthfulness is if an individual is intentionally restricting their intake. Restrained eaters intentionally restrict their intake or look to package nutritional claims with a goal to either promote weight loss or weight maintenance, while non-restrained eaters are not purposely trying to control their weight.[26,27] As Herman and Polivy described, restrained eaters are "constantly dieting and concerned with not gaining weight, and who presumably would gain substantial weight if they were to 'let themselves go'".[28] Eating restraint has largely been studied with college females. However, it has been reported that individuals that were dieting at any earlier age in life was associated with higher adult BMI, higher restraint scores, and greater uses of risky dieting behaviors.[29] Just over 15% of normal-weight middle-aged women reported clinically significant levels of restrained eating.[30]

Restrained and non-restrained eaters both express food related guilt. However, restrained eaters reported significantly more guilt and greater number of feared foods compared to non-restrained eaters.[31] Non-restrained eaters express guilt food as nutritionally poor and restrained eaters refer to guilt related foods as fattening or diet breaking.[33] Restrained eaters may also be more likely categorize foods they consume

as either "guilt-inducing" or "guilt free" and be more affected by health claims and packaging.[32,33] Restrained eaters may in turn, find more food related enjoyment with foods that have front of package claims as they may feel less food related guilt from the product with the claim.[31,32] As a way of controlling their caloric intake, restrained eaters rely more on external cues such a food packaging rather than internal cues such as hunger signals.[7, 23] The feeling of guilt after a minor violation to a restrained eater's diet may result in loss of control because and use no corrective action.[34] Guilt free claims that are on unhealthy products may directly appeal to restrained eaters.

This study aims to explore how a guilt free message may influence United States women between the ages of 30-60 years old their perception of healthfulness, purchase intention, and amount willing to pay for a product compared with the same product without the guilt free message. Eating restraint in older women will be explored to assess comparable rates of restrained eating from college women. Based on previous research from the literature review, the following hypotheses were prepared.

Hypotheses

Research Question: *Do guilt free messages affect perception of healthfulness with all participants?*
1. Guilt free will increase perception of healthfulness.

Research Question: *Does eating restraint moderate the effect of guilt free claims on purchase intention and amount willing to pay?*
2. These effects will differ between restrained and non-restrained eaters.

Research Question: D*oes perception of healthfulness and valuing nutritious products mediate the relationship of condition and restraint on purchase intention?*
3. These effects will be mediated by perception of healthfulness and valuing nutritious products.

This study also aims to explore the relationship between eating restraint and age as well as the relationship between overall food choices and eating restraint.

Methods

This study was a 2 (non-restrained vs. restrained) by 2 (guilt free vs. control) between-subjects experimental design. An online panel of United States women (ages 30-60 years old) answered questions about the product as well as the Eating Restraint Scale and Food Choice Questionnaire.[3,35] Individuals were excluded from the main study if they had been previously diagnosed with an eating disorder or had a diagnosed dairy allergy. Post analysis, Body Mass Indexes were calculated, underweight participants were excluded (n=7). The University of Connecticut's Board Human Subject Committee approved an exemption and so informed consent was not required for this study however participants were asked to agree to participate in the study. Participants were not asked for their names, email, or any identifying features and IP addresses remained anonymous and were not recorded. Collection of data occurred from September 2018 to January 2019.

Product Selection

Product development was first completed to make sure participants had no preexisting attitudes or experiences with the product (Figure 1). Novel products (gelato and cookies) were created with fictional brand names and messages. The main goal of product selection was to select a product for the main study that was considered more health neutral, had a more positive attitude, and participants had more intention to purchase the product. Participants were recruited through Amazon Mechanical Turk (MTurk), a market research company with a representative panel of US and

international adults (ages 18+).[36] MTurk recruited participants by placing advertisements to panel users for 24 hours. Participants were paid $1.50-2.00 to complete this eight-minute survey. For quality control, researchers reviewed data after completion. Participants were randomly assigned to a counterbalanced order to reduce order effect. Condition 1 participants were directed to seeing a gelato product then cookies. Condition 2 participants were directed to seeing cookies then gelato.

Participants in were asked, healthy they thought the product was (1-very healthy; 7-very unhealthy), this product is for someone like me (1-strongly disagree; 7-strongly agree), I would try this product (1-strongly disagree; 7-strongly agree) and I would buy this product (1-strongly disagree; 7-strongly agree). Participants viewed gelato (M=3.07, SD=1.29) as more health neutral than cookies (M=2.88, SD=1.66); t (58) =1.58, p=0.12. Gelato (M=4.98, SD=1.38) was viewed to be more for "someone like them" than cookies (M=4.53, SD=1.42); t(58)= -1.64, p=0.11 and would be more likely to try gelato (M=5.12, SD=1.46) than the cookies (M=4.67, SD=1.59); t(58)= -1.83, p=0.07. Participants reported that they would be also more likely to purchase gelato (M=4.86, SD=1.55) than cookies (M=4.26, SD=1.62); t(58)= -2.09, p=0.04. Gelato was selected for the remainder of the studies as participants believed it was more health neutral, had more positive attitudes towards it and would be more likely to buy the product.

Figure 1. Product Selection

The cognitive testing was conveniently sampled through Facebook for one

week.[37] Cognitive survey testing was used to confirm that participants understood the

survey questions and could answer them appropriately. Cognitive survey participants

were randomly assigned to see guilt free or control gelato (Figure 2).

Main Study

The novel product selected from pretesting, Gelato, was used for the main study

(Figure 2). Main study used an online panel with a 2x2 factorial design (guilt free versus

control) by (restrained eater versus non restrained eaters). Participants were randomly

assigned to view images of the novel product with a guilt free message or a control.

Participants were asked questions regarding attitude, purchase intention, amount willing

to pay, and perception of healthfulness. Participants later took the Eating Restraint

Scale to assess if they were a restrained or non-restrained eater.[33] Participants were

also asked questions from the Food Choice Questionnaire about their product choices at home.[35] Participants also completed a simple demographic survey as well as reporting their height and weight. Body mass indexes (BMI) were calculated using Excel workbook after from weight in pounds (lbs) and height in feet and inches. Feet and inches were first calculated to inches by multiplying feet by 12 and adding inches. The following equation was used by researchers to calculate BMI: weight (lb)/ [height (in)]^2 x 703.[38]

Figure 2. Main Study Products

Participants

Participants were recruited through InnovateMR a market research company with a representative panel of United States adults (ages 18+).[39] For quality control, participants receive points towards awards periodically, but no compensation for individual surveys. Three hundred sixty-one participants were recruited for this survey, after researchers went through data for quality control three hundred eighteen

participants were a part of the analysis. This study included only women between the ages of 30-60 from the United States. One half scored 15 or higher on the Eating Restraint Scale and were classified as restrained eaters.

Measures. The main outcome variables in this analysis were perception of healthfulness, purchase intention, and amount willing to pay for a product. Perception of healthfulness was combined into a scale of three questions based on a high internal consistency. All variables were analyzed using 7 point Likert scales except for amount willing to pay which was assessed using a sliding scale. The independent variables were condition (guilt free versus control) and eating restraint (non-restrained versus restrained). Finally, the Food Choice Questionnaire analyzed four questions to assess importance of having healthful food in context with restrained eaters.[35] A copy of the main study questionnaire Appendix B.

Purchase Intention. Participants completed the following statement, "I would buy this product". Responses were captured by using a scale ranging from 1= strongly disagree to 7= strongly agree.

Amount Willing to Pay. Participants were then asked to identify their willingness to pay for the product, "The most I would be willing to pay for this product (in dollar amount) is". Responses were captured using a sliding scale ranging from $1.00 to $6.00, in increments of $0.01.

Product Attitude Scale. Participants completed three questions and statements regarding their attitude towards the product. "What is your overall attitude toward this product", "This product is for someone like me", and "I would like to try this product". Participants responded using a scale ranging from 1= strongly disagree or strongly

negative to 7= strongly agree or strongly positive. These responses were combined into one attitude scale based on the high internal consistency (Chronbach's alpha 0.85).

Perception of Healthfulness Scale. Three questions were used to measure perception of healthfulness. Participants were asked the following questions and statements, "How healthy is this product for you", "This product would be good for me.", and "Do you consider this product appropriate for a healthy diet". Participants responded using a scale ranging from 1= strongly disagree or very unhealthy to 7= strongly agree or very healthy. Responses were combined into one product healthfulness scale based on the high internal consistency (Chronbach's alpha = 0.89).

Food Choice Questionnaire.[35] Participants completed four questions from the Food Choice Questionnaire regarding preferences of food. Participants were asked to assess the following statements based on "It is important to me that the food I eat on a typical day." The statements included "is nutritious", "is low in calories", "helps me control my weight", and "is low in fat". Statements were rated 1= strongly disagree to 7=strongly agree.

Herman and Polivy 1980 Eating Restraint Scale.[3] Participants completed The Eating Restraint Scale to determine if a participant was considered to be a restrained or non-restrained eater. The Restraint Scale is subdivided into two subscales. The Concern for Dieting (CD) subscale to assess preoccupation with food and The Weight Fluctuation subscale to measure instability with weight. After participants reported eating restraint, researchers were able to calculate if participants were a restrained or non-restrained eater. Appendix A includes The Eating Restraint Scale.[3] Participants

were identified as a restrained eater with a combined scale score of $\geq$15 and as a non-restrained eater with a combined scale score of $\leq$14. [40,41]

Demographics. Participants completed a simple demographic survey. The survey assessed participant age, sex, race/ethnicity, menopause status, height, weight, and education.

Cognitive pretesting was done for the main study in December 2018 to assess if questions were the construct intended. The cognitive pretesting participants were recruited through a convenience sampling method.

Statistical Analysis

SPSS statistical software (version 22.0; IBM, Chicago, IL) was used to analyze product selection and main study data. Descriptive statistics, internal reliability, correlations, t-tests, multivariate analysis of variance (MANOVA), chi-squares, and linear regressions were analyzed. Descriptive statistics and then internal reliability of scales were first analyzed to assess grouping of questions. Correlational analyses between main outcome variables assessed the relationship strength between the variables. An independent samples t-test assessed the overall effect of condition on perception of healthfulness. MANOVAS analyzed the main effects and interaction between condition and restraint on multiple main outcome variables (purchase intention and amount willing to pay). With a mean Cohen's d estimate of 0.5, power analyses for MANOVAS to represent a medium effect size. Chi square analysis analyzed if randomization was effective between restraint and condition. Linear regressions were used to assess the mediating effect of perception of healthfulness and valuing nutritious products on the relationship between condition and restraint on purchase intention.

Finally, a separate correlational analysis between main outcome variables and select questions from the Food Choice Questionnaire were assessed. [35]

Results

Three hundred eighteen participants were included in the study after screening for missing data and excludes underweight participants (n=7). All of the participants in this study identified as female. Almost one quarter of participants were between the ages of 30-34 years old (22%), 20.8% between the ages of 35-39 years old, 23.6% were between the ages of 40-49 years old, and 33.6% were between the ages of 50-60 years old. The majority of the sample was White non-Hispanic (75%), 10.1% Black non-Hispanic, 7.9% Hispanic, and 7.2% another race/ ethnicity that was not specified. Over a quarter of participants highest education was high school or less (26.1%), 41.2% had some college or went to technical school, 21.4% went to a four-year college, and 11.3% went on to post graduate school (Table 1). Just under half of the participants calculated BMI was obese (43.5%), 24.4% as overweight, and 30.2% as normal weight. Based on The Restraint Scale, restrained eaters made up just above half (50.6%) of the participants, the rest of participants were considered non-restrained eaters (Table 2). Data was analyzed for outliers and normality; outcome variables were nonsignificant and were considered normally distributed.

Reliability Analysis. Three questions were included in the healthfulness scale and a separate three questions were included in the attitude scale to assess thoughts about the presented product. All statements were on a scale between 1-7, ranging from strongly disagree/very unhealthy to strongly agree/very healthy. Questions that were presented in the survey are in Tables 3 and 4. A Cronbach's Alpha coefficient of 0.70 or

higher is considered to have satisfactory reliability. [42] The healthfulness scale used in this analysis had a Chronbachs Alpha of 0.89 and the attitude scale used had a Chronbach's Alpha of 0.85. [42]

Correlation Analysis (Main Outcomes). A correlation analysis was first conducted to examine the relationships between all main outcome variables. This analysis produced several significant relationships. Purchase intent and product attitude had a strong positive correlation (0.64) (Table 5). Additional studies have previously established the relationship between product attitude and purchase intention.[43,44] Due to the correlation between the two variables, purchase intention was selected to be used for the remainder of this analysis. Healthfulness scale, purchase intention, and amount willing to pay were also significantly positively correlated with each other.

Effect of Condition on Main Outcome Variables. To assess the first hypothesis, guilt free message will increase perception of healthfulness in all participants, t-test analysis was first completed. The guilt free message increased perception of healthfulness $t(316)=2.22$, $p=0.03$. Participants in the guilt free condition also believed that the product was almost "somewhat healthy" (M= 4.66, SD= 1.15). While participants in the control on average believed that the product was "neither healthy nor unhealthy" (M= 4.37, SD= 1.24) (Figure 3).

Interaction Effect of Condition and Restraint. MANOVAs were completed for the next analysis to test the second hypothesis, the effect of the guilt free message on purchase intention and amount willing to pay will be greater for restrained eaters than for non-restrained eaters (Figures 5-7). The interaction between condition and restraint on purchase intent was not significant ($F(1)= 0.32$, $p= 0.56$). However, the main effect of

condition on purchase intention was significant (F(1) = 3.84, p=0.05) while the main effect of restraint on purchase intention was not significant (F(1) = 2.43, p= 0.12). There was no significant interaction effect between condition and restraint on amount willing to pay (F(1)= 0.16, p=0.69). The main effect of condition on amount willing to pay was not significant (F(1)=2.97, p=0.09) however the main effect of restraint on amount willing to pay was significant (F(1) = 4.23, p=0.04). Further analyses completed also analyzed the effect on perception of healthfulness. The interaction between condition and restraint was also found to have a non-significant effect on perception of healthfulness (F(1)= 0.09, p=0.77) (Table 6). The main effects of condition (F (1)=3.82, p=0.05) and restraint (F(1) =4.01, p=0.05) on perception of healthfulness were both significant.

After the analyses were completed, a chi square was completed between restraint does and condition. Results revealed the chi square to be approaching significance. (X^2 (1, n=319) =3.22, p=0.07) (Table 7).

Mediating Effect on Purchase Intention. Linear regression analysis was used to investigate the hypothesis that perceived healthfulness of a product and valuing nutritious products mediates the effect of condition and restraint on purchase intention. Results indicated that condition was an approaching significant predictor of purchase intention, (B = -0.28, SE = 0.16, p = 0.09). Restrained eating was a significant predictor of purchase intention, (B = 0.32, SE = 0.16, p =0.05). When perceived healthfulness, (B= 0.35, SE= 0.20, p=0.00) and valuing nutritious products, (B=0.12, SE=0.19, p=0.02) were both added into the model they were both positive significant predictors of purchase intention. Condition, (B=-0.10, SE=0.14, p=0.49) and restraint level, (B= 0.14, SE= 0.14, p= 0.34), were no longer significant/ approaching significant predictors of

purchase intention after controlling for the mediators, perceived healthfulness and valuing nutritious products. Condition and restraint were associated with purchase intention that were approximately 0.28 points higher as mediated by perceived healthfulness and valuing nutritious products. This model, with two mediators, accounted for 0.28 of the explained variances compared to 0.02 without mediators (Table 8).

Correlation Analysis Food Choice Questionnaire. Perception of healthfulness and purchase intention of the product shown were significantly positively correlated with having a higher importance of having products at home that were considered nutritious, low in calories, helped to control weight, and low in fat. Restrained eating also significantly predicted having more interest in eating nutritious products ($F(1)=12.1$, $p=0.001$), products that helped to control their weight ($F(1)= 27.4$, $p=0.00$), were low in calories ($F(1)=22.7$, $p=0.00$), and low in fat ($F(1)=5.7$, $p=0.018$). Participants in the guilt free condition (M=5.7, SD= 1.2) were significantly more likely to want products that were nutritious for them than the control condition (M=5.4, SD=1.2) (Table 9).

Discussion

This study examined the effect of condition and eating restraint on perception of healthfulness, purchase intention, and amount willing to pay for a guilt free message. In the context of this study, the intent was to establish the extent to which front-of-package food claims have on United States women between 30-60 years old while examining possible covariate effects.

T-Test results indicated that condition (guilt free versus control) was a significant predictor of the perception of healthfulness. Participants in the guilt free condition

believed that the product was significantly more healthful than participants in the control. These results support our hypothesis, that guilt free will increase perception of healthfulness.

The MANOVA results yielded no interaction effects when restraint was added into the model with condition for any of any of the main outcomes (purchase intention, amount willing to pay, and perception of healthfulness). These results do not support our hypothesis, that restrained eaters will have stronger purchase intention and amount willing to pay with a guilt free message than non-restrained eaters. However, the main effects revealed that participants in the guilt free condition thought the product was significantly healthier and were more likely to purchase the product. These results are consistent with a previous study that showed front of package health-related claims were 75% more likely to be purchased than the same product without health-related claims.[43,44] The main effects of restraint revealed that restrained eaters were more likely to think that both products were healthier and were more likely to pay more for the products that the non-restrained eaters. These results are similar to previous research, that restrained eaters are more likely to be influenced by food packages than non-restrained eaters. [26,27]

The test of association results was approaching significance ($p=0.07$). Randomization of non-restrained versus restrained eaters may have not been evenly distributed. Guilt free message may have also primed individuals to have increased restrained thoughts.

Perceived healthfulness of a product and valuing nutritious products were found to be significant mediators of condition and restraint on purchase intention. Specifically,

believing the product was more healthful and valuing eating more nutritious products explained the relationship between condition and restraint on purchase intention. These results do support our hypothesis that, some of the predictive effect of condition and restraint on purchase intention is mediated by product perception of healthfulness and valuing nutritious foods. These results are also consistent with previous research that the perception of healthfulness of a product with a health claim influenced a consumer's intention to purchase a product. These results are similar to other research that has showed increased perceived health for a product with a claim predicts purchase intention.[13,14,20]

The correlational analysis demonstrated that restrained eaters also valued having products that were considered nutritious, were low in calories, helped to control their weight, and were low in fat compared to non-restrained eaters. The guilt free condition also demonstrated a significant relationship with wanting more nutritious products at home. The guilt free message may have primed participants prior to answering this question.

Implications for Practice

In addition to the understanding of front of package messages and restrained eating, the present study provides a new understanding of "guilt free" to women between the ages of 30-60 years old. The present study provides insight into current food trends as well as the consumer's amount willing to pay for them. This research can be used in order to educate consumers regarding misleading front-of-package messages that can influence perception of healthfulness, purchasing at the grocery store, as well as their amount willing to pay for products. On a broader scale this

research provided insight for specifically what restrained eaters and consumers are looking for in their while making their food related decisions.

Limitations

There are several limitations to mention for this study. One limitation is the high percentage of White non-Hispanic participants that were included in this study. These results may impact the generalizability to specific races/ ethnic minorities. Another limitation to this study is that, income was not assessed and may impact the generalizability to consumers on limited or fixed food budgets. Another possible limitation to consider is the used of self-reported survey and panel data, as this may risk inaccuracy from the participant. The last limitation of this research is individuals in the guilt free condition reported they were more interested in having products that were nutritious than the control condition. Individuals in the guilt free condition may have been primed after seeing the guilt free label.

Future Research

In order to add to the current understanding of the relationship between guilt free messages and eating restraint on perception of healthfulness, purchase intent, and amount willing to pay, it is essential to highlight directions for future research. Future research should focus on how consumers make purchasing decisions related to guilt free messages using specific questionnaires that ask more in-depth questions regarding taste, satisfaction, and perceived flavors. Another area of future research should include a nutrition label in order to assess how this would affect the perception of healthfulness and purchase intention of the products. Both of the products used for the main study

were perceived as slightly unhealthy in pretesting by participants. Future research should focus on more health neutral products to assess how ambiguous foods with a guilt free message may affect results. Future research should also assess how guilt free claims make individuals feel more guilty. Although the aim of this study was to apply to individuals that identify as female between the ages of 30-60 years old, this study is not generalizable to individuals outside of this range. Future areas of research may be useful to focus on more generalizable results to apply to the general population.

Conclusion

In conclusion, the present study was able to demonstrate how front-of-package messages and eating restraint can influence purchasing decision, perceived overall healthfulness, and amount willing to pay. Restrained eaters were more likely to believe a product was more healthful and purchase the product than the non-restrained eaters. Additionally, guilt free messages influenced consumers into believing the products were more healthful, influenced purchasing decision, and amount willing to pay for the product. Restrained eaters were also found to have significantly higher importance of health-related food choices compared to non-restrained eaters. Additionally, this study suggests results that are consistent with the literature, that individuals are more likely to perceive products with health claims as more healthful, more willing to purchase and pay for products with guilt free messages. [24]

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Figures

Figure 3. T-Test analysis of condition on perception of healthfulness and purchase intention
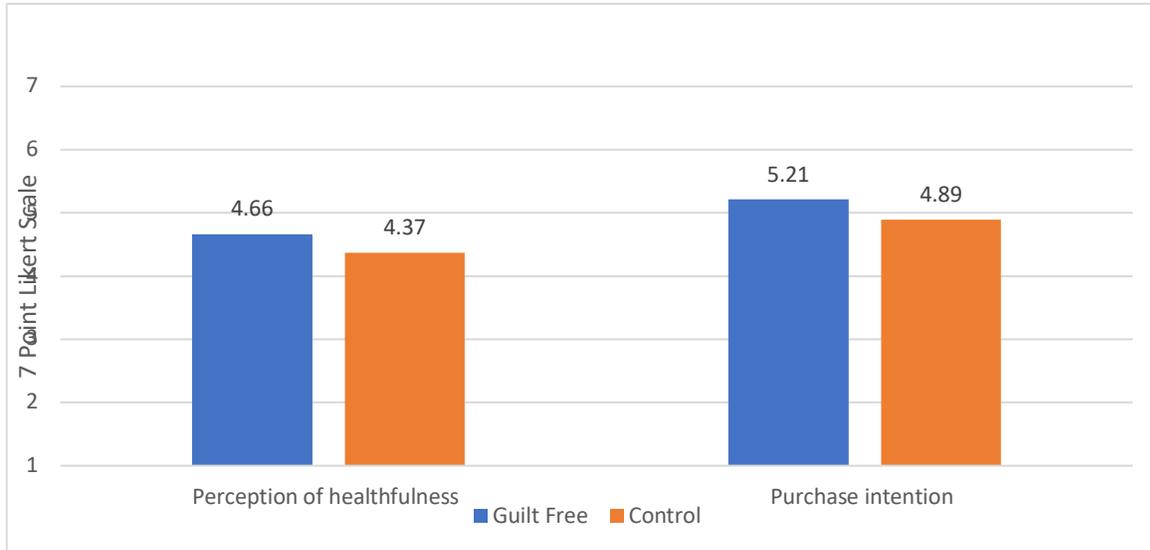

Figure 4. T-Test analysis of condition on amount willing to pay.
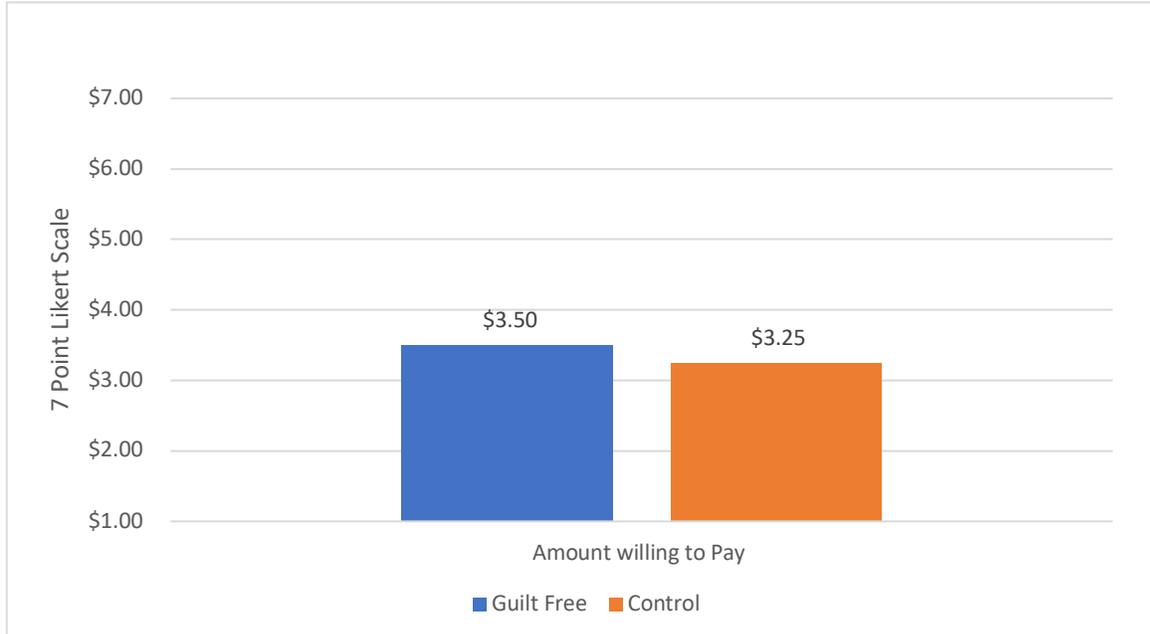
Figure 5. MANOVA analysis of perception of healthfulness of guilt free versus control products between restrained and non-restrained eaters.
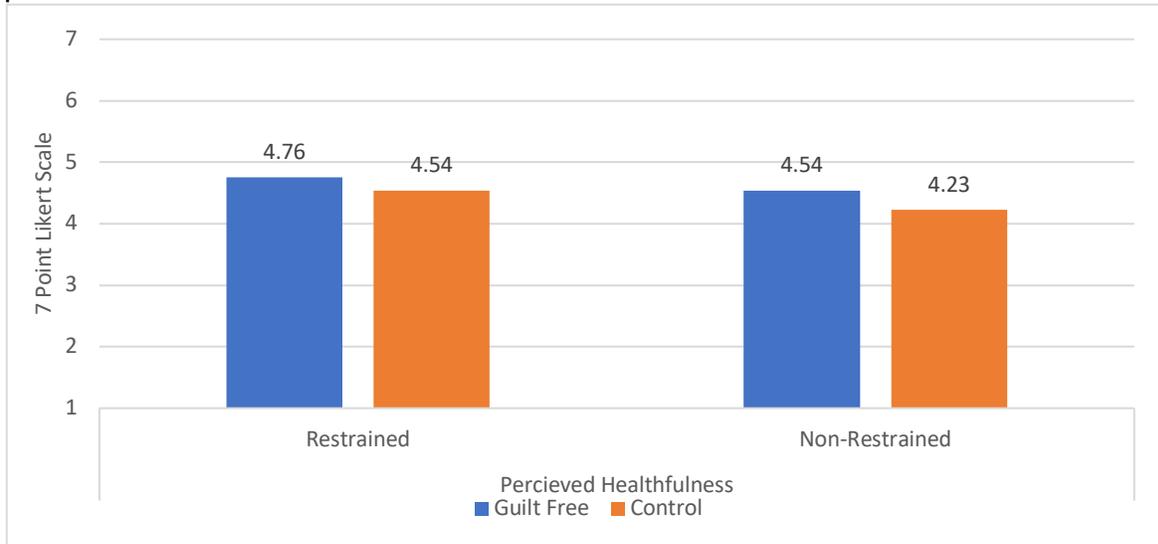
Figure 6. MANOVA analysis of purchase intention of guilt free versus control products between restrained and non-restrained eaters.
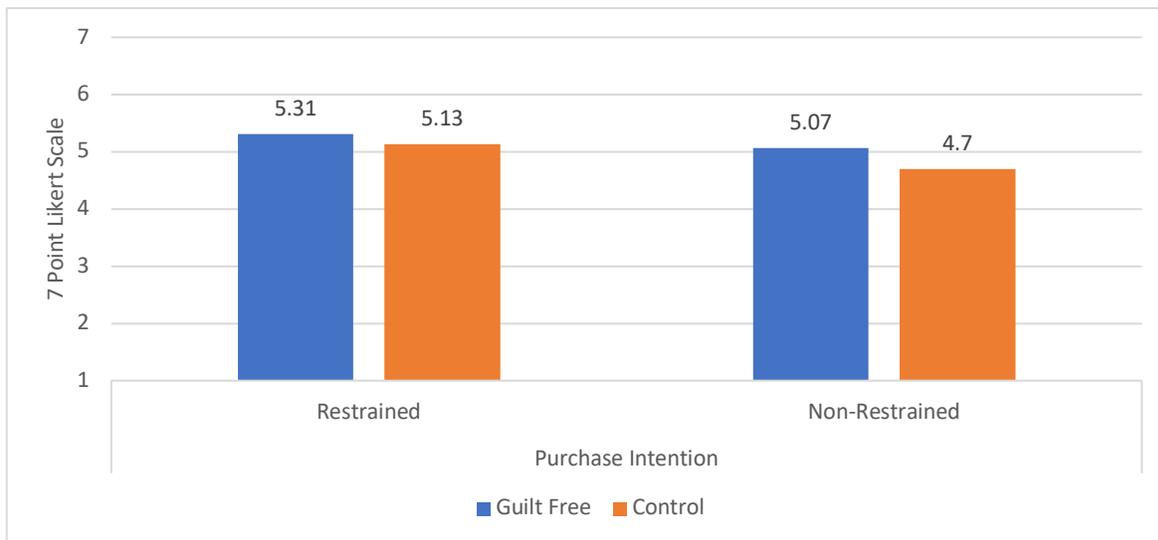
Figure 7. MANOVA analysis of amount willing to pay for guilt free versus control products between restrained and non-restrained eaters.
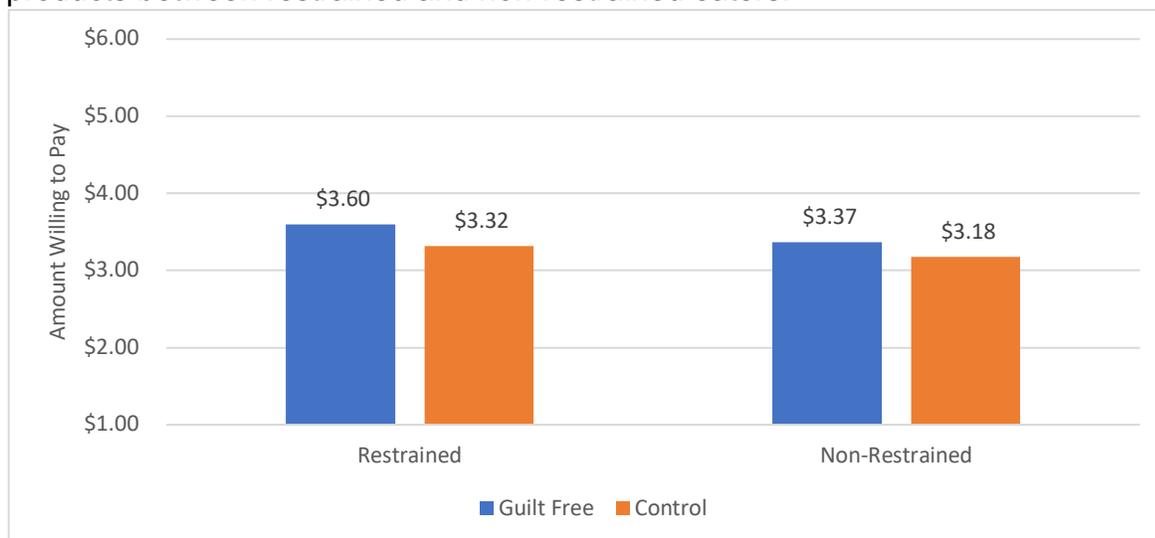
Tables

Table 1. Demographic Data

	Variable	*Percentage (n=318)*
Ethnicity	White Non-Hispanic	74.8%
	Black Non-Hispanic	10.1%
	Hispanic	7.9%
	Other, not specified	7.2%
Age (years)	30-34	22.0%
	35-39	20.8%
	40-49	23.6%
	50-60	33.6%
Education	Highschool or less	26.1%
	Some College	41.2%
	4-year College	21.4%
	Post Graduate	11.3%

Table 2. Additional Health Data

	Variable	Percentage (n=318)
BMI	Normal	30.2%
	Overweight	24.4%
	Obese	43.5%
Menopause	Prefer Not to Answer	6.3%
	Premenopausal	45%
	Perimenopausal	16.7%
	Postmenopausal	32.1%
Restraint	Restrained	49.4%
	Non-Restrained	50.6%

Table 3. *Healthfulness Scale*

Question	Chronbachs Alpha if Item Deleted
"How healthy is this product for you?"	0.84
"This product would be good for me."	0.87
Do you considered this product appropriate for a healthy diet?"	0.83

*Chronbachs Alpha: 0.89

Table 4. Attitude Scale

Question	Chronbachs Alpha if Item Deleted
"What is your overall attitude toward this product?"	0.88
"This product is for someone like me."	0.71
"I would like to try this product."	0.77

*Chronbachs Alpha: 0.85

Table 5. Correlations between main outcome variables

	Healthfulness	Purchase	Attitude	Most Pay
Healthfulness Scale	1			
Purchase	0.50**	1		
Attitude Scale	0.42**	0.64**	1	
Most Pay	0.19**	0.34**	0.39**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 6. Analysis of Variance of Evaluated Variables on Perceived Healthfulness, Purchase Intention, and Amount Willing to Pay (n= 318)

	Condition	Restraint	Condition x Restraint
Perception of health	$F(1,314)=3.82$, p=0.05*	$F(1,314)=4.01$, p=0.05*	$F(1,314)=0.89$, p=0.77
Purchase intention	$F(1,314)=3.84$, p=0.05*	$F(1,314)=2.43$, p=0.12	$F(1,314)=0.164$, p=0.69
Amount willing to pay	$F(1,314)=2.97$, p=0.09	$F(1,314)=4.23$, p=0.04*	$F(1,314)=0.315$, p=0.32

Table 7. Results of chi square test and descriptive statistics of restraint x condition.

	Guilt Free	Control	Total
Non-Restrained	71	86	157
Restrained	89	72	161
	160	158	318

Note. X^2 = 3.216, df = 1. *p <0.05

Table 8. Regression analysis of condition and restraint on purchase intention with mediating effect of perception of healthfulness and valuing nutritious foods.

	Beta	Significance	Lower CI	Upper CI	SE
Condition	-0.10	0.49	-0.37	0.18	0.14
Restraint	0.11	0.44	-0.17	0.39	0.14
Nutritious	0.17	0.01	0.05	0.29	0.06
Healthfulness	0.18	0.00	0.14	0.22	0.02

*B= unstandardardized beta values

Table 9. Food Choice Questionnaire Correlations

	Healthfulness	Purchase	Attitude	Most Pay	Affect Weight	Nutritious	Low Calorie	Control weight	Low Fat
Nutritious	0.29**	0.28**	0.29**	0.13*	0.024	1			
Low Calories	0.29**	0.19*	0.18**	0.06	0.09	0.41**	1		
Control weight	0.18**	0.13*	0.16**	0.07	0.09	0.49**	0.73**	1	
Low Fat	0.29**	0.24**	0.16**	0.02	0.10	0.41*	0.75**	0.65**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Appendix A. Herman and Polivy 1980 Restraint Scale. [3]
*(CD) = Concern for Dieting subscale
*(WF) = Weight Fluctuation subscale

1. How often are you dieting? (CD)
    a. Never, Rarely, Sometimes, Usually, Always
2. What is the maximum amount of weight (in pound) that you have ever lost within one month? (WF)
    a. 0-4 pounds, 5-9 pounds, 10-14 pounds, 15-19 pounds, 20+ pounds
3. What is your maximum weight gain within a week? (WF)
    a. 0-1 pounds, 1.1-2 pounds, 2.1-3 pounds, 3.1-5 pounds, 5.1+ pounds
4. In a typical week, how much does your weight fluctuate? (WF)
    a. 0-1 pounds, 1.1-2 pounds, 2.1-3 pounds, 3.1-5 pounds, 5.1+ pounds
5. Would a 5 pound weight gain significantly affect the way you live your life? (CD)
    a. Not at all, Slightly, Moderately, Very Much
6. Do you eat sensibly in front of others and splurge alone? (CD)
    a. Never, Rarely, Often, Always
7. Do you give too much time and thought to food? (CD)
    a. Never, Rarely, Often, Always
8. Do you have feelings of guilt after overeating? (CD)
    a. Never, Rarely, Moderately, Often, Always
9. How conscious are you of what you are eating? (CD)
    a. Not at all, Somewhat, Moderately, Very Much
10. How many pounds over your desired weight were you at your maximum weight? (WF)
    a. 0-1 pounds, 1.1-2 pounds, 2.1-3 pounds, 3.1-5 pounds, 5.1+ pounds

Appendix B. Copy of Main Study Questionnaire

A Study of Consumer Food Choices

Purpose:We are conducting a research study to examine individuals' food choices. Procedures:
Participation in this study will involve viewing a food package. You will be asked to answer questions about your attitudes toward the product. We anticipate that your involvement will require no more than 20 minutes. Risks and Benefits:
There are no risks associated with participating in this study. Although this study will not benefit you personally, we hope that our results will add to the knowledge about public attitudes toward food products.

Confidentiality:
All of your responses will be anonymous. Only the researchers involved in this study will have access to the information you provide. Voluntary Participation:
Participation in this study is completely voluntary. You are free to decline to participate, to end participation at any time for any reason, or to refuse to answer any individual

question without penalty. You must be a woman between 30-60 years old to participate in this study. Questions:
If you have any questions about this study, you may contact the Principal Investigator, Dr. Jennifer Harris or Investigator, Alexis Ludwig at (860) 380-1000
or Alexis.Ludwig@uconn.edu. If you have any questions about your rights as a research participant or concerns about the conduct of this study, you may contact the University of Connecticut Institutional Review Board, 438 Whitney Road Extension, Unit 1006, Storrs, CT, (860) 486-3619 Agreement to Participate:

○ I have read the above information and agree to participate in this study (1)

○ I do not want to participate in this study (2)

- -

We will be asking you some questions about a food product that a company is thinking of introducing in the future. We would like to know your impression of this product.

Please click to begin survey.

End of Block: Introduction

Start of Block: Exclusion Questions

Q1. First do you have any food allergies? Please select any food allergies that you have.
- ☐ Gluten Allergy (1)
- ☐ Dairy Allergy (2)
- ☐ Egg Allergy (3)
- ☐ Seafood Allergy (4)
- ☐ Nut/Peanut Allergy (5)
- ☐ Other Allergy (Please list allergies) (6)
- ☐ No Food Allergies (0)

Q2. Do you have any other diet restrictions?
Either out of medical need or personal choice.
- ☐ Low Carbohydrate Diet (1)
- ☐ Low Fat Diet (2)
- ☐ High Protein (3)
- ☐ Vegetarian/ Vegan Diet (4)
- ☐ Calorie Restricted Diet (5)
- ☐ Food Sensitives (Please List) (6)
- ☐ Other Diet Restrictions (Please List) (7)
- ☐ No Diet Restrictions (0)

Q3. Have you ever been diagnosed with an eating disorder?

- ○ Yes (1)

- ○ No (0)

End of Block: Exclusion Questions

Start of Block: Guilt Free

Q4. Please take a look at this product package and then answer some questions about the product listed.

Q5. Have you ever seen or heard of this brand before?

- ○ Yes (2)

- ○ No (0)

- ○ Not Sure (1)

Q6. What is your overall attitude toward this product?

○ Strongly negative (1)

○ Negative (2)

○ Somewhat negative (3)

○ Neither negative nor positive (4)

○ Somewhat positive (5)

○ Positive (6)

○ Strongly Positive (7)

Please indicate your agreement with the following statements about the product listed.

Q8. This product is for someone like me.

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q9. I would like to try this product.

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q10. I would buy this product.

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

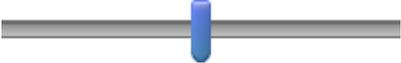**Q11.** I think this product would be tasty.

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q12. The most I would be willing to pay for this product (in dollar amount) is:

	1	2	3	4	5	6
US Dollar ($) ()						

Please answer the following questions in reference to the product listed.

Q13. How healthy is this product for you?

○ Very unhealthy (1)

○ Unhealthy (2)

○ Somewhat unhealthy (3)

○ Neither unhealthy or healthy (4)

○ Somewhat healthy (5)

○ Healthy (6)

○ Very healthy (7)

Q14. Do you consider this product appropriate for a healthy diet?

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q15. This product would be good for me.

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q16. If you ate this product regularly, how would it affect your weight?

○ I would lose weight. (0)

○ It would not affect my weight. (1)

○ I would gain weight. (2)

Please answer the following questions in reference to the product listed.

Q17. Based on the information you see on this product, what is your overall impression of how healthy Meleni Gelato is?

0: extremely unhealthy- 100: extremely healthy

	0 10 20 30 40 50 60 70 80 90 100
Gelato ()	

Q18. Compared to other gelato brands, how healthy do you think Meleni Gelato is?

0: much less healthy- 10: much more healthy.

	0 1 2 3 4 5 6 7 8 9 10
Gelato	

Q19. What is the lowest amount of calories you would expect to be in one serving (1/2 cup) of Meleni Gelato?

	50 100 150 200 250 300 350 400 450 500
Gelato	

Q20. What is the highest amount of calories you would expect to be in one serving (1/2 cup) of Meleni Gelato?

50 100 150 200 250 300 350 400 450 500

Gelato	——————|———————

Please provide your attitudes about the food you eat on a typical day.

It is important to me that the food I eat on a typical day:

Q21. Keeps me healthy

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q22. Is nutritious

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q23. Is low in calories

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q24. Helps me control my weight

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q25. Is low in fat

○ Strongly disagree (1)

○ Disagree (2)

○ Somewhat disagree (3)

○ Neither disagree nor agree (4)

○ Somewhat agree (5)

○ Agree (6)

○ Strongly agree (7)

Q26. Please answer a few questions about yourself.

Q27. How often are you dieting?

○ Never (0)

○ Rarely (1)

○ Sometimes (2)

○ Usually (3)

○ Always (4)

Q28. What is the maximum amount of weight that you have ever lost within one month?

○ 0-4 pounds (0)

○ 5-9 pounds (1)

○ 10-14 pounds (2)

○ 15-19 pounds (3)

○ 20+ pounds (4)

Q29. What is your maximum weight gain within a week?

○ 0-1 pound (0)

○ 1.1-2 pounds (1)

○ 2.1-3 pounds (2)

○ 3.1-5 pounds (3)

○ 5.1+ pounds (4)

Q30. In a typical week, how much does your weight fluctuate?

○ 0-1 pound (0)

○ 1.1-2 pounds (1)

○ 2.1-3 pounds (2)

○ 3.1-5 pounds (3)

○ 5.1+ pounds (4)

Q31. Would a 5 pound weight gain significantly affect the way you live your life?

○ Not at all (0)

○ Slightly (1)

○ Moderately (2)

○ Extremely (3)

Q32. Do you eat sensibly in front of others and splurge alone?

○ Never (0)

○ Rarely (1)

○ Often (2)

○ Always (3)

Q33. Do you give too much time and thought to food?

○ Never (0)

○ Rarely (1)

○ Often (2)

○ Always (3)

Q34. Do you have feelings of guilt after overeating?

○ Never (0)

○ Rarely (1)

○ Often (3)

○ Always (4)

Q35. How conscious are you of what you are eating?

○ Not at all (0)

○ Slightly (1)

○ Moderately (2)

○ Extremely (3)

Q36. How many pounds over your desired weight were you at your maximum weight?

○ 0-1 pounds (0)

○ 1-5 pounds (1)

○ 6-10 pounds (2)

○ 11-20 pounds (3)

○ 21+ pounds (4)

End of Block: Restraint Scale

Start of Block: Demographic Questions

Q37. What is your gender?

    ○ Female (1)

    ○ Male (2)

    ○ Other or prefer not to say (0)

Q38. How would you describe your current menstrual status?

    ○ Premenopausal (currently having regular periods) (1)

    ○ Perimenopausal (changes in periods, but not have gone 12 months in a row without a period) (2)

    ○ Postmenopausal (after menopause) (3)

    ○ Prefer not to answer (0)

Q39. What is your age?

    ○ Younger than 30 years old (1)

    ○ 30-34 years old (2)

    ○ 35-39 years old (3)

    ○ 40-44 years old (4)

    ○ 45-49 years old (4)

    ○ 50-54 years old (6)

    ○ 55-60 years old (6)

    ○ Older than 60 years old (7)

Q40. Do you consider yourself to be Hispanic, Latino, or Spanish descent?

    ○ Yes (2)

    ○ No (0)

    ○ Prefer not to answer (1)

Q41. Please indicate your race. Select all that apply.

○ White (1)

○ Black or African American (2)

○ American Indian or Alaska Native (3)

○ Asian (4)

○ Native Hawaiian or Pacific Islander (5)

○ Other (please list) (0)

_____

Q42. Please indicate the highest level of education you have received.

○ Some high school (1)

○ High school degree (1)

○ Some college or 2-year degree (2)

○ 4-year college degree (3)

○ Post graduate degree (4)

○ Technical or vocational degree (2)

Page Break

Q43. What is your height in feet?

○ Feet (1) _____

○ Inches (2) _____

- -

Q44. What is your weight in pounds?

○ Pounds (1) _____

End of Block: Demographic Questions

Start of Block: End of Survey

Thank you for your participation!
Please leave any feedback

_____

End of Block: End of Survey