Promoting Healthy Choices: Information vs. Convenience

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Abstract

Although recent legislation has been enacted to require fast-food restaurants to display calorie information on menus, the consequences of posting such information remain unclear. We address the effects of providing information and test the efficacy of an alternative approach that makes ordering healthier foods slightly more convenient. Fast-food customers were given menus that varied by: 1) provision of general calorie recommendations, 2) provision of specific calorie information, and 3) whether high- or low-calorie items were more easily accessible. Results suggest that a strictly informational approach may be less effective than subtle guidance in enticing fast-food customers towards healthier meals.

During the past twenty years, the United States, like many other countries, has seen a dramatic increase in obesity. In 1991, only four states had obesity prevalence rates as high as 15-19% and not a single state had a rate above 20%. By 2005, only four states reported rates *below* 20%, with 17 states registering rates equal to or above 25% (Center for Disease Control and Prevention, 2006). Estimates of annual deaths attributable to obesity in the United States range between 280,000 and 400,000, ranking obesity as the second leading preventable cause of death, just behind tobacco use (David B. Allison et al.1999 and Ali H. Mokdad et al. 2004).

Economic analyses of this trend have implicated a variety of potential causes, consequences and costs of obesity (see, e.g., Eric A. Finkelstein et al. 2005 and Shin-Yi Chou et al. 2004). While it is clear that the reasons for the epidemic are multifaceted, survey and economic data suggest that much of the rise in obesity can be attributed to an increase in caloric intake, as opposed to a change in energy expenditure (David M. Cutler et al. 2003). Consequently, government policy has often attempted to reduce obesity by influencing individual food choices, with most intervention tactics focusing on information provision, in the hope that educating consumers about nutritional content will lead them to make healthier food choices. The primary example of such information-based legislation is the Nutrition Labeling and Education Act (NLEA), which was implemented in 1994 (United States Food and Drug Administration) and required that consumers have access to consistent nutritional information for packaged foods. This legislation, however, exempted restaurants from such labeling requirements, limiting its impact primarily to grocery store shopping. Because the increase in obesity has been paralleled by an increase in restaurant dining (Jayachandran N. Variyam 2005 and Joanne F. Guthrie et al. 2002), recent legislation has proposed employing similar tactics in restaurants. In particular, at least 20 states and localities have introduced legislation that would

require chain restaurants to display calorie information prominently on their menu boards, as recommended by the Center for Science in the Public Interest (2003). Yet despite ongoing legislative debate, it is unclear whether these initiatives will have the intended effect, or, even if successful, represent the most effective means for producing such change.

In order to address this question, we compared the efficacy of two different types of interventions to change the food intake of fast food restaurant patrons, one that provides calorie information, mimicking the proposed legislature, and another that makes healthier meal choices marginally more convenient. Raising questions about existing proposed policies, providing information had little net effect in our sample, while the subtle manipulation of convenience had a large effect on calorie intake.

Encouraging Healthy Eating Behaviors

Despite the focus of current and past legislation on providing information, there is little evidence that doing so has much impact. The results of economic analyses of obesity have often led to the conclusion that informational strategies aimed at targeting obesity have had and are likely to have only a limited effect (Eric A. Finkelstein et al. 2005, John G. Lynch Jr. and Gaul Zauberman 2006, and Kelli K. Garcia 2007). The single study that estimated the impact of the NLEA specifically on obesity prevalence found that that it led to a reduction of obesity for only one demographic group: white females (Jayachandran N. Variyam and John Cawley 2006). Other studies of nutrition labeling have produced mixed findings and have found, at best, limited effects of labeling on overall diet quality and calorie intake (Siva K. Balasubramanian and Catherine Cole 2002, Tanja V.E. Kral et al. 2002, Jennifer D. Seymour et al. 2004, and Jayachandran N. Variyam 2005).

Moreover, food choices made in restaurants are qualitatively different in ways that are likely to make them even less influenced by calorie information. Selecting food at the supermarket involves planning for future meals and is not necessarily done on an empty stomach, whereas going out to eat typically occurs when one is hungry, and generally requires the consumer to make only one immediate meal choice. Consumers who are hungry and anticipating a quick meal may be more short-sighted and less motivated to engage in the effortful processing required to use nutritional information (George Loewenstein 1996). In addition, choices made in such "hot" visceral states are not always rational, as dictated by economic theory. For example, David M. Cutler and colleagues (2003) investigate whether or not the increase in caloric intake over time could be seen as simply a rational response to the lowered prices of food, in particular packaged snack foods, which are tempting to consume because they are convenient and require little time to prepare. They conclude that a rational response to the price of food may account for some, but probably not all, of the increase in calories consumed as prices dropped. They propose a model of self-control based on hyperbolic discounting to explain why the increased availability of easy-to-consume snack foods has had a disproportionate effect on weight gain compared to other foods. The need to employ self control in food decision making has been recognized and incorporated into other recent economic theories of obesity (John Komlos et al. 2003) and recognized for its policy implications (John G. Lynch Jr. and Gal Zauberman 2006).

These studies suggest that a purely informational approach is unlikely to lessen caloric intake in one-time, immediate meal choices. A potentially more fruitful intervention in such situations may result from the use of what behavioral economists refer to as "asymmetrically paternalistic" interventions (Colin Camerer et al. 2003 and Cass R. Sunstein and Richard H.

Thaler 2003), which seek to steer consumers toward "better" behaviors without limiting their freedom of choice. These interventions acknowledge the presence of self control problems, as well as other irrational influences on consumer decision making, and exploit already existing cognitive biases to promote better behaviors.

This approach has been advocated by scholars in behavioral and health economics as a promising method by which to address non-optimal consumer choices, including financial and health related behaviors (Rebecca K. Ratner et al. 2008, Kelli K. Garcia 2007, Peter Kooreman and Henriette Prast 2007). For example, in an article that argues in favor of a more prominent role for economists in shaping individuals' health behaviors, Jody Sindelar (2008) describes the power of positive incentives and the need to develop policies that build on this power. In another recent article, George Loewenstein et al. (2007) document the ways in which asymmetrical paternalism can be used to change health behaviors and argue that the standard economic approach of simply providing more information fails to exploit what we know about human motivation, self-control and behavioral change. The authors suggest that we should "exploit the same biases that ordinarily contribute to self-harmful behavior…to promote healthy behavior" (p. 2416).

Behaviors contributing to obesity provide a clear application of this approach. Previous research has supported the contention that subtle environmental factors, such as the convenience of unhealthy foods, can affect food consumption without the consumer making an explicit choice about whether or how much to eat (Brian Wansink 2006). Most of this research has emphasized the effects on quantity of food eaten (James E. Painter et al. 2002) or on decisions between

peripheral meal items (e.g. chips and candy) (Herbert L. Meiselman et al. 1994), but it is unknown whether this approach could affect more mindful choices about a primary meal.

We introduce a convenience manipulation that plays on two biases that ordinarily promote high calorie intake, and use them instead to reduce intake. The first is present-biased preferences, whereby individuals place disproportionate weight on immediate costs and benefits at the expense of delayed outcomes (Ted O'Donoghue and Matthew Rabin 1999). Enforcing the importance of these preferences to health behaviors, a recent meta-analysis of reinforcement contingency management (in which people are paid for improving health behaviors) found that the single most important determinant of effect size was whether behavior-contingent rewards were delivered immediately or only after a time delay (Jennifer P. Lussier et al. 2006). In the case of eating, present-biased preferences typically promote unhealthy choices because the immediate allure of a tasty meal can eclipse considerations of future weight gain. Furthermore, because any single indulgence has no noticeable effect on weight, the benefits of abstaining are intangible and hard to assess. Although these preferences typically work against healthy behaviors, it is possible to exploit them to instead favor consumer interests by making healthy behaviors more convenient and unhealthy behaviors more immediately costly, a move which could also reduce the need to employ willpower (Roy F. Baumeister and Kathleen D. Vohs 2003). In the current study, we do this by making healthy meal options slightly more convenient to order in one experimental treatment. Thus, the avoidance of small immediate costs – the cost of the extra effort required to order a less healthy meal – weighs in favor of healthy selections.

The second bias, well documented in the Behavioral Economics literature, is the tendency for people to stick with the status quo or default option, even if superior options are available

(William Samuelson and Richard Zeckhauser 1988). Policies that set the desired behavior as the default have been shown to greatly increase retirement savings (Richard H. Thaler and Shlomo Benartzi 2004) and organ donation (Eric J. Johnson and Daniel Goldstein 2003). Inspired by dramatic results like these, we made healthy options the implicit default in our experimental condition intended to increase healthy choices.

Overview of the Current Study

The study was designed to assess the effects of informational vs. asymmetrically paternalistic approaches to encouraging low-calorie meal choices. The informational manipulations were (1) providing recommendations for daily caloric consumption for a person of the subject's gender and activity level, and (2) providing specific information about the caloric content of menu options (so as to mimic proposed legislation). Our asymmetrically paternalistic intervention is conceptually similar to the proposal of Sunstein and Thaler (2003) that healthy food options be positioned first in cafeterias, thereby inducing consumers to take more healthy food without limiting the availability of other choices. We explore these factors in a field study examining meal choices in a familiar restaurant.

Methods

During lunch hours, customers entering a Subway restaurant were approached and offered a free Subway meal of their choosing in exchange for completing a survey. Patrons who agreed to participate were instructed to pick their meal from the provided menu, first selecting a sandwich, then a side dish and drink. Next, participants completed the survey, after which they were handed a Subway cash card and a coupon with their order on it to give to Subway. Participants were deliberately led to believe that our interest was in the information they

provided on the survey, in order to minimize subjects' self-consciousness or concern that they would be judged on the basis of their food choice.

The menus varied in a 2 (daily calorie recommendation offered or not) x 2 (calorie information for menu items shown or not) x 3 (convenience of healthy options) design. The calorie recommendation was presented following brief instructions on the first page, and provided daily recommendations of calorie consumption for men and women, with sedentary vs. active lifestyles. Those who did not receive the calorie recommendation saw only the general instructions. The next page listed five of the ten sandwich options as "featured sandwiches," which varied according to the convenience manipulation, in an attempt to influence the difficulty of ordering particular sandwiches. This page contained either the five most caloric sandwich options, the five least caloric sandwich options, or a mix of high- and low-calorie options. Participants were informed that they could choose from the featured menu page or, in large print at the bottom of the page, that they could choose from the complete menu by turning to the page with additional options. That page listed the five remaining non-featured sandwiches and was bound with a small round paper seal, which enabled us to record accurately whether it had been opened. Calorie information, if provided, was listed prominently next to each menu item. Participants indicated their sandwich choice, whether from the "featured" or non-featured list. Then they turned to the next page to choose their drink (e.g., soda or water) and side dish (e.g., potato chips or fruit). Participants returned the menu and handed their order to the experimenter, and were then given the survey.

The survey asked participants to provide estimates of the caloric content of their chosen meal and their recommended daily caloric intake, rate their hunger and anticipated enjoyment of

the meal on 7-point scales, indicate how often they eat at Subway and whether they were currently dieting, and provide their height, weight, and demographic information.

Statistical Analyses

Participants' sandwich and meal calories decisions were examined in two analyses that included as independent variables: 1) presence versus absence of calorie information, 2) presence versus absence of a daily calorie recommendation, 3) low-calorie items more convenient, versus high and mixed, 4) high-calorie items more convenient, versus low and mixed, 5) gender, and 6) age. The distribution of sandwich calories was intentionally split into low- and high-calorie, resulting in a bimodal distribution, so logistic regression was used for this dependent measure (Table 1, left column). Linear regression was used to examine total meal calories (Table 1, right column).

Results

Participants

More than half of customers approached agreed to participate (N= 293), with those not agreeing typically saying they didn't have time. One participant appeared to misunderstand the instructions, so this person's responses were omitted, leaving 292 participants. The sample was 61% male, with an average age of 29 years (range 18 to 85 years). The sample classified themselves as 54% white, 11% African American, 29% Indian/Asian, 3% Hispanic and 3% other. The average BMI (calculated from self-reported weight and height) was 25 (range 16 to 44). Twenty-four percent of participants reported that they were currently dieting. Participants reported being somewhat hungry (Mean = 5.1 on 7 point scale), expected to enjoy their meal

(Mean = 5.6 on 7 point scale) and, on average, reported visiting Subway between once and twice a month.

Informational Effects

The left column of Table 1 presents the logistic regression predicting sandwich choice, including the manipulated variables, gender and age. There was no main effect on picking a low-calorie sandwich of providing either calorie information, $p = .69$, or the daily calorie recommendation, $p = .68$, nor was there any interaction, $p = .63$. The same was true for total meal calories, with no main effect of calorie information, $p = .66$, daily calorie recommendation, $p = .79$, nor any interaction, $p = .55$.

Insert Table 1 about here

Paternalistic Effects

In contrast to the lack of impact of calorie information, the convenience manipulation had a strong main effect on the odds of choosing a low-calorie sandwich, such that participants chose sandwiches with fewer calories when it was more convenient to do so (left column of Table 1). In particular, controlling for all other variables and compared to those who received the mixed featured menu, those who received the healthy menu were far more likely to choose a low-calorie sandwich (OR=2.75, p=.001, 48% more likely), whereas those who received the unhealthy menu were considerably less likely (OR=.38, p =.002, 43% less likely) to choose a low-calorie sandwich (Figure 1). Although there were significant differences between all three

menu conditions, perhaps the most important for policy purposes is the contrast between the mixed and low-calorie menus, which most closely represent the typical restaurant menu and a paternalistically asymmetric alternative, respectively.

The effect of receiving the healthy featured menu was robust enough to lower overall meal calories, including the side dish and drink, B = -78.34, $t(288) = -2.28$, $p = .02$ (Table 1, right column), despite the fact that the manipulation was only applied to the sandwich menu. However there was virtually no difference in total meal calories between those with the mixed and high-calorie menus, $p = .79$, perhaps indicating a compensatory effect of seeing the mixed menu. Finally, some exploratory analyses were conducted to examine the subset of the population who chose to look for additional sandwich options. Overall, 38% of the sample chose to look at the second (non-featured) menu. This percentage did not vary significantly by any of the three main manipulations (calorie recommendation, $p = .55$, calorie information, $p = .64$, or featured menu, $p = .96$) or any of the demographic variables.

Discussion

Although the motivation to provide calorie information in restaurants is well intentioned, the results of this study indicate that information alone may not lead to healthier behavior across the board. Nor did providing a guideline for recommended daily calorie intake appear to help consumers use the calorie information more effectively.

These findings suggest that, rather than providing mere information to consumers, a more promising avenue for changing eating behavior, and thereby affecting obesity rates, may be to make it easier for people to choose healthier options. In this study, simply providing consumers with a low-calorie “featured” menu first and requiring slightly more effort to order high-calorie

alternatives significantly reduced sandwich and meal calories. One limitation of this study is that the decision involved only a single meal choice. It is possible that those who chose low calorie sandwiches may have felt hungrier later in the day, or more entitled to indulge, and may then have consumed caloric snacks as a result. Also, it is unclear whether a program that made low calorie food more convenient, if implemented in an ongoing fashion, would produce sustained changes in behavior. On the one hand, people might learn to work around the intervention, e.g., always to go immediately to the full menu so that the express menu was no longer more convenient. On the other hand, if the convenience manipulation worked for some period, it might prove to be habit-forming, thereby creating long term changes in diet even if the intervention were removed. Besides addressing these limitations, future research will also be needed to assess how approaches such as the one studied here could be incorporated successfully into legislation and restaurants' business models.

The current study suggests a promising avenue for public interventions targeting preventable hazards such as obesity, smoking, or alcohol use, where self-control plays a large role that information alone cannot address. These findings are consistent with previous research in which the power of present-biased preferences and default options to change behavior is well documented (Richard H. Thaler and Shlomo Benartzi 2004). The current study adds one more piece of evidence suggesting that asymmetrically paternalistic interventions can help people to behave more optimally while leaving them 'free to choose'. Based on the continued support for the effectiveness of these strategies, the challenge for policy makers is to find novel and creative ways in which to harness cognitive biases to help people achieve healthier outcomes for themselves.

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Figures

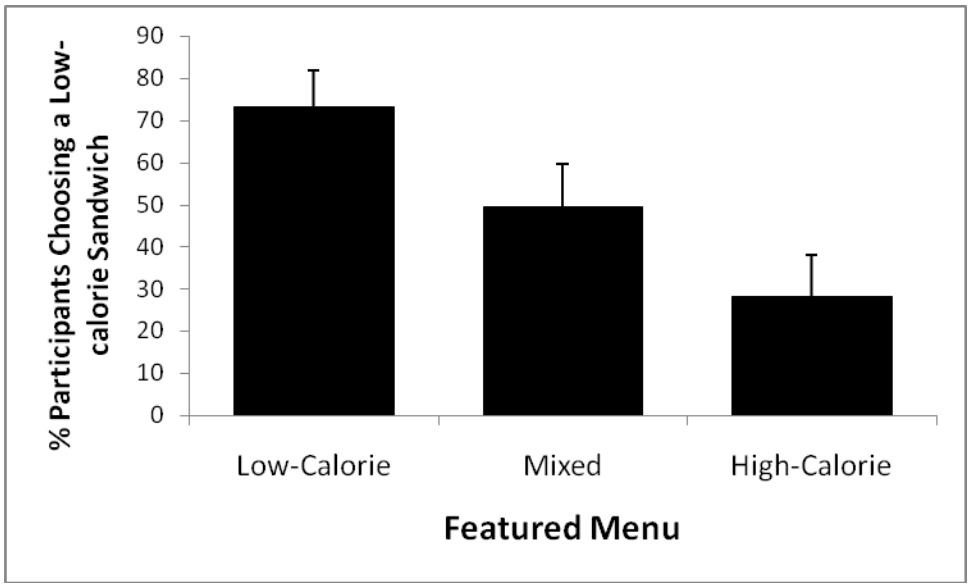

Figure 1. The percentage of participants who chose a low-calorie sandwich as a function of "featured" menu. Bars indicate two standard errors.

Table 1. Regressions predicting food choices from convenience, information, and demographics

	Dependent variable: Log odds of choosing a low-calorie sandwich	**Dependent variable: Total meal calories**
type of regression	logistic	linear
Constant	.27 (.42)	814.82** (48.79)
Calorie Information	.15 (.37)	-18.41 (41.93)
Calorie Recommendation	-.15 (.37)	-11.56 (42.38)
Calorie Info*Calorie Recommendation	.25 (.51)	-34.96 (57.71)
Healthy Featured Menu	1.01** (.30)	-78.34* (34.41)
Unhealthy Featured Menu	-.96** (.31)	9.38 (35.96)
Female	-.03 (.27)	-53.79 (29.93)
Age	-.01 (.01)	-.07 (1.11)
	N = 292	N = 290

	$X^2 = 42.81, p < .001$	$F(7,282) = 2.11, p < .05$
	Nagelkerke $R^2 = .18$	$R^2 = .05$

Note: * significant at $p < .05$, ** significant at $p < .01$. Standard errors are in parentheses.

Appendix: Instructions, menu (for condition with calorie recommendation, calorie information, and healthy featured menu), and survey

Below are instructions on how to complete this survey and earn your free Subway meal. **Please read the instructions carefully before continuing.** If you have any questions, at any point, please raise your hand and the experimenter will come to you.

INSTRUCTIONS

- In return for completing this short survey packet, you will receive a coupon for your chosen meal (a 6 inch Sub, Side and Medium Drink) from Subway. We anticipate that this survey should take approximately ten minutes to complete.

- In making your decision about what meal to order, you may want to consider the information below, which comes from www.mypyramid.gov, a nutrition guide provided by the United States Department of Agriculture.

- This site recommends that men should eat about 2400 calories per day, and women should eat about 2000 calories per day. People who are physically active are recommended to have an additional 200 calories if they get 30 minutes of exercise per day, and 400 calories if they get 60 minutes of exercise per day.

- **On the next page, you will see a menu with several featured Subway subs. If you would like one of these featured subs, you can select it by checking off the box next to it. If you do not like any of the featured options, you may open the sealed pamphlet at the back of the binder to view additional selections. If you would like one of these additional selections, please indicate your choice by writing the sub number in the appropriate space.**

Cal 6" sub			Sub #	Check One
280	**Turkey Breast** (Sliced Turkey Breast, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		1	☐ (1)
290	**Ham** (Sliced Ham, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		2	☐ (2)
290	**Roast Beef** (Sliced Roast Beef, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		3	☐ (3)
280	**Veggie Delite** (Extra Cheese, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles with Extra Cheese)		4	☐ (4)
310	**Oven Roast Chicken** (Boneless Roasted Chicken Breast Patty, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		5	☐ (5)

Additional Subs are available in the pamphlet at the back of this binder.

OR

If you would like one of those subs instead, please write the Sub # here →

_____

Other Sub

B/F

Cal	Sides	Check One	Check One
230	Regular Lays (A)	☐ (A)	☐ (1)
130	Baked Lays (B)	☐ (B)	
35	Apple Slices (C)	☐ (C)	☐ (2)
110	Dannon All-Natural Strawberry Yogurt (D)	☐ (D)	
400	2 Oatmeal Raisin Cookies (E)	☐ (E)	☐ (3)
440	2 Peanut Butter Cookies (F)	☐ (F)	
130	Raisins (G)	☐ (G)	☐ (4)
	Drinks	Check One	☐ (5)
240	Coca-Cola (21 oz.) (A)	☐ (A)	
0	Diet Coke (21 oz.) (B)	☐ (B)	OR
190	Low-Fat Milk (12 oz.) (C)	☐ (C)	
320	Chocolate Milk (12 oz.) (D)	☐ (D)	
0	Bottled Water (20 oz.) (E)	☐ (E)	# _____
220	Minute Maid Juice (15 oz.) (F)	☐ (F)	Other Sub _

Additional Sandwich Options

If you would like to see more Sub options you may open this pamphlet.

ONLY OPEN IF YOU WOULD LIKE TO CONSIDER
ADDITIONAL SUB OPTIONS

Cal 6" sub			Sub #
530	**Tuna** (Tuna Salad, Cheese, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		6
560	**Meatball Marinara** (Meatballs, Marinara Sauce and Cheese)		7
500	**Italian B.M.T.** (Sliced Salami, Pepperoni & Ham, Extra Cheese, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		8
500	**Veggie Patty** (Extra Cheese, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		9
580	**Chicken Bacon Ranch** (Chicken Breast Strips, Bacon, Cheese, Lettuce, Tomatoes, Red Onions, Green Peppers, Olives and Pickles)		10

If you would like one of these additional subs, please write the Sub # in the appropriate space on the previous order sheet.

B/F

After choosing their sandwich, side and drink, participants handed their binder back to the experiment and were given a survey to fill out, the text of which follows.

Please answer all of the following questions.

1) **How many calories do you think your entire meal contains, including your sandwich, side, and drink?** (If you are unsure, just make your best guess.)

"I think my entire meal contains _____ calories."

2) **How much do you think you will enjoy your meal?**

1	2	3	4	5	6	7
I won't enjoy it very much						I will really enjoy it

3) **On a scale of 1 to 7, how hungry do you feel right now?**

1	2	3	4	5	6	7
Not at all hungry						Extremely hungry

4) **About how often do you eat at Subway, at this or another location?**

once a year or less	once every 6-12 months	once every 2-6 months	once a month	once every 2 weeks	once a week	twice a week or more

5) **About how many calories do you think a doctor or nutritionist would recommend that you should eat for your daily diet?**

"I think I should eat about _____ calories per day."

6) **Are you currently dieting (watching or restricting the number of calories you eat)?**

Yes No

7) **Are you a vegetarian?**

Yes No

8) **Please circle the number (1-7) that corresponds with what you think about the Subway meal that you have chosen:**

	Strongly Disagree						*Strongly Agree*
a) I carefully considered what to order	1	2	3	4	5	6	7
b) I ordered less than I usually do when eating here	1	2	3	4	5	6	7
c) I ordered healthier than I usually do	1	2	3	4	5	6	7
d) I am usually careful about what I eat	1	2	3	4	5	6	7
e) I considered calories when ordering	1	2	3	4	5	6	7

f) How many seconds did it take you to decide what to order? _____ seconds

9) **Please complete the following brief questions:**

a) Age: _____
b) Sex: Male Female
c) Weight: _____
d) Height: _____
e) Race/Ethnicity: _____
f) Your Ideal Weight (the weight you would most like to be): _____
g) Home (not school) Zip Code_____

10) **What is your current cholesterol level?**

High Average Low Don't Know

If you know it, please fill in your exact cholesterol level: _____ ml/dl

11) **What is your average blood pressure?**

High Average Low Don't Know

If you know it, please fill in your blood pressure level: _____/_____ mm Hg

12) **Do you currently have health insurance?**

Yes No

13) **What is the highest grade your *mother* has completed in school?**

____ I don't know.
____ Grade 8 or less.
____ Between grade 9-12, but did not graduate yet.
____ High school graduate.
____ Some college/university/trade school.
____ Graduated from a 2-year college.
____ Graduated from a 4-year college.
____ Some graduate school.
____ Masters degree.
____ Ph.D. degree.

14) **What is the highest grade your *father* has completed in school?**

____ I don't know.
____ Grade 8 or less.
____ Between grade 9-12, but did not graduate yet.
____ High school graduate.
____ Some college/university/trade school.
____ Graduated from a 2-year college.
____ Graduated from a 4-year college.
____ Some graduate school.
____ Masters degree.
____ Ph.D. degree