The Relationship between Future Orientation, Regulatory Focus, and Need for Cognition and Healthy Menu Choices

The effect of nutritional information on healthier menu choices have been reflected in previous research and nutrition policy efforts. This study further examines the relationship between healthy menu choices and three consumer characteristics - Future Orientation, Regulatory Focus, and Need for Cognition. A 3 x 3 experimental design was used with varying food types (burger sandwiches, sub sandwiches, and salad dressing) and the degree of nutritional information (no information, total calories only, and full nutrition information). It was found that having more nutritional information, and individuals with Future Orientation and Promotion Focus were associated with the choice of healthier menus. More specifically, those with high Consideration of Future Consequences and with Promotion Orientation switched their choices to the healthier ones with the provision of nutritional information.

Dietary habits in the US resulting in health consequences have recently become a major concern (Van Der Merwe et al., 2010). A number of literature suggests that frequent consumption of restaurant food is associated with high levels of body fat (French et al., 2001; Jeffery and French, 1998). Reports also highlight the negative dietary traits associated with frequent fast-food consumption, such as high caloric intake, including more saturated fat, lesser consumption of fruits, vegetables, and milk (French et al., 2001; Jeffery and French, 1998). Such concerns gave birth to the 2003-proposed bill “Menu Education and Labeling Act” that now partly forms Section 4205 of the Patient Protection and Affordable Care Act of 2010, amending Federal Food, Drug, and Cosmetic Act (Public Law 111-148, 2010). With this, restaurants and similar food establishments with 20 or more locations are now mandated to include calorie content information on menu boards at the point-of-purchase. Moreover, suggested daily caloric intake and other nutrient information - total calories, fat, saturated fat, cholesterol, sodium, total carbohydrates, sugars, fiber and total protein should be likewise available on the premises (Congressional Research Service, 2010). In 2008, New York City passed a similar law called a mandatory calorie labeling legislation as the city's public health strategy toward informed decisions on home food purchases (Vadiveloo et al., 2011). When nutritional information is presented, consumers are more likely to purchase more healthful foods and get more satisfaction (Cranage et al., 2003). Further, consumers choose food items based on their knowledge and ease of access of the menu as well as food prices.
perceptions and beliefs on, and attitudes toward food (Robinson and Smith, 2003). Reportedly, restaurant customers hold distinct expectations regarding nutritional information, product information, and food preparation (Mills and Thomas, 2008). For instance, a consumer's attitude, intention, and behavior may be significantly influenced by the type of nutritional information provided (Burton et al., 2006). The study showed that less than a third of consumers always read nutrition labels and about a half of consumers sometimes read nutrition labels when purchasing food for home consumption. Other studies likewise reported that healthier choices from fast food menus were made by adults noticing or using calorie labels (Vadiveloo et al., 2011), and that choices are made based on product-related, label-related, and personal-related strategies when presented with product alternatives (Van Der Merwe et al., 2010).

This study investigated whether nutritional information on the menu can induce healthier choices among consumers. As an individual's level of motivation to process and utilize given information might vary depending on their psychological traits, it further tested the hypothesis that the effectiveness of nutritional information in promoting healthier choices is conditioned by several characteristics specific to the individual consumers. Some literature on persuasive health message communication imply that health messaging can become more effective if tailored to consumer-specific traits, such as future orientation (Sirois, 2004; Strathman et al., 1994), regulatory focus (Keller, 2006), and need for cognition (Williams-Piehota et al., 2003).

Future Orientation
People differ in terms of the emphasis they attach to long-term versus short-term outcomes of their respective behavior (Bearden et al., 2003; Howlett et al., 2008; Strathman et al., 1994; Zimbardo and Boyd, 1999). Future-orientation is the propensity of an individual to consider the future consequences of current choices (Strathman et al., 1994). Further, variation in future orientation among individuals may help explain variation in life outcomes (Strathman et al., 1994). People who value future benefits rather than immediate gratification are more willing to sacrifice in the short term, while people who don't consider future outcomes are more likely to seek utility in the present. In this respect, a consumers' future-orientation can be an important determinant of their eating behavior.

An individual’s future orientation should be closely related to how much they are willing to forego short-term pleasure for long-term health benefit. In other words, consumers who are present-oriented rather than future-oriented would focus on immediate benefits such as taste, whereas future-oriented consumers would focus on more distant outcomes, such as long-term health. Hence, consumers who have a higher level of the consideration of future consequences (CFC) are expected to choose more healthful menu items, especially if some level of nutritional information is provided.

Regulatory Focus
Higgins (1997) proposed a concept of regulatory focus that distinguishes between two different types of goals and their corresponding motivational foundations: promotion focus and prevention focus. Promotion-focused motivation is driven by the potential of a positive outcome or by ideals and aspirations. In contrast, prevention-focused motivation is driven by the desire to avoid negative outcomes and by concerns with safety and responsibility. Higgins (2002) indicates that promotion-oriented consumers perceive promotion-focused outcomes as more important in their decision than prevention-focused outcomes, while the opposite is true for prevention-oriented consumers (Higgins, 2002).

Previous studies on regulatory focus theory suggest that individuals process information differently based on their regulatory orientation (Higgins et al. 2001). This study then posits that for high promotion-oriented consumers, increased exposure to nutritional information will lead to a higher likelihood of choosing more healthful menu items, while more nutritional information will not affect prevention orientated consumers who may prefer status quo.

Need for Cognition
The literature on information-processing and
The Relationship between Future Orientation, Regulatory Focus, and Need for Cognition and Healthy Menu Choices

persuasion defines two overarching modes by which individuals process information, and two corresponding methods of persuasion that accommodate these respective modes (Chaiken, 1980; Chaiken, 1987; Petty and Cacioppo, 1986; Steward et al., 2003). When presented with a given argument, individuals with high levels of motivation undertake a careful and systematic consideration of the assertion at hand; individuals with lower levels of motivation are less thorough in their evaluation, and will more likely respond to simplified message cues. The former group is more responsive to the “central route” to persuasion, while the latter responds well to the “peripheral route” to persuasion.

A Need for Cognition (NFC) scale measures the tendency of people to employ central or peripheral modes of processing (Cacioppo et al., 1996). Drawing from this theoretical framework, the study hypothesizes that a more detailed set of information, containing several different nutritional indicators, will induce consumers high in NFC to choose more healthful options, while increasingly detailed information will not have the same effect on consumers low in NFC, who will respond more readily to more basic forms of nutritional information.

Thus, this experimental study examines the influence of nutritional information on consumer choice, and tests whether this relationship is conditioned by two types of variation: (1) variation in consumer-specific traits, and (2) variation in the degree of information displayed.

SUBJECTS AND METHODS

Experimental Design

A 3×3 experiment was designed with variation in the level of nutritional information for three different food types: burger sandwiches, sub sandwiches, and salads. To examine the influence of variation in the degree of nutritional information, three levels of nutritional information were selected: no information, total calories only, and full nutritional information. Therefore, a total of 9 food choice scenarios were developed and randomly divided into 3 conditions using a Latin-square design.

Participants were randomly assigned to one of the three conditions and provided three randomly ordered scenarios. Each scenario contained three food types and one level of nutritional information for each food type. For instance, in one scenario, the burger sandwich menu was presented first without nutritional information, then the sub sandwich menu with full nutritional information, then the salad dressing menu with total calories only.

Menu items used in this study were obtained from fast food restaurants. The burger sandwich menu included six items: single hamburger, double hamburger, grilled chicken sandwich, fried chicken sandwich, fish fillet sandwich, and low-fat fish sandwich. The sub sandwich menu contained seven choices: veggie sub, roast beef sub, turkey sub, ham sub, steak and cheese sub, chicken sub, and tuna sub. For the salad menu, four different dressing options were provided: no dressing, non-fat dressing, low-fat dressing, and regular dressing. The nutritional information provided were modified to make a significant nutritional difference among menu items, but closely reflected the existing nutritional information of menu items offered by fast food restaurants.

The low fat fish and the grilled chicken sandwiches were among the relatively healthier foods compared to the double burger and the fried chicken sandwiches. On the sub sandwich menu, the veggie sub and the turkey sub were the healthier items against the tuna sub and a steak-and-cheese sub. The salad without dressing or with non-fat dressing was considered healthier menu options than the salad with regular dressing.

Procedure and Sample

The MediaLab software, a computer mediated survey method was used for data collection. Three different scenarios were presented one by one. For each scenario, participants were asked to imagine that they were in fast food restaurant and select one of menu options that are presented to them. They were also asked to rank the importance of nutrient contents after a menu item was chosen. Finally, the respondents were asked to answer various personality questions as well as demographic questions. The study was self-paced, averaging 15 to 20 minutes to
complete. Participants were undergraduate marketing students of a large university in the Midwest. The study had 273 participants comprised by 91, 95, and 87 samples, respectively for the three menu conditions. This study was approved by the University's Institutional Review Board's human subject committee.

Majority of the respondents were 19 to 22 years old (80%), most were junior or senior undergraduate students (83%), Caucasian (75%), and male (59%) respondents outnumbered the females. In addition, 48% of respondents reported their monthly income to be under $500, and 31% reported monthly income between $500 and $1,000 of which $50 to $100 each month is spend on food away from home (36%). Only a small percentage (14%) of the sample reported that a menu board is a source of nutritional information. Among eleven nutrient contents, total fat (mean=3.42 out of 5) was considered the most important nutrient, followed by transfat (mean=3.23), total calories (mean=3.10), and fat calories (mean=3.10).

Measures
A choice of a menu items was provided to each subject to gauge the differences in menu choices having three levels of nutritional information. The following relevant consumer specific variables were measured.

The degree of future orientation was measured with a 12-item CFC scale by Strathman et al. (Strathman et al., 1994). For instance, the respondents assessed statements such as “I consider how things might be in the future, and try to influence those things with my day to day behavior” or “My convenience is a big factor in the decisions I make or the actions I take” using 5-point Likert scale with 1=extremely uncharacteristic to 5=extremely characteristic. The CFC scale was reliable (Cronbach’s α=0.82) and a median split (median=44 out of 60) was used to categorize the sample into two groups, high (n=129) and low (n=144) CFC groups.

The regulatory focus (RF) questionnaire developed by Higgins et al. (Higgins et al., 2001) was used for measuring the subject's levels of promotion and prevention orientations. Among eleven items, the promotion scale assesses the presence of positive outcomes such as “How often have you accomplished things that got you psyched to work even harder?”, while the prevention scale evaluates a subject's propensity to seek the prevention of negative outcomes such as “How often did you obey rules and regulations that were established by your parents” (Grant and Higgins, 2003). The reliability of both the promotion and prevention scales were sufficient (Cronbach’s α=0.66 for promotion; Cronbach’s α=0.81 for prevention), and two scales were modestly correlated (r=0.13). Through a median split (median =23 for promotion; median=17 for prevention), participants were divided into two groups respectively; high and low promotion groups, as well as high and low prevention groups.

To gauge the subject's predominant information-processing mode, an 18-item NFC scale described by Cacioppo and Petty (Cacioppo et al., 1982) was employed. Eighteen items such as “I would prefer complex to simple problems.” were evaluated using 5-point likert scale defined as 1=extremely uncharacteristic to 5-extremly characteristic. The NFC scale was reliable (Cronbach’s α=0.85), and the sample was divided into two groups using a median (median=61 out of 90); high NFC (n=131) and low NFC (n=142).

Data Analysis
Chi-Square tests were conducted since the dependent variable was categorical. Due to the assumption of small frequency in a cell, fish fillet and low fat fish fillet sandwiches, and no dressing option in the salad categories were excluded from the analysis. The turkey sub sandwich was dominantly selected across all information levels in the sub sandwich category (no information 41.2%; only total calories 45.1%; full information 50%). It was one of the healthier items on the sub sandwich menu. Thus, having no significant variation in the result, this sub sandwich category was excluded in the analysis.

RESULTS
Effects of Nutritional Information Presence on Menus
The result of Chi-square analysis indicated that the
The presence of nutritional information made significant differences in consumers’ menu choices in both the burger and the salad dressing categories (Burger $\chi^2(12)=34.38, p \leq 0.01$; Salad $\chi^2(4)=9.48, p = 0.05$). Specifically, in the absence of nutritional information, the double burger (n=25, 29.8%) and the fried chicken (n=24, 28.6%) sandwiches were chosen frequently on the burger menu and the regular dressing on the salad menu (n=36, 40.0%). But when total calories counts were shown, respondents chose healthier menu items—the grilled chicken sandwich (n=39, 47.6%) and a low fat dressing (n=43, 51.8%). With full information, choices were similarly healthier options: the grilled chicken sandwich (n=40, 53.3%) and the low fat dressing (n=34, 40.5%). However, no significant difference was found between menus having total calorie and full nutritional information. Figure 1 depicts the change of menu item choices in burger and salad categories.

**Future Orientation and Menu Choices**

The burger menu choice was significantly different depending on the level of consideration of future consequences (CFC) when nutritional information increased in degree. Respondents who have high CFC level were more likely to select a healthier menu item (a grilled chicken sandwich) when total calories only or full nutrition information was included on the menu ($\chi^2(6)=15.28, p \leq 0.05$). Without nutritional information, the double burger (n=18, 36%) and the fried chicken sandwiches (n=14, 28%) were most commonly selected. However, the grilled chicken sandwich became the top choice when menus with total calories (n=22, 44.9%), and full information (n=21, 55.2%) were presented. In contrast, in the low CFC group, no significant difference was observed when presented with menus with or without health information (Figure 2).

Results from the salad dressing category did not exhibit any significant difference in menu item choices between the high- and low-CFC groups. Nevertheless, in the salad dressing category, respondents with high CFC mostly selected a low fat (total calories only n=27, 54%; full information n=23, 46.9%) or a non-fat dressing (full information n=17, 34.6%). In the absence of nutritional information, regular dressing (n=17, 42.5%) was top choice by respondents with high CFC.

Thus, respondents with high CFC scores were more likely to select healthier menu items than those with low CFC.

**Regulatory Focus and Menu Choices**

The promotion-focused group showed significantly different burger choices when nutritional information
was presented on the menu ($\chi^2(6)=18.72$, $p\leq0.01$). Respondents’ top choice was a double burger sandwich (n=14, 34.1%) on the menu without nutrient information. As expected, consumers most often selected healthier menu item (a grilled chicken sandwich, total calories only n=13, 38.2%; full information n=23, 67.6%) when provided with nutritional information. Similarly, the less promotion-focused group selected a healthier item (grilled chicken sandwich) most often when nutritional information was provided, but the difference was not statistically significant (Figure 3).

Respondents who were less prevention-focused (promotion-focused) more likely selected a healthier menu item when nutritional information was available ($\chi^2(6)=15.91$, $p\leq0.05$). But, there was no significant finding in the prevention-focused group regarding variations in nutritional information.

Figure 4 presents the frequency of chosen menu items in the burger category in terms of regulatory focus.

Accordingly, study participants who were more
The Relationship between Future Orientation, Regulatory Focus, and Need for Cognition and Healthy Menu Choices

promotion-focused or less prevention-focused paid attention to nutritional information, and use such to select healthier items from the burger menu. In contrast, there was no significant difference in salad dressing choices by the regulatory focus despite the degree levels of nutritional information available.

Need for Cognition and Menu Choices

The Chi-Square test revealed that burger choices were significantly different depending upon the levels of nutritional information provided, but such variation was not significantly conditioned by need for cognition (NFC). Consumers with high NFC levels were likely to choose a healthier menu item (grilled chicken sandwich; total calories only n=25, 52%; full information n=22, 50.9%) when nutritional information was offered ($\chi^2(6)=15.85, p \leq 0.05$). Without nutritional information, consumers who have a high NFC chose a double burger (n=15, 37.5%) and a grilled chicken sandwich (n=7, 27.5%) most often. In addition, similar significant differences in menu choice were found in the low NFC group. When nutritional information was added, study participants also selected a healthier menu item most frequently (grilled chicken sandwich; total calories only n=14, 41.1%; full information n=18, 58%) ($\chi^2(6)=16.0, p \leq 0.05$). Consequently, regardless of the NFC levels, respondents chose healthier menu items when nutritional information was presented on the menu. Figure 5 displays the significant differences in selecting a burger item in both the high and low NFC groups. In contrast, when NFC was included in the analysis, the salad dressing category did not yield similarly significant results.

Discussion

The results of this study can be summarized in four points. First, presenting nutritional information had a significant influence on the respondents' menu choices in the burger and salad dressing categories. In contrast, despite the varying degree of nutritional information available in the sub sandwich category, respondents' choices yield no statistically significant difference. It is possible that the study participants already perceive sub sandwiches as healthy menu items, thus, less likely to feel the need to choose differently upon viewing the relevant nutritional information. This suggests that nutritional information availability is less likely to induce healthier menu choices in sub sandwich restaurants. In short, providing nutritional information might not be an important factor in a consumer's decision-making process if the consumer already perceives the menu items to be healthy. This is consistent with the previous finding that decision making process is based on product-related, label-related, and personal-
related strategies (van der Merwe et al., 2010).

Second, there was no distinct variation in menu choices between scenarios of total calories only and full nutritional information. However, significant variation was observed between scenarios where some information (total calories only or full nutritional information) was presented and no information was presented. Thus, while the presence of total calorie information appeared to have an effect on consumer decisions, no further change in menu choices occurred when full nutritional information were included. This indicates that providing total calories only could be sufficient in order for fast food restaurants to satisfy informational needs of their customers and hopefully to induce healthier choices as promoted in Section 4205 of the Patient Protection and Affordable Care Act, 2010.

Alternatively, participants’ level of understanding for the full nutrition information may be limited, which made them not utilize the full information.

Third, the level of CFC was influential in the impact of nutritional information levels in the burger category. High-CFC respondents, who consider long-term consequences more deeply, were more likely to change their menu choices to healthier items if nutritional information is present. On the other hand, low-CFC respondents provided with nutritional information seemed disregarded the information and did not consider long-term benefits or threats. They chose menu items based on their immediate tastes and preferences. This result is consistent with the study results of Orbell et al. (Orbell et al., 2004) and other previous studies (Sirois, 2004; Strathman et al., 1994) that emphasized the impacts of CFC on the individuals’ health behaviors. These studies suggested that high-CFC individuals are more likely to be influenced by persuasive information meant to promote healthy choices.

Fourth point is an individual’s regulatory focus (RF) had a significant relationship with menu choices when there was nutritional information in the burger category. The promotion-focused participants were more likely to change their menu choice to healthier items if nutritional information was present. On the other hand, the prevention-focused participants likely ignored the presence of nutritional information. This result provides support for the RF theory (Higgins, 1997) and other studies (Keller, 2006; Liberman et al., 1999) demonstrating that promotion-focused individuals are more willing to change their behavior than those prevention-focused individuals. Applied to the specific case of fast food menu choices, findings of this study implied that promotion-focused consumers are more responsive to nutritional information if it is provided at the point of purchase.

In spite of its useful findings, the limitations of this study need to be recognized. First, this study only employed a chi-square statistics and showed...
whether or not the menu choice is dependent on nutrition information and certain individual characteristics. However, to fully understand what role individual traits played in the choice behavior more developed model could be used such as multivariate analyses or longitudinal study designs.

Second, this experimental study was conducted in a computer lab with college students, which is limited to simulate the real choice setting in fast food restaurants. An exploration of consumers’ menu choice behavior in a real restaurant setting could produce more generalizable results. For example, in real restaurant setting, a consumer will have multitude of information cues that can affect his or her menu choices, such as smell of the food, vividness and attractiveness of menu items, and price information including daily deals.

Furthermore, most subjects for this study were Caucasians. When measuring individual differences, the importance of culture cannot be overlooked. The perception of health and the risk related to food might vary greatly by one’s cultural background. Since our study setting is specific to the fast food menu items, the findings might imply the Caucasians’ view on those menu items. Therefore, a cautious approach is suggested when generalizing the findings of this study to different culture.

CONCLUSIONS

According to national surveys, 85% of Americans claim that nutrition is personally important to them (2000), but only 10% of consumers think that nutritional information is adequately available in restaurants (Perlick, 2004). It is evident that today’s food consumers are more interested in nutrition and health, and this higher degree of nutrition consciousness increased the demand for nutritional information and healthy menu items in restaurants (Mills and Thomas, 2008).

To satisfy health conscious customers and entice them to eat at their restaurants, many fast food restaurants continually develop new menu items and have added healthy menu options where sandwich bread options include whole grains, wheat, oats, and the like to increase fiber content. For instance, McDonald’s now offers an egg-white McMuffin with a high-fiber, multigrain English muffin for breakfast (Halperin, 2008). However, there has been scare research on the effective format of nutrition information on the menu board. This study offers insights on the effective level of nutrition information, as well as consumer traits that are associated with healthier choices if menus have nutritional information, Findings of this study suggest that burger category can most benefit from providing information to induce healthier choices. Also, consumers did not always utilize full nutrition information. Rather, just providing total calorie in the menu significantly improved their food choices. This could mean that awareness and knowledge on the nutritional information available aside from total calories is needed to help people make more informed choices at the point-of-purchase at restaurants.

Theoretically, this study implies that certain consumer characteristics such as consideration of future consequences and promotion orientation can be useful in understanding the effectiveness of nutritional information provision. However, this study did not explore the relationship between these traits. It may be true that consumers who are future oriented might also be promotion focused, and thus concern more about the nutritional information of their food intake. Future studies exploring the relationship between different individual traits can merit the literature on nutrition information.

REFERENCES


Americans Think, Need, Expect? *Journal of the American Dietetic Association*, 100, 626-627.


Received April 1, 2012
Revised May 13, 2012
Accepted May 27, 2012