



**MONTCLAIR STATE**  
UNIVERSITY

Montclair State University  
**Montclair State University Digital  
Commons**

---

Theses, Dissertations and Culminating Projects

---

5-2015

## **Consumer Perceptions of Calorie Content in Fast-Food Restaurant Meals vs. Casual Dining Chain Meals**

Gina Alexandra Pope  
*Montclair State University*

Follow this and additional works at: <https://digitalcommons.montclair.edu/etd>



Part of the [Nutrition Commons](#)

---

### **Recommended Citation**

Pope, Gina Alexandra, "Consumer Perceptions of Calorie Content in Fast-Food Restaurant Meals vs. Casual Dining Chain Meals" (2015). *Theses, Dissertations and Culminating Projects*. 577.  
<https://digitalcommons.montclair.edu/etd/577>

This Thesis is brought to you for free and open access by Montclair State University Digital Commons. It has been accepted for inclusion in Theses, Dissertations and Culminating Projects by an authorized administrator of Montclair State University Digital Commons. For more information, please contact [digitalcommons@montclair.edu](mailto:digitalcommons@montclair.edu).

MONTCLAIR STATE UNIVERSITY

Consumer Perceptions of Calorie Content in Fast-Food Restaurant Meals  
vs. Casual Dining Chain Meals

by

Gina A. Pope

A Master's Thesis Submitted to the Faculty of  
Montclair State University

In Partial Fulfillment of the Requirements

For the Degree of

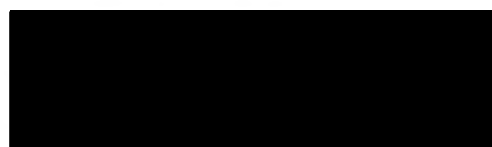
Master of Science

May 2015

College/School:  
College of Education and Human  
Services

Department:  
Nutrition and Health Sciences

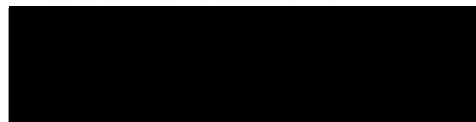
Thesis Committee:



Douglas Murray, PhD  
Thesis Sponsor



Lauren Dinour, DrPH, RD  
Committee Member



Yeon Bai, PhD, RD  
Committee member

CONSUMER PERCEPTIONS OF CALORIE CONTENT  
IN FAST-FOOD RESTAURANT MEALS VS.  
CASUAL DINING CHAIN MEALS

A THESIS

Submitted in partial fulfillment of the requirements  
For the degree of Master of Science

by

GINA ALEXANDRA POPE

Montclair State University

Montclair, NJ

May 2015

### Abstract

**Background:** The obesity epidemic in America is a growing cause for concern. Because frequency of dining outside the home is on the rise, accurate understanding of restaurants and the foods they serve is imperative. **Purpose:** It is the purpose of this study to determine how consumers perceive a food item in terms of calories and reputation at a fast-food restaurant, McDonald's, in comparison to a similar food item at a casual dining restaurant chain, Applebee's. This study fills a gap in the literature by providing a comparison of perception between fast food and full service restaurants menu offerings. **Methods:** Using a snowball sample, participants were recruited via email listserves at a large, public university in the Northeast United States to participate in a quantitative survey instrument to determine differences in perceptions of these restaurants. Participants were also asked to estimate the calories in three similar meals from each restaurant. Data was collected in LimeSurvey, and exported to SPSS where chi-square, descriptive, and paired sample t-test analyses were conducted. **Results:** Of the 195 participants, a large majority were female (69%), Caucasian (71%), and highly educated (60% possessing Bachelor or graduate degrees). Overwhelmingly, 90% of participants answered that they believed Applebee's served more healthful food compared to McDonald's. Participants indicated a higher mean satisfaction rating for taste, quality, and healthfulness compared to McDonald's. Additionally, the caloric content of the McDonald's burger and chicken sandwich meals were overestimated (overestimated as 1268 vs. 940 kcal, and 998 vs. 930 kcal, respectively), while the comparable burger and chicken sandwich meals from Applebee's were underestimated (1261 vs. 1410 kcal, and 979 vs. 1410 kcal, respectively). Demographic information was collected to test for

statistically significant differences within the sample. Significance was found for education and quality and healthfulness of Applebee's ( $p=.013$  and  $p=.012$ , respectively), income and healthfulness of McDonald's ( $p=.009$ ), age and quality and healthfulness of McDonald's ( $p=.001$  and  $p=.000$ , respectively), as well as age and quality and healthfulness of Applebee's ( $p=.021$  and  $p=.010$ , respectively). **Conclusions:** Overall, the results reveal that there is a dichotomy between estimated calorie estimations and the actual caloric contents of foods served at these restaurants. Also, the incorrectly perceived healthfulness of Applebee's may contribute to the growing dietary health concerns and indicate the need for consumer education and awareness.

## Table of Contents

Thesis Signature Page	1
Title Page	2
Abstract	3
Table of Contents	5
List of Figures	8
Chapter I: Introduction	9
A. Overview	9
B. Purpose of Study	12
C. Significance	13
D. Research Questions	14
E. Definitions	14
Chapter II: Literature Review	15
A. Socioeconomic Factors and Their Effects on Obesity and Health Outcomes	15
B. Consumer Perceptions	15
a. Gender differences	17
b. Effect of perception on consumer behavior	18
C. Calorie Estimation	21
D. Health Positioning	26
a. Health halos	26
b. Stereotypes	29
c. The role of advertising and marketing	31
d. Brand image	33

	6
Chapter III: Methods	36
A. Research Questions	36
B. Sample	37
C. Initial Instrument	37
D. Pilot Study and Participant Survey Completion	39
E. Ethical Considerations	40
F. Data Collection	41
G. Data Analysis	42
Chapter IV: Results	44
A. Participant Demographics	44
B. Healthy Eating Consciousness Scale	46
C. Dining Choice Results	48
D. Perception Based on Satisfaction Scale	49
E. Calorie Estimations	52
F. Chi-square Analysis	54
Chapter V: Discussion	58
A. Discussion	58
a. Demographics	58
b. Health consciousness	59
c. McDonald's vs. Applebee's	59
B. Strengths and Limitations/Delimitations	63
C. Future Research	64
D. Implications	64

References

66

Appendix

75



## List of Tables Figures

Table 1. Demographic Profile of Participants	45
Figure 1. Personal Healthy Eating Consciousness	47
Figure 2. Personal Healthy Eating Consciousness Agreement	47
Table 2. Establishment Healthfulness and Dining Frequency	48
Table 3. Reasons for Dining Frequency	48
Table 4. Social Eating Restaurant Choice	49
Table 5. Satisfaction Scale Frequencies and Means	51
Table 6. Estimated vs. Actual Calories	53
Table 7. Calorie Estimation Comparisons	54
Figure 3. Eating Consciousness Mean Agreement Between Genders	55
Figure 4. Satisfaction with Restaurant Qualities for Age	56
Figure 5. Satisfaction with Restaurant Qualities for Education	57

## Chapter I

### Introduction

#### Overview

The obesity epidemic in America is a growing cause for concern. According to the Centers for Disease Control (CDC), currently more than one-third (34.9%) of American adults are obese (Ogden, Carroll, Kit, & Flegal, 2014). In 1990, less than 15% of American adults were considered obese. By 2010, 25% of American adults were obese in 36 states, and 12 of those states had obesity rates of 30% or higher (Centers for Disease Control and Prevention, 2014). Obesity is known to cause cardiovascular related diseases, type 2 diabetes, and certain types of cancer (Ogden et al., 2014). This high rate of obesity in the U.S. has led to an estimated annual medical cost of \$147 billion in 2008 (Ogden et al., 2014). Fast-food is often posed as an obesity culprit, with many saying that the rise in fast-food consumption has consequently led to the growing obesity rates (Chandon & Wansink, 2007a; Paeratakul, Ferdinand, Champagne, Ryan, & Bray, 2003). Food choices play a large role in energy intake, and it is imperative that Americans are educated on the types of food that may contribute further to this epidemic.

Along with obesity, many diet-related diseases are on the rise. According to the American Heart Association (Mozaffarian et al., 2015), “the leading risk factor for death and disability in the U.S. is suboptimal diet quality.” In the U.S., contributors to the 678,000 deaths related to insufficient nutrition were inadequate intakes of fruits, nuts and seeds, whole grains, vegetables, and seafood, along with excess intakes of sodium (Mozaffarian et al., 2015). Specifically, 6.3% of cardiovascular deaths were attributable to excess sodium intake in the U.S. (Mozaffarian et al., 2015). It has also been shown that

the maintenance of a healthy weight can reduce the risk of cancers, such as those of the esophagus, colorectum, breast, endometrium, and kidney (World Cancer Research Fund International, 2014). Additionally, it has been found that soft drink consumption is associated with increased energy intake and increased body weight, and also associated with lower intakes of key nutrients such as calcium (Vartanian, Schwartz, & Brownell, 2007). These issues regarding health and diet highlight the importance of nutrition education, as well as supportive food environments.

Another challenge that surrounds healthy eating habits in the U.S. is the fact that dining outside of the home has become commonplace for Americans. A study that examined eating norms of Americans found that only 2 people out of 380 mentioned the norm “eat at home” (Fisher & Dube, 2011). This demonstrates that when Americans are thinking about food and appropriate eating habits, eating out is the norm, or default (Fisher & Dube, 2011). The same study showed that the normative behavior of limiting restaurant food was associated with a lower BMI (Fisher & Dube, 2011). According to the National Center for Health Statistics, 11.3% of American adults’ daily calories came from the consumption of fast food during the years of 2007 through 2010 (Fryer & Ervin, 2013). Similarly, 2013 data from the Pew Research Center shows that 50 million Americans are served at fast-food restaurants daily (Pew Research Center, 2014). This same data determined that 44% of Americans eat fast food once per week (Pew Research Center, 2014).

Popular casual dining restaurant chains, such as Applebee’s, Olive Garden, and Chili’s, make up much of America’s food industry, with the top ten casual dining chains making a combined \$25 billion in sales in 2012 (Smith, 2013). Further, a Harris

Interactive poll of 2,496 online survey respondents determined that 52% of Americans had eaten at a casual dining restaurant chain in the past month (Shannon-Missal, 2013).

Even more troubling, the U.S. restaurant industry has seen a decline in independent restaurants, and an increase in chain restaurants. Between 2008 and 2012, over 7,000 independent restaurants closed, likely due to the recession and the independent restaurants lacking the financial capabilities to sustain their businesses; over 4,500 restaurant chains opened during the same time period (“U.S. Independent Restaurants Account for 87 Percent of Industry Traffic Losses Since 2008,” 2012). Restaurant chains account for 70% of the full-service restaurant industry’s market share, and consumers often perceive these eating establishments to have a superior quality and healthfulness compared to quick-service (i.e. fast food) restaurants (Auchincloss et al., 2014; Duarte Alonso, O’Neill, Liu, & O’Shea, 2013; D. Kim & Leigh, 2011). However, single meals at these full-service restaurants often have nutritional values that exceed recommended amounts for calories, saturated fat and sodium (Auchincloss et al., 2014). Some meals even exceed the recommended intakes for an entire day, especially regarding sodium and saturated fat (Auchincloss et al., 2014).

Overall, accurate understanding of these restaurants and the foods they serve is imperative. It is the right of the consumers to have an awareness and comprehension of nutrition and food in order to make an informed decision regarding their food intake. In turn, this knowledge and understanding could influence consumers to choose meals - both inside and outside the home - that will lead to healthier diets. Consequently, an improvement in the quality of dietary intake could lead to a reduction in obesity and diet-related diseases, such as cancer and diabetes.

### **Purpose of study**

It is the purpose of this study to determine how consumers perceive a food item in terms of calories at a fast-food restaurant in comparison to a similar food item at a casual dining restaurant chain, and also to gain insight on the reputation perceptions of these two industry segments. The hypotheses being tested are: 1) Participants will perceive fast-food meals to contain higher calorie counts than similar meals served in a full-service casual restaurant, and 2) there will be a corresponding perception that the casual full-service restaurant's similar offerings are healthier than the fast-food offerings. As the market leaders in their respective segments, Applebee's and McDonald's have been selected to analyze these perceptions. The first hypothesis is based on the negative reputation and coverage that fast-food restaurants often receive in the media, and proposes that consumers will overestimate the calories in those fast-food meals, and underestimate the calories in Applebee's dining chain meals when compared to the actual caloric values provided by the restaurants themselves. By solely comparing nutrient values, it is clear that McDonald's meals often have much lower calories (in addition to fat, sodium, etc.) than Applebee's meals. A study that compared quick-service vs. full-service chains for nutrient content found that quick-service restaurants had a median value of 620 calories per entrée, while the full-service chains had a median value of 1010 calories per entrée (Bruemmer, Krieger, Saelens, & Chan, 2012). It is hypothesized this research will further reiterate the differences between fast-food and full-service casual dining chains, and that the consumers will not be aware of these differences.

## **Significance**

As previously stated, accurate consumer knowledge and the ability to make informed decisions is key to healthy dietary outcomes. Incorrect perceptions formed by the media have influenced commonly held beliefs that fast-food restaurants are the ultimate unhealthy dining choice, when in actuality there are many non-fast-food restaurants that offer much more unhealthy choices. These misconceptions are dangerous when it comes to making healthy food choices, and emphasize the need for consumers to gain basic knowledge of the nutrition of the food offerings outside the home.

Currently, there is no known research that makes comparisons between the food choices at fast food restaurants and casual dining restaurant chains. There is a gap in the research regarding consumer perceptions of the calorie differences between these two restaurant industry types. Comparisons have been made between two fast-food restaurants, such as Subway and McDonalds(Chandon & Wansink, 2007b), and the actual nutrient content of quick-service vs. full-service restaurants was also compared in a different study (Bruemmer et al., 2012), but perceptions regarding these areas of the food industry have not yet been researched. Though consumer perceptions of the healthfulness of food items at these dining establishments were analyzed, no comparisons have been made between restaurants such as McDonalds and Applebee's, for example.

With the growing obesity epidemic and other diet-related health issues, it is pertinent to delve into the common misconceptions of consumers and determine if there is a way to educate the public on better food choices, especially when eating outside the home. People will continue to go out to eat; it is the choices that are made at these food establishments that have an influence on weight, obesity, and health.

## **Research Questions**

This study hypothesizes that consumers perceive the caloric content of fast-food meals as being less healthy and more calorically dense than similar meals at casual dining chain restaurants. The application of perception scales and calorie estimations will reveal the perceptions of consumers. This examination will allow for the following primary research questions to be answered:

- RQ1: What factors influence consumers to choose one restaurant type over another?
- RQ2: Are consumers' perceptions of calories for food served at fast-food and casual dining chain restaurants different from the actual calorie amounts?
- RQ3: Do consumers perceive a meal from a fast-food restaurant (i.e. McDonald's Quarter Pounder Cheeseburger with fries) as having more calories than a similar meal from a casual dining restaurant chain (i.e. Applebee's Cheeseburger with fries)?
- RQ4: Do consumers perceive Applebee's as being healthier than McDonald's?

## **Definitions**

The following definitions of terms are given in order to provide clear and concise meanings of terms used in this study.

1. Fast food restaurants - Restaurants that have minimal table service and have food that is prepared and served quickly ("Fast-food," n.d.). Also known as quick service restaurants, e.g. McDonald's, Burger King, Taco Bell
2. Casual dining restaurants – Restaurants that typically have full table service, and have a moderately priced and usually large menu (Nation's Restaurant News, n.d.), e.g. Applebee's, TGI Friday's, Ruby Tuesdays

## Chapter II

### Literature Review

#### **Socioeconomic Factors and Their Effects on Obesity and Health Outcomes**

It is widely understood that low-income individuals consume greater amounts of processed, energy-dense foods, like those served at both food establishments being studied (Andrieu, Darmon, & Drewnowski, 2006; Beydoun & Wang, 2008; Cassady, Jetter, & Culp, 2007; Hendrickson, Smith, & Eikenberry, 2006; James, Nelson, Ralph, & Leather, 1997; Monsivais & Drewnowski, 2007; Rustad & Smith, 2013). Research suggests that these food trends in lower-income populations are due to the fact that high-energy-density foods provide the most dietary energy at the lowest cost, compared to low-energy-density foods (Cassady et al., 2007; Monsivais & Drewnowski, 2007). It has been shown that those Americans who fall under the higher-income groups consume healthier diets (Andrieu et al., 2006; M a Beydoun & Wang, 2008; Cassady et al., 2007; Rustad & Smith, 2013; Turrell & Kavanagh, 2006), are more likely to engage in healthier behaviors (Lê et al., 2013; Pampel, Krueger, & Denney, 2011), and have a greater knowledge of food and/or nutrition (May a. Beydoun & Wang, 2008; Rustad & Smith, 2013) compared to those in lower socioeconomic populations. These differences between socioeconomic groups are important to consider when discussing consumer perceptions of various aspects of the food industry.

#### **Consumer Perceptions**

As defined by Schacter, Gilber and Wegner (2010), perception is the “organization, identification, and interpretation of a sensation in order to form a mental



representation.” Though past schools of thought believed perception to be merely responses of the five senses, modern research demonstrates that perception is extremely subjective (Hanna, Wozniak, & Hanna, 2013). Perception can be applied to every area of academia, but consumer perception is the sect of the topic that is most relevant to this research.

Consumer perception is of utmost importance to companies, because it is the image that their customers have of their brand, business, and/or product (Hanna et al., 2013). Marketing professionals are concerned with the three concepts that make up perception: exposure to a stimulus, attention of the individual to that stimulus, and sensation of the individual’s sensory receptors to the stimuli, and thus the transmission of this sensation to the brain (Hanna et al., 2013). However, because humans are bombarded constantly with environmental stimuli, they are selectively perceptual, and this selectively is what marketers attempt to transcend (Hanna et al., 2013). Additionally, the associations that individuals form between stimuli (i.e. the beliefs about the company, products, brands, etc. that are based on previously acquired knowledge, information, and experiences) are the perceptual inferences that companies try and achieve through the use of advertisements, marketing strategies, and promotions (Hanna et al., 2013).

Of even greater interest to the research at hand is the consumer perception of restaurants and the food they serve. Consumers perceive the quality of food in multidimensional ways of “taste, variety, freshness, and presentation” (Lim & Loh, 2014). How consumers perceive the taste of the food is also the most important perception for both the customers and the restaurant, and is directly correlated with consumers’ satisfaction and their likelihood to return to the establishment (Lim & Loh,

2014; Min & Min, 2011; Shaharudin, Mansor, & Elias, 2011). The topic of consumer perceptions and the research that has been conducted on the subject will be further discussed in the following section.

### *Gender differences*

It has long been reported in the literature that women are more concerned with the healthfulness of the food they consume compared to men (Hunt, 1997; Kiefer, Rathmanner, & Kunze, 2005; Michael E Oakes & Slotterback, 2001; Michael E. Oakes & Slotterback, 2000). However, it is interesting to note the gender differences regarding the perceptions of food healthfulness. These perceptions are often altered because of the media onslaught about health, nutrition, and food (Carels, Konrad, & Harper, 2007; Chandon & Wansink, 2011; M E Oakes & Slotterback, 2001b; M E Oakes, 2003, 2005). One study found that women, compared to men, perceived higher fat foods as being less healthy than other foods, though both men and women perceived higher fat foods as less healthy than lower fat counterparts (Michael E Oakes & Slotterback, 2001a). Females also more frequently reported that they read nutritional labels on food packages and were more knowledgeable about foods compared to males (Michael E Oakes & Slotterback, 2001a).

Another study by the same authors found gender differences among participants who evaluated food names for healthiness (M E Oakes & Slotterback, 2001b). When posed with questionnaire with food names (i.e. rice cake, grapes, apple pie) and then a separate questionnaire with a description of this food item without the name (information about the food's recommended daily allowance of fat, calories, cholesterol, sodium fiber, and protein, along with information on the vitamins and minerals in the food), both men

and women rated 13 of the 33 foods as healthier in comparison to the other food choices when they just read their descriptions alone (M E Oakes & Slotterback, 2001b). Females also tended to consider food names such as Egg McMuffin, tuna, yogurt and ice cream as more healthful than their corresponding descriptions. Additionally, when rating the descriptions for pasta, Snickers bar, and oatmeal, female participants indicated the descriptions are more healthful than their names (M E Oakes & Slotterback, 2001b). The authors discuss the fact that because the correlation between name and description ratings was lower among females than among males, a larger discrepancy among this gender between food names and descriptions exists (M E Oakes & Slotterback, 2001b). Both of the aforementioned studies developed results that indicate women are more likely to be swayed by a negative health reputation and/or stereotype that often surrounds foods.

Further, another study researched the perceptions of participants regarding healthiness, unhealthiness, and “capacity to influence weight loss or gain” of foods listed on a *Food Healthfulness Questionnaire* (Carels et al., 2007). However, contrary to the studies previously mentioned, the authors of this article found that males tended to mention “high calories” when describing the unhealthy foods on the questionnaire compared to women (Carels et al., 2007).

#### *Effect of perception on consumer behavior*

The perception a consumer has towards a particular brand (i.e. brand image) can greatly influence that consumer’s behavior when interacting with that brand. Ryu et al. (2008) found that the perceived value, customer satisfaction, and overall restaurant image of the quick-casual restaurant segment were significant predictors of consumer’s behavioral intentions. The perceived value and quality of a food item can be influenced

by many factors, such as food labeling or nutrition claims. One study found that novice participants (i.e. those that were not experts in nutrition) were positively influenced by “all natural” labeling when conducting product evaluations, even if the ingredients listed on the label were inconsistent with “all natural” claims (Walters & Long, 2012). Further, another study found that when a “great taste” claim was used for a food item, consumer perceptions were unaffected by the provided caloric information (Howlett, Burton, Bates, & Huggins, 2009a). On the other hand, when the food item claimed to be low in calories, the consumers perceived the product in a negative way (Howlett et al., 2009a). The authors suggest that “many consumers may be unable to make accurate assessments of the diet-related health implications associated with the consumption of many foods prepared outside the home in the absence of objective nutrition information” (Howlett et al., 2009a, p. 501) which obviously poses a huge hurdle for overcoming the obesity epidemic and other dietary health outcomes.

Additionally, it was found that heart-healthy package or menu claims “led to more positive attitudes toward the product, nutrition, and purchase intentions and reduced perceived risk” (Kozup, Creyer, & Burton, 2003). The heart-healthy claim, however, had little positive effect on the consumer attitudes and purchase intentions when presented with either favorable or unfavorable nutrition information (Kozup et al., 2003). As the authors state, this suggests that “consumers are sensitive to and willing to use any available nutrition information when forming product evaluations and purchase intentions for menu items” (Kozup et al., 2003, p. 31).

Researchers Wilcox, Vallen, Block, and Fitzsimons (Wilcox, Vallen, Block, & Fitzsimons, 2009) examined consumers’ food choices in relation to the presence of

healthy items. They determined that consumers are more likely to choose “indulgent” food items when a healthy item is merely present compared to when the healthy item is not available (Wilcox et al., 2009). This demonstrates the idea of health halos, which will be discussed later.

Moreover, Provencher, Polivy, and Herman (Provencher, Polivy, & Herman, 2009) found that study participants consumed approximately 35% more of a snack item when it was perceived to be healthy compared to when it was perceived as unhealthy. Similarly, another study of restaurant operations in South Korea found that perceived food healthiness increases the value and satisfaction of restaurants among consumers, and those feelings of satisfaction can predict intentions to revisit the establishment (H. J. Kim, Park, Kim, & Ryu, 2013). Korean diners’ value perceptions, satisfaction and revisit intentions were also found to be influenced by healthiness attributes such as nutritional information, fresh and natural ingredients, weight control, and nutritionally balanced diet (H. J. Kim et al., 2013).

Additionally, many researchers have found that calorie underestimation and obesity are linked (Lansky & Brownell, 1982; Lichtman et al., 1992; Livingstone & Black, 2003; Toozee et al., 2004). Specifically, Lichtman et al. (1992) found that the underreporting of caloric intake may partly explain why some fail to lose weight. Additionally, Livingstone and Black (2003) found a correlation between body mass index (BMI) and “the ratio of estimated to actual food intake, indicating that people with a high BMI are significantly more prone to underestimation than people with a low BMI” (Chandon & Wansink, 2007a, p. 84). Thus, the previous research findings demonstrate the effects of perception on nutrition behavior and food choices.

### **Calorie Estimation**

Research regarding calorie estimation accuracy and influences has been extensively studied. Particularly interesting is the calorie estimation of foods that people often categorize as “healthy” or “unhealthy” foods. Carels et al. (2007) asked participants of their study to estimate the calories of a list of food items in a Food Healthfulness Questionnaire. The authors hypothesized that the participants would overestimate the caloric content of foods often perceived as unhealthy, such as potato chips and pizza, and conversely underestimate the caloric content of foods often perceived as healthy, such as apples and yogurt (Carels et al., 2007). The results supported this hypothesis; participants overestimated the calories of “unhealthy” foods by an average of 41 calories, and underestimated the calories of “healthy” foods by an average of 53 calories, despite the fact that the actual caloric amounts were similar (Carels et al., 2007). The authors also examined differences in caloric estimations by gender, dieting status, and weight status (Carels et al., 2007). Their research revealed that there was not a difference in gender regarding accuracy of calorie estimations (Carels et al., 2007). However, dieters tended to be more accurate when judging energy contents of both healthy and unhealthy food items on the questionnaire compared to non-dieters (Carels et al., 2007). This may indicate that consumers who are motivated to become informed are better equipped to judge and, thus estimate, calories. Further, weight status was not a determinant of differences in caloric estimation accuracies (Carels et al., 2007). The authors discuss the fact that consumers “appear to automatically assume that an unhealthy food is high ‘calorie’ and a healthy food is low ‘calorie’, regardless of the food item or serving size” (Carels et al., 2007).

Additionally, another study examined how adults, adolescents, and school age children estimate the calorie content of meals from fast food restaurants (Block et al., 2013). The researchers interviewed participants at fast food chain restaurants and asked them to estimate the calorie content of the meal items shown on their receipt (i.e. items they had just purchased and eaten) (Block et al., 2013). The study's results showed that at least two thirds of the participants underestimated the calorie content of their meals, and around 25% of those underestimating the amount by at least 500 calories (Block et al., 2013). Adults underestimated the caloric content by an average of 175 calories, adolescents by 259 calories, and school age children by 175 calories (Block et al., 2013). The researchers also determined that the mean underestimation of the calories was greater when the participants were dining at Subway compared to the other fast food chains, especially compared to McDonald's (Block et al., 2013). The researchers also determined that those adults with higher BMI tended to estimate higher calorie content of meals, which results in a lesser likelihood of underestimating calorie contents ((Block et al., 2013) . Further, older adults estimated lower calorie contents than older adolescents who estimated higher and were less likely to underestimate the calories (Block et al., 2013). The authors discuss the possibility that brand marketing plays a role in calorie estimation discrepancies, and mention the phenomenon of "health halos", which will be examined later in this literature review (Block et al., 2013).

Perhaps most well versed in the area of calorie estimations, Chandon and Wansink have conducted a multitude of studies on the subject. One article by these authors describes two studies that examined discrepancies in calorie estimations: one study conducted in fast-food restaurants and the second in a university laboratory

(Wansink & Chandon, 2006). In study 1, the participants were asked to estimate the number of calories in the fast-food meals that they had just finished eating, and were asked to supply the researchers with their heights and weights (Wansink & Chandon, 2006). Of the consumers who participated, 59% were classified as normal weight and 41% as overweight, with 46% women at an average age of 20.4 years (Wansink & Chandon, 2006). In study 2, undergraduate student participants were shown 15 fast-food meals and asked to estimate the caloric content of each (Wansink & Chandon, 2006). The majority (70%) of these undergraduate participants were classified as normal weight, 30% classified as overweight, and 65% were women (Wansink & Chandon, 2006). Between the men and women in both studies, the researchers found no statistical differences in calorie estimation, but did find that the caloric content of the fast-food meals were underestimated by a mean of 23.1% in study 1 participants and 9.0% in study 2 participants (Wansink & Chandon, 2006). The authors' results revealed that calorie underestimation is caused by meal size due to the fact that when meals were small, the mean percentage deviation was not statistically different from 0, meaning these small meals were overall accurately estimated for caloric content (Wansink & Chandon, 2006). Further explanation of the results led to the realization that the underestimation of the caloric content of larger meals was -38.0% and -22.6% for study 1 and study 2, respectively, while the estimations of calories in smaller meals was very close to accurate (-2.9% and 3.0% for study 1 and study 2, respectively) (Wansink & Chandon, 2006). Additionally, the results from study 1 displayed no statistical differences between normal weight and overweight participations for calorie estimations, yet showed that overweight participants ate meals that contained significantly more calories (Wansink & Chandon,



2006). This, in turn, led to the overweight participants underestimating the calorie content of their meals by a larger mean percentage deviations than those normal weight participants (Wansink & Chandon, 2006). Wansink and Chandon (2006) discuss the fact that their results confirm the findings that overweight persons are “more likely to underestimate their food intake than those of normal weight”, due to the fact that they tend to choose larger meals, and henceforth estimate the calories of those larger meals (Wansink & Chandon, 2006). The authors sum up their results by saying that their research demonstrates the fact that “doubling the size of a fast-food meal only makes it seem 45% to 57% larger”, which leads to a negative effect for the consumer group most likely to be impacted by portioning and bundling fast-food meals (Wansink & Chandon, 2006).

Further, Elbel (2011) compared calorie estimations in communities that did or did not implement calorie labeling in fast food restaurants. Using low-income urban populations, the researcher assessed if the population was knowledgeable concerning the amount of calories that should be consumed on a daily basis, how well this population estimated calories in food items they had just purchased at the fast-food restaurant where the study was taking place, and the effect of calorie labeling on the aforementioned factors (Elbel, 2011). The results revealed that approximately 11% of total participants were unaware or did not answer the question regarding the recommended amount of calories they should consume daily, and this percentage of participants increased among those in the post-labeling group (Elbel, 2011). Less than a third of participants gave answers for the recommended total calorie amounts that are deemed “correct” (between 1,500 and 2,499 calories) (Elbel, 2011). Participants from the pre-labeling group in one

city underestimated the calories of meals by 24% the actual number of calories (619 estimated calories vs. 810 actual calories), with a similar underestimation in the other pre-labeling city (26% underestimation) (Elbel, 2011). The post-labeling group had improved estimations, with an underestimation of 14% in one city and 21% in the other (Elbel, 2011). This overall underestimation of fast-food calories may be an influential factor of obesity.

The issues of obesity and calorie underestimation were also explored by Chandon and Wansink (2007). The researchers found similar results to Elbel (2011) in that fast-food meals were underestimated by most participants by a mean of 141 calories (Chandon & Wansink, 2007a). They also examined the differences between overweight and healthful-weight participants and their ability to estimate calories and found no variations between the two groups (Chandon & Wansink, 2007a). Their studies also revealed that as the size of the fast-food meals increased, the severity of the calorie underestimation also increased (Chandon & Wansink, 2007a). The authors discuss the fact that it is not body mass that influences calorie underestimations; it is the fact that overweight people tend to consume larger meals, which in turn leads to a greater underestimation of calories (Chandon & Wansink, 2007a).

In a previously discussed article regarding gender and food perceptions, this same study also examined differences in calorie estimations among dieting status, weight, and gender (Carels et al., 2007). The researchers found that there was no difference in males and females or weight status when it came to caloric estimations, yet participants that reported that they were dieting were more accurate in estimating calories compared to

non-dieting participants (mean discrepancy of 95 calories vs. mean discrepancy of 111 calories) (Carels et al., 2007).

## **Health Positioning**

### *Health halos*

The original concept of a “halo effect” was identified in 1920 by Edward Thorndike when he examined how ratings of various characteristics and qualities affect a person’s other characteristics (Thorndike, 1920). Thorndike (1920) found that there was a strong correlation between qualities like physique and intelligence, for example, and were perceived as having a metaphorical halo. Other researchers have studied the relation of physical appearance and other personality traits, such as the research conducted by Dion, Berscheid, and Walster (1972). The authors determined that there is a stereotype of “what is beautiful is good” (Dion et al., 1972).

This halo effect idea can be described by consumer inferences, as reviewed by Kardes, Posavac, and Cronley (2004). They explain that halo effects, or attitude-based inferences, occur when consumers “frequently use implicit theories to make deductive inferences of singular objects in making conclusion about specific attributes of the object based on their general attitude toward the object” (Kardes et al., 2004, p. 245). Consumers’ overall attitudes toward a product often result in biases towards individual attributes of that product (Kardes et al., 2004). The authors further clarify that these attribute beliefs and inferences can be the result of a lack of consumer knowledge of the product and/or brand (Kardes et al., 2004). Additionally, it was found that those

consumers who exhibited a broader knowledge of the product were less likely to fall victim to the halo effect (Kardes et al., 2004).

The halo effect theory has been applied to health and nutrition in recent literature. Pioneers of the subject, Chandon and Wansink (2007b) found that food from fast-food restaurants that claim to be healthy, such as Subway, are more likely to be underestimated for caloric content compared to restaurants that do not claim to be healthy, such as McDonald's. Specifically, their research revealed that there is a "general health halo that leads people to believe that a 1,000-calorie Subway meal contains 21.3% fewer calories than same-calorie McDonald's meals" (Chandon & Wansink, 2007b). To further explain these estimations, Chandon and Wansink (2007b) examined if restaurant familiarity played a role. They determined that even people that were familiar with both Subway and McDonald's still estimated Subway sandwiches as containing significantly fewer calories than McDonald's sandwiches containing the same number of calories. This same experiment weighed nutrition involvement in the participants' caloric estimations, and also found that it improved the relative accuracy of the calorie estimations, but did "not reduce the halo effects of the restaurant brand's health positioning" (Chandon & Wansink, 2007b).

Additionally, these same researchers found that consumers are also more likely to choose higher-calorie side dishes, drinks, or desserts when dining at the same restaurants that claim to be healthy compared to when they dine at restaurant that do not make this claim (Chandon & Wansink, 2007b). Participants who were given a coupon for a Subway 12-inch Italian BMT sandwich were "less likely to order a diet soda, more likely to upgrade to a larger drink, and more likely to order cookies" compared to the participants

who were given a coupon for a McDonald's Big Mac sandwich (Chandon & Wansink, 2007b). Also, the Subway sandwich contained 50% more calories than the McDonald's sandwich, so the participants at Subway consumed meals with a mean of 56% more calories than those at McDonald's (Chandon & Wansink, 2007b). Similarly, as previously discussed, Block et al. (2013) examined consumers' estimation of calorie content at fast food restaurants. Their results are in support of Chandon and Wansink's (2007b) study that demonstrates the health halo that surrounds the Subway restaurant chain. Participants across all age groups, especially adults and adolescents, estimated the calories of Subway meals to be much lower than meals at McDonald's (Block et al., 2013). The results of all aspects of their health halo research reveal that health claims made by restaurants can place a biasing effect on consumers and their calorie estimations.

Other research supports Chandon and Wansink's claims that health claims effect the perception of other aspects of a product. Roe, Levy, and Derby (1999) found that participants of their study were less likely to examine the nutrient panel of a food product's packaging if the product contained a health claim (e.g. "Diets with enough folic acid may reduce the risk of certain birth defects"). The authors also found that health claims create a halo effect, after discovering that consumers attributed "inappropriate health benefits" to the food products when a health or content claim was present (Roe et al., 1999).

The issue of health halos in relation to nutrition is the fact that consumers' inferences and perceptions towards certain restaurants that are already formed may hinder their ability to gain clarity regarding the actual healthfulness of these establishments. Recent political mandates have been established for restaurant chains in cities across the

United States that require calorie labeling on menus, menu boards, and drive through windows for all restaurant chains that are comprised of at least twenty entities (*Patient Protection and Affordable Care Act*, 2010). Research conducted on the outcomes of meal and calorie disclosures on consumer fast food evaluations have shed light on the enduring effects of health halos (Tangari, Burton, Howlett, Yoon-Na, & Thyroff, 2010). It was determined that, though the disclosure of nutrition information in restaurants is likely to enlighten many consumers, the likelihood of this movement being consistent for all menu items and restaurants is slim (Tangari et al., 2010). This is due to the fact that many restaurants have already formed an almost permanent positioning in some consumers' viewpoints, and these perceptions and expectations of certain restaurants will be difficult to alter. Though there are conflicting views on the subject of calorie labeling on menus and its effects (Dumanovsky et al., 2011; Roberto, Larsen, Agnew, Baik, & Brownell, 2010), a systematic review revealed that a large majority of studies researched did not find a statistically significant reduction in calories after menu labeling was enacted (Swartz, Braxton, & Viera, 2011).

### *Stereotypes*

Perhaps some aspects of the health positioning of restaurants can be explained by the food-stereotyping phenomenon. Perceptions and judgments of food in regards to healthfulness have been extensively studied in the literature. For example, Oakes (2005) aimed to delve into the perceptions of "good" and "bad" foods and their role in obesity. By having participants rate the "weight-enhancing characteristics" of snack foods presented by name in both "good" (i.e. reputable) and "bad" (i.e. disreputable) categories (e.g. banana and bacon, respectively), Oakes revealed that disreputable or "bad" snacks

were “generally perceived to promote greater weight gain than much higher-calorie reputable snacks” (M E Oakes, 2005). This suggests that a food’s stereotype for weight gain capacity is often not dependent on the actual nutritional factors of that food (M E Oakes, 2005). The results also revealed that size of the foods seemed to play a small role when comparing portions of “bad” and “good” foods (M E Oakes, 2005). Small portions of “bad” foods were perceived to promote greater weight gain compared to larger portions of “good” foods, such as in the case of a Snickers miniature containing 47 calories being perceived to promote more weight gain than a large snack of cottage cheese, carrots, and pears containing 569 calories (M E Oakes, 2005).

Oakes and Slotterback (2001a, 2001b; 2003) have extensively researched food name stereotypes and the factors that lead to this phenomenon. They determined that food names’ reputations had more influence than the actual nutrient content of the food (M E Oakes & Slotterback, 2001a, 2001b; M E Oakes, 2003). Specifically, compared to men, college-aged women rated low-fat food names as more healthy (M E Oakes & Slotterback, 2001b). These women were also more likely to have biases about food names, and often used the fat content of the food when judging the healthfulness of food names, making them more likely to use stereotypes when judging food names (M E Oakes & Slotterback, 2001b). In further research, these same authors delved more into the topic of age and food stereotyping (M E Oakes & Slotterback, 2001a). It was determined that adults over the age of 25 still utilized food stereotypes to judge food healthfulness, yet tended to be more accurate than the sample of college-aged adults (M E Oakes & Slotterback, 2001a). This older sample of women, however, displayed negative attitudes toward dietary fat, which played a role in their judgments of food names and

healthfulness (M E Oakes & Slotterback, 2001a). Men in this sample, on the other hand, used vitamin and mineral content, as well as fat, to provide judgments of the food names (M E Oakes & Slotterback, 2001a).

Further, Oakes continued his research on food stereotypes in his comparison of judgments of food healthfulness by young and elderly women (M E Oakes, 2003). Compared to the elderly sample, the college-aged females used stereotypes more often when evaluating food names (M E Oakes, 2003). Again, the young women displayed negative attitudes towards dietary fat, while the elderly women took into account other aspects of the food such as fiber and sodium (M E Oakes, 2003).

It is possible the stereotypes that Oakes and Slotterback (2001a, 2001b; 2003) found to be so prominent when judging food healthfulness stem from the issue of consumers not fully understanding the concept of what is “healthy.” As Raghunathan, Naylor, and Hoyer (2006) pose in their article about the perception of unhealthy food being tastier than healthy food, “...reeducating consumers to evaluate the healthiness of a food could actually change consumers’ perceptions about what constitutes healthy and unhealthy.” Without complete knowledge of what “healthy” and “unhealthy” foods are, and the fact that “unhealthy” foods can likely be incorporated into any balanced diet, stereotypes will continue to be used when judging the healthfulness of food.

#### *The role of advertising and marketing*

Often touted as one of the many reasons obesity has become such an epidemic in America, food marketing practices are among the most criticized (Seiders & Petty, 2004). The food industry has been blamed for the “intensive distribution and promotion of fast



foods and snack foods”, and it has been said that these factors contribute to obesity as environmental influences (Harnack & French, 2003; Seiders & Petty, 2004).

Restaurants are honing in on the fact that halo effects may influence consumers’ purchasing habits. Recent marketing strategies highlight their availability of healthy items, even though these healthy items do not represent the overall nutritional quality of their menus (Ward, 2013). Fast-food restaurants have made the switch to non-hydrogenated cooking oils, and have done away with “supersized” portions in response to America’s growing concerns with health (Ward, 2013).

To further understand the restaurant industry’s views of adding healthful meal items to their menus and marketing these additions, Glanz et al. (2007) interviewed 41 executives of major U.S. restaurant chains. A large majority of participant executives stated that their decisions are driven by the prospect of growing sales and increasing profits, while health and nutrition and social responsibility were the least important marketplace issues (Glanz et al., 2007). The restaurant executives consider fat and calorie content when thinking about healthier foods, and believe that consumers refer to these characteristics as well (Glanz et al., 2007). Most executives said they offer healthier menu items because there is sufficient demand for these changes, but also feel that many consumers prefer to indulge while eating out (Glanz et al., 2007). One participant said, “Offering healthier menu items is like putting lipstick on a pig. People may go where healthier foods are advertised, but they usually wind up eating the same old stuff” (Glanz et al., 2007). Other executives perceived calling menu items healthy to be “the kiss of death,” and believe these food choices to be lacking in demand among consumers (Glanz et al., 2007). Thus, though Americans claim to desire healthier food options when eating

outside of the home, the statistics demonstrate that the consumption of commercially prepared meals is remarkably high; between 2007 and 2010, an average of 11.3% of American adults' total daily calories came from fast food (Fryar & Ervin, 2013).

However, consumers may gain mindfulness of the restaurant industry's marketing tactics, and begin to acquire the knowledge that these restaurants overall do not fit the health claims made in their advertising attempts. This acquisition of knowledge is referred to as the Persuasion Knowledge Model, and explains "how people develop and use persuasion knowledge to cope with persuasion attempts" (Friestad & Wright, 1994). As Howlett, Burton, Bates, and Huggins (2009b) state in their article about nutrition disclosures on menus, "... awareness of the potential effect that health halos may have on judgment and choice outcomes may improve consumers' persuasion knowledge of marketing communications of restaurant chains."

### *Brand image*

According to Keller (1993), brand image is defined as "perceptions about a brand as reflected by the brand associations held in consumer memory." Many researchers have revealed that when consumers have a positive brand image, the tendency of those consumers to have a more favorable attitude towards that brand and its products are high (Andreassen & Lindestad, 1998; Bloemer, Ruyter, & Peeters, 1998; J. Burton, Easingwood, & Murphy, 2001; H. J. Kim et al., 2013; Ryu et al., 2008). For example, Ryu et al.'s (2008) findings reveal that quick-casual restaurant image, along with perceived value and customer satisfaction, are significant predictors of customers' behavioral intentions.

In an analysis of the relationship between motivation and brand understanding and their effects on consumers' judgments, Lee and Shavitt (2009) explore metacognitive experiences surrounding McDonald's and the food establishment's perceived healthfulness. The authors cite the films *Super Size Me* and *Fast Food Nation* as portraying the idea that most consumers hold opinions about McDonald's that pertain to its unhealthfulness (K. Lee & Shavitt, 2009). Ironically, McDonald's has made efforts to demonstrate their new menu offerings that incorporate healthier eating (i.e. apples for kids' meals, eradication of super sized portions) (MacArthur, 2006), but the consumers' "responses to new information may depend on consumers' metacognitive feelings about whether they adequately understand the brand (K. Lee & Shavitt, 2009; Schwarz, 2004, 2006) According to the authors, "consumers generally believe that they have a good grasp on the brand's meaning" (K. Lee & Shavitt, 2009). It has been well established in the literature that greater fluency or ease in thinking about a target results in an increase in positive judgments towards that target (A. Y. Lee & Labroo, 2004; K. Lee & Shavitt, 2009; Reber & Schwarz, 1999). However, it is the authors' theory that those brands that are well established, such as McDonald's, have greater opportunities for their marketing claims to reach the consumers, and for those consumers to experience the brands (K. Lee & Shavitt, 2009). These marketing claims and experiences can lead consumers to believe they have an overall understanding of the meanings, even though their knowledge of the brand may be lacking (K. Lee & Shavitt, 2009). The authors' results suggest that "when consumers believe that they have a good sense of understanding, they are not motivated to acquire new information. However, when their perceived understanding is threatened, they are more open to an available cue, which possibly results in a change to the existing

evaluation and representation of the brand” (K. Lee & Shavitt, 2009). Additionally, the issue with some brands being so well established is that the representations may be difficult to reposition (K. Lee & Shavitt, 2009). In other words, for extremely well established brands such as McDonald’s, their representation in the eyes of the consumers is often a negative one. Thus, even their continued marketing of more healthful meal items may not be successful in repositioning their brand’s image in the minds of all consumers.

## Chapter III

### Methods

#### Research Questions

Though calorie estimations and consumer perceptions of calories have been highlighted in the literature and this study, a quantitative comparison of consumer's perceptions regarding the calories of meals consumed in the casual dining chain (i.e. full-service restaurants with multiple locations, moderate pricing, and usually large menus) and fast-food dining (i.e. minimal table-service restaurants with food that is prepared and served quickly) segments is lacking. In order to fill this gap in the literature, the application of perception scales and calorie estimations will reveal the accuracy of perceptions of consumers surrounding these two food service categories. The healthfulness scales were adapted from two highly cited studies to better fit the perceptions studied here (S. Burton, Tangari, Howlett, & Turri, 2014; Chandon & Wansink, 2007b). To conduct the study, the largest food service chain in each category was identified and used to represent the category under examination. Applebee's is the largest purveyor of food and beverage in the casual dining chain segment ("Applebee's At a Glance," n.d.), and McDonalds is the fast-food leader ("The Global 30 - QSR magazine," n.d.), making it logical that a direct comparison between these two companies can potentially provide a novel representation for each dining segment under examination. The purpose of this study is to answer to the following research questions:

- RQ1: What factors influence consumers to choose one restaurant type over another?

- RQ2: Are consumers' perceptions of calories for food served at fast-food and casual dining chain restaurants different from the actual calorie amounts?
- RQ3: Do consumers perceive a meal from a fast-food restaurant as having more calories than a similar meal from a casual dining restaurant?
- RQ4: Do consumers perceive Applebee's as being healthier overall than McDonald's?

### **Sample**

Due to the fact that the consumers of both dining segments represent a population from all backgrounds (D. Kim & Leigh, 2011), no identifiable subpopulation could be identified. For convenience, the decision was made to access available social media platforms and networks, then to solicit the initial contacts to use their networks to expand the search parameters, creating a snowball sample (Goodman, 1961). Participants qualified for participation in the survey if they were over the age of 18, and had reported eating at both McDonald's and Applebee's in the past 12 months.

### **Initial Instrument**

A survey instrument was developed based on scales used in previous research (S. Burton et al., 2014; Chandon & Wansink, 2007b), and modified to answer the research questions for this specific study. Burton et al. (2014) used a perception scale in their research to determine how consumers perceived the healthfulness of four fast-food meal items ("This food item is healthy"; 1 = strongly disagree to 7 = strongly agree). Similarly, Chandon and Wansink (2007b), in their research of the health positioning and health

halos surrounding McDonald's and Subway restaurants, used a perception scale to gauge the perceived healthfulness of both dining establishments overall ("The food served here is healthy"; 1 = strongly disagree and 9 = strongly agree). Both scales aim to determine the perceptions regarding the healthfulness of either specific meal items or the restaurants in general. After adaptation, these scales serve a similar purpose in the present study by measuring the consumers' perceived healthfulness of McDonald's and Applebee's.

The survey for the present study asked questions to develop a demographic profile, eating out habits, and perceived calorie estimations of various meals from both McDonald's and Applebee's. A 9-point Likert scale was used to determine three perception dimensions: taste, quality, and healthfulness. For these perception dimensions, participants were asked to rate their satisfaction for each of these qualities for both McDonald's and Applebee's. For the purposes of data analysis, scores 1-5 indicated dissatisfaction, 6 and 7 denoted slight satisfaction, while 8 to 9 signified "top box scores" of high satisfaction. Hospitality and marketing researchers have made the distinction that high satisfaction is distinctly different from merely satisfied or neutrally satisfied (Baloglu, 2002; Gold & Salkind, 1974). Thus, the "top box" measurement of satisfaction refers to the highest satisfaction ratings of the scale (Gold & Salkind, 1974). Participants were also asked to estimate the number of calories for three similar meals at both restaurants: a burger and fries meal (McDonald's Bacon and Cheese Quarter Pounder with medium French fries, Applebee's Bacon Cheddar Cheeseburger with a side of fries), a chicken sandwich and fries meal (McDonald's Premium Grilled Chicken Bacon Clubhouse Sandwich and medium French fries, Applebee's Artisan Grilled Chicken Ciabatta Sandwich with a side of fries), and a salad (McDonald's Premium Bacon Ranch

Salad with Crispy Chicken and Ranch Dressing, Applebee's Fried Chicken Salad with Honey Dijon Dressing).

Survey questions were also posed to determine the participants' perceptions regarding personal healthy eating awareness. Participants were asked if they agreed with a series of statements, such as "Eating healthy is important to me." A 9-point survey scale was used, with 1 to 5 indicating not in agreement, 6 and 7 signifying slight agreement and 8 to 9 representing the strongest levels of agreement. The survey underwent expert review from three experienced research faculty to ensure face-validity of the survey items.

### **Pilot Study and Participant Survey Completion**

The instrument was further tested prior to implementation. To gain feedback, improve the instrument, and minimize the potential for ambiguity of the survey questions, a pilot study was initiated. Four University faculty members administered the survey by forwarding the research study recruitment email to their classes over a four-week period between October and November 2014. The recruitment email and survey were posted onto the class Learning Management System (Canvas) and students followed the posted link to take the pilot survey via LimeSurvey. The pilot test differed from the actual research survey because it asked five additional questions regarding clarity, content, and length of the survey, as well as a prompt for further feedback. The resultant feedback led to further refinement of the instrument, and the pilot study conditions were duplicated for the part of the study that utilized the finalized survey. Because the research employed a snowball sampling method, the number of individuals asked to participate is unknown.



However, the LimeSurvey program revealed that of the 100 views or “responses” of the pilot survey, 67 produced completed surveys. The pilot results (N=67) were tested for reliability using Cronbach’s alpha (Cronbach, 1951), which indicated that the measure had good reliability (0.765 for the combined scale question sets). Correlation analysis was run and convergent validity was confirmed. Results of pilot survey were positive, with no feedback provided regarding time or ambiguity of the instrument. In order to compensate for 3 “missing” pilot survey responses, an “other” category was added to the gender question. A question in the pilot survey that asked participants to indicate their likelihood of ordering a dessert or milkshake when dining at both restaurants was dropped from the finalized survey instrument, and was not included in any analyses or results. Though modified, no significant changes to any scales or question sets were made. Consequently, there were no changes in question relevant to data analysis or subsequent results.

The finalized survey instrument was administered over a five-week period between November and December 2014 by being distributed electronically via campus-based list serves and social media sites (Twitter, Facebook). Of the 445 total views or “responses” for the main survey, 128 responses were complete. Thus, out of the 545 combined total responses for both the pilot and main research surveys, a total of 195 participants responded to all survey questions for a 36% completion rate.

### **Ethical Considerations**

Great care was given to meet the requirements and conduct proper procedures for conducting human research. The researcher and supervising committee members are all

Collaborative Institutional Training Initiative (CITI) trained and certified. The Institutional Review Board (IRB) of Montclair State University reviewed the study prior to administration, and examined the study construct, survey instrument, and potential for harm (IRB Protocol #001559). All ethical considerations having been met, the review resulted in approval to conduct the research. The survey was distributed via email and social media, collected by the LimeSurvey program, transformed into statistical data, and then imported into SPSS – the social science statistical software package, version 20 - for analysis by the researcher. The participants' anonymity has been protected throughout.

### **Data Collection**

The survey was administered from various on-campus outlets using email, as well as the social media sites of Facebook and Twitter. Participants were encouraged to forward the email and survey link to all of their contacts, thus resulting in a snowball sample. The survey was designed to be web-based to maximize participation. There are many advantages of online survey research cited in the literature. For example, online surveys allow the researcher to access unique or otherwise obscure groups of people, and also save time and money for both the researchers and the participants (Evans & Mathur , 2005; Wright, 2006). Convenience is also a major advantage of online survey use, in that participants may answer at their leisure (Evans & Mathur , 2005). Web-based surveys also allow the usage of a variety of different questions, such as multiple-choice, scales, and even open-ended questions (Evans & Mathur , 2005). It has also been shown that online surveys increase response rates compared to mail survey response rates

because of the ease of follow-up (i.e. sending follow-up reminders via email) as well as the elimination of having to physically send a return letter (Evans & Mathur , 2005).

All of the survey responses were collected and stored within the LimeSurvey website. When the survey was closed, the data was exported to SPSS 20 using a feature embedded in the LimeSurvey software. This is where the data analyses took place.

As an incentive for participants to complete the survey, a \$50 gift card raffle was offered. After the completion of the survey, participants were prompted to follow a hyperlink to a separate Google survey where they could enter their email address into the raffle. Because the survey for the raffle used a completely different survey program, the anonymity of survey answers and identifying information (e.g., email addresses) was ensured. The winner of the raffle was determined after the email addresses were exported into an Excel spreadsheet and randomly chosen with a random number generator.

### **Data Analysis**

To address RQ1, data was analyzed to determine average perceived calorie estimations for each meal and compared between groups to determine any significant differences through a paired sample t-test comparison. Paired sample t-tests were performed because the data met three criteria: 1) The number of points in each data set were the same, organized in pairs, and there is a definite relationship between each pair of data points, 2) The survey was designed so that no data point in any paired set could be paired a data point in another paired set, 3) A comparison was made between the mean scores for the same group of people for two different variables (Pallant, 2007; “Student’s’ t Test (For Paired Samples),” n.d.). To address RQ2, the mean perceived

calorie amounts were compared to the actual calorie amounts for each sample meal to determine accuracy.

Descriptive statistics were calculated to analyze demographic information of the participants. Descriptive statistics were also performed for satisfaction scales, healthy eating consciousness questions, and restaurant dining frequency questions, which addressed RQ3 and RQ4. A Chi-square analysis was performed to determine statistical significance between the independent variables of gender, age, education, current student status and the dependent variables of the mean results for the scale question sets. The Chi-square was chosen to apply to the scaled, Likert-type questions, on a scale from 1 = strongly disagree to 9 = strongly agree.

Two scales were measured: a healthy eating consciousness scale and a satisfaction scale (i.e. the three construct scale of taste, quality, and healthfulness). The satisfaction scales of the pilot test reached a Cronbach alpha of .638, which indicates good reliability (Cronbach, 1951). The healthiness scale of the pilot test reached a Cronbach alpha of .750, which indicates very good reliability (Cronbach, 1951). Since neither of the scales was altered after the pilot testing, the researchers accepted the Cronbach alpha for the pilot test for the finalized survey instrument. As such, the survey instrument is deemed reliable.

## Chapter IV

### Results

#### Participant Demographics

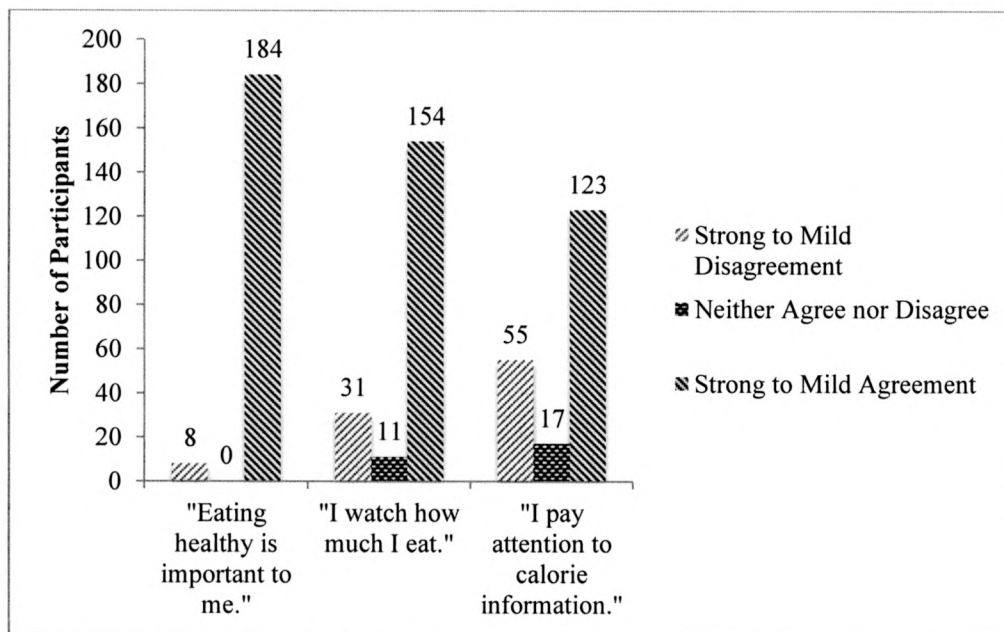
A total of 195 participants completed the survey in its entirety. Table 1 depicts the demographic frequencies of all participants for gender, age, ethnicity, household income, education, and current student status. Of these 195 participants, 69% were women, and 65% were between the ages of 18 and 34. Further, 72% of the participants self-identified as Caucasian, 11% identified as African American, 6% stated that they were Hispanic, 3.6% identified as Asian, and 7.3% marked the "Other" category for ethnic background. These ethnic representations do not match the United States census statistics; the US population is currently comprised of 13% African Americans, 5.3% Asians, and 17% Hispanic or Latino (U.S. Census Bureau). The majority (60%) of the survey participants reported a household income of \$60,000 or higher, with 30% of participants reporting an income of \$100,000 and above. This is well above the U.S. median income of \$53,046, but is representative of NJ's median household income of \$71,629 (U.S. Census Bureau). Additionally, 95% of participants have been exposed to some higher education, with 60% possessing Bachelor or graduate degrees. Similarly, 50% of participants answered that they were currently students. It is also noteworthy that 7% of those current students were majoring in nutrition, 12% were majoring in physical education, and 11% were public health majors. Therefore, 30% of student participants, or 15% of total participants, were currently studying in areas related to health and wellness.

Table 1. Demographic Profile of Participants

Frequency of Ages			Frequency of Gender		
Value Label	<i>N</i>	%	Value Label	<i>N</i>	%
18-24	79	40.5	Male	57	29.2
25-34	47	24.1	Female	134	68.7
35-44	26	13.3	Missing	4	2.1
45-54	18	9.2	Other	0	0
55-64	20	10.3	<b>Total</b>	<b>195</b>	<b>100.0</b>
65 or older	5	2.6			
Missing	0				
<b>Total</b>	<b>195</b>	<b>100.0</b>			
Frequency of Ethnicity			Frequency of Household Income		
Value Label	<i>N</i>	%	Value Label	<i>N</i>	%
Caucasian	139	71.3	Less than \$25,000	35	17.9
Hispanic	11	5.6	\$25,000-\$39,999	19	9.7
African Americans	22	11.3	\$40,000-\$59,999	23	11.8
Asian	7	3.6	\$60,000-\$79,999	35	17.9
Other	14	7.2	\$80,000-\$99,999	23	11.8
Missing	2	1.0	\$100,000 and above	59	30.3
			Missing	1	0.5
<b>Total</b>	<b>195</b>	<b>100.0</b>	<b>Total</b>	<b>195</b>	<b>100.0</b>
Frequency of Education			Frequency of Current Student Status		
Value Label	<i>N</i>	%	Value Label	<i>N</i>	%
Less than high school degree	1	0.5	Yes	97	49.7
High school degree or equivalent (e.g., GED)	8	4.1	No	97	49.7
Some college but no degree	60	30.8	Missing	1	0.5
Associate degree	9	4.6	<b>Total</b>	<b>195</b>	<b>100.0</b>
Bachelor degree	61	31.3			
Graduate degree	56	28.7			
Missing	0	00.0			
<b>Total</b>	<b>195</b>	<b>100.0</b>			

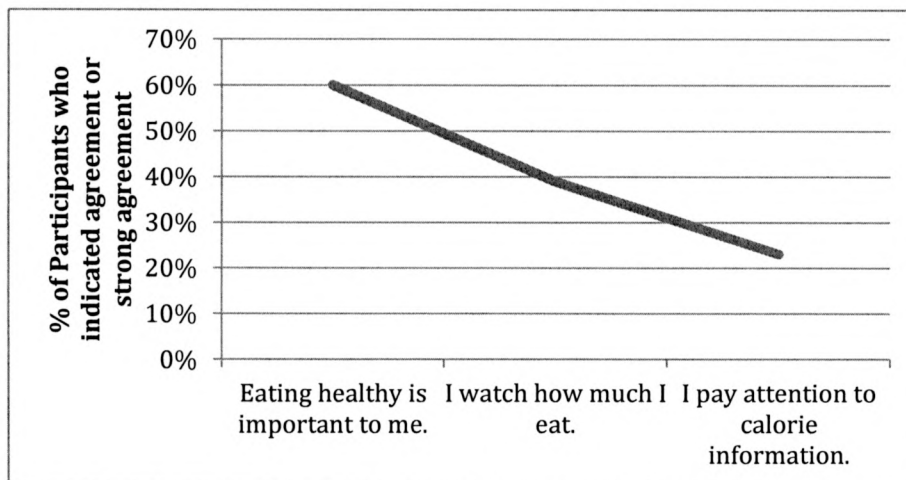
### **Healthy Eating Consciousness Scale**

Participants were asked questions regarding their healthful eating habits (i.e. “Eating healthy is important to me;” “I watch how much I eat;” “I pay attention to calorie information.”), as well as the perceived healthfulness of the two restaurants. The results reported in Figure 1 show the agreement frequencies for each healthful eating question, while Figure 2 demonstrates the trend line of the participants who indicated agreement or strong agreement to this question set. Only 4% of participants indicated that they disagree with the statement, “Eating healthy is important to me.” Contrarily, 60% of participants agreed or strongly agreed that eating healthy is important to them, with 96% indicating some form of agreement with the statement. Additionally, 19% of participants indicated disagreement or neutrality to the statement, “I watch how much I eat,” while 39% agreed or strongly agreed with the statement. Furthermore, regarding the statement, “I pay attention to calorie information,” 37% of participants indicated disagreement, while 23% indicated strong agreement.



**Figure 1. Personal Healthy Eating Consciousness**

Table 2 reports the frequencies for the questions, "In your opinion, which establishment serves more healthful food?" and "Which restaurant do you eat at more frequently?" Interestingly, 90% of participants answered that they believed Applebee's served more healthful food compared to McDonald's. However, frequency of participation was split evenly (50%) between the two operations.



**Figure 2. Personal Healthy Eating Consciousness Agreement**



**Table 2. Establishment Healthfulness and Dining Frequency**

<b>Question</b>	<b>Restaurant</b>	<b>N(%)</b>
In your opinion, which establishment serves more healthful food?	McDonald's	20(10.3)
	Applebee's	175(89.7)
Which restaurant do you eat at more frequently?	McDonald's	97(50.0)
	Applebee's	97(50.0)

### **Dining Choice Results**

Table 3 demonstrates the participants' reasons for dining at the respective restaurants more frequently, with the most frequent responses for McDonald's being convenience, and for Applebee's being other. The other responses that were provided by participants were quality (n=9), variety (n=8), environment (n=5), social aspects (n=5), and healthiness (n=2). The choices for dining frequency were mutually exclusive. By limiting the participants to one selection, they were forced to provide their primary reasons for dining frequency.

**Table 3. Reasons for Dining Frequency**

<b>Reason</b>	<b>McDonald's Frequency N (%)</b>	<b>Applebee's Frequency N (%)</b>
Price	15 (16)	9 (10)
Health	0 (0)	22 (24)
Convenience	68 (70)	20 (22)
Speed of Service	10 (1)	1 (1)
Other	4 (4)	40 (45)
<b>Total</b>	<b>97</b>	<b>92</b>

Participants were also asked questions to gauge which restaurants they eat at more frequently with friends and family, and which they eat at more frequently when they are alone (Table 4). Overwhelmingly, Applebee's was the common choice for dining out with friends and family (n=183, 94.3%), while McDonald's was chosen by 166 participants (85.6%) as more likely to eat at when dining alone.

**Table 4. Social Eating Restaurant Choice**

<b>Question</b>	<b>Restaurant</b>	<b>Frequency N (%)</b>
When dining out with friends or family, which restaurant are you more likely to choose?	McDonald's	11 (5.7)
	Applebee's	183 (94.3)
When dining out alone, which restaurant are you more likely to choose?	McDonald's	166 (85.6)
	Applebee's	28 (14.4)

### **Perception Based on Satisfaction Scale**

A satisfaction scale comprised of three questions was presented for participants in order to gauge their satisfaction with each restaurant for the characteristics of taste, quality, and healthfulness (Table 5). For taste satisfaction on a scale where 1 = extremely dissatisfied, and 9 = extremely satisfied, McDonald's received a mean satisfaction rating of  $5.89 \pm 1.53$  (which is between "Neither satisfied nor Dissatisfied" and "Slightly Satisfied"), while Applebee's received a mean satisfaction rating of  $6.60 \pm 1.20$  (which is between "Slightly satisfied" and "Moderately satisfied"). For quality, the mean rating for McDonald's was  $4.83 \pm 1.704$  (which is between "Slightly dissatisfied" and "Neither satisfied nor dissatisfied"), and the mean rating for Applebee's was  $6.14 \pm 1.40$  (which is between "Slightly satisfied" and "Moderately satisfied"). Lastly, McDonald's received a

mean healthfulness rating of  $3.32 \pm 1.82$  (which is between “Moderately dissatisfied” and “Slightly satisfied”), while Applebee’s received a mean healthfulness rating of  $5.46 \pm 1.57$  (which is between “Neither satisfied nor dissatisfied” and “Slightly satisfied”).

Further, approximately 30% of participants marked a degree of dissatisfaction or neutrality for the taste of McDonald’s food overall. On the other hand, 13% of participants were unsatisfied (i.e. indicated scores of 1-5 (extremely dissatisfied to neither satisfied nor dissatisfied)) with the taste of Applebee’s food. Similarly, 9% of participants were highly satisfied (i.e. indicated “top box” scores of 8 (very satisfied) or 9 (extremely satisfied)) with taste at McDonald’s, while 24% of participants were highly satisfied with taste at Applebee’s. Further, 63% of participants answered that they were unsatisfied with the quality of McDonald’s food and only 3% of participants were highly satisfied. Regarding Applebee’s food quality, 22% of participants were unsatisfied and 13% of participants were highly satisfied. Additionally, 85% of participants indicated that they felt unsatisfied with the healthfulness of McDonald’s, while 0.5% indicated a high satisfaction level. Comparatively, 44% of participants responded with a level of dissatisfaction for the healthfulness of Applebee’s, while 6.1% were highly satisfied.

**Table 5. Satisfaction Scale Frequencies and Means**

Category	Satisfaction Level	McDonald's N (%)	Mean±SD	Applebee's N (%)	Mean±SD
Taste	Extremely dissatisfied	5 (2.6)	5.89±1.53	0 (0.0)	6.60±1.20
	Very dissatisfied	4 (2.1)		1 (0.5)	
	Moderately dissatisfied	3 (1.6)		1 (0.5)	
	Slightly dissatisfied	14 (7.3)		8 (4.2)	
	Neither satisfied nor dissatisfied	32 (16.7)		16 (8.3)	
	Slightly satisfied	69 (35.9)		64 (33.3)	
	Moderately satisfied	47 (24.5)		55 (28.6)	
	*Very satisfied	13 (6.8)		41 (21.4)	
	*Extremely satisfied	5 (2.6)		6 (3.1)	
	<b>Total N</b>	192		192	
Quality	Extremely dissatisfied	9 (4.7)	4.83±1.70	3 (1.6)	6.14±1.40
	Very dissatisfied	12 (6.3)		0 (0.0)	
	Moderately dissatisfied	19 (10.0)		7 (3.7)	
	Slightly dissatisfied	28 (14.7)		11 (5.8)	
	Neither satisfied nor dissatisfied	52 (27.4)		20 (10.5)	
	Slightly satisfied	42 (22.1)		74 (38.7)	
	Moderately satisfied	22 (11.6)		52 (27.2)	
	*Very satisfied	4 (2.1)		19 (9.7)	
	*Extremely satisfied	2 (1.1)		5 (2.6)	
	<b>Total N</b>	190		191	
Healthfulness	Extremely dissatisfied	38 (19.9)	3.32±1.82	2 (1.0)	5.46±1.57
	Very dissatisfied	37 (19.4)		6 (3.1)	
	Moderately dissatisfied	37 (19.4)		17 (8.9)	
	Slightly dissatisfied	19 (9.9)		23 (12.0)	
	Neither satisfied nor dissatisfied	35 (18.3)		38 (19.9)	
	Slightly satisfied	17 (8.9)		54 (28.3)	
	Moderately satisfied	7 (3.7)		39 (20.4)	
	*Very satisfied	0 (0.0)		10 (5.2)	
	*Extremely satisfied	1 (0.5)		2 (1.0)	
	<b>Total N</b>	191		191	

\* "Top Box" Scores

### **Calorie Estimations**

The participants' perceived calorie estimation responses were rank ordered by frequency to acquire a baseline determination of the most common understanding of caloric content for each restaurant. Table 6 depicts the calorie estimations for the meals at both restaurants. The most frequently entered calorie amount for the McDonald's burger meal was 1000 calories (21 participants), while the most frequently entered calorie amount for Applebee's burger meal was 1200 calories (23 participants). Additionally, the most frequently entered calorie amount for the McDonald's chicken sandwich meal was 700 calories (21 participants), while the most frequently entered calorie amounts for the Applebee's chicken sandwich meal were 700 calories and 1200 calories (17 participants each). Further, the most frequently entered calorie amount for the McDonald's salad was 800 calories (22 participants), while the most frequently entered calorie amounts for the Applebee's salad were 600 calories, 800 calories, and 1000 calories (15 participants each). For all McDonald's meal items, the mean calorie amounts were overestimations, while the Applebee's mean calorie amounts were underestimations, compared to the nutritional information provided on the restaurants' websites (Applebee's, 2015; McDonald's, 2015). Though both the burger meals and chicken sandwich meals from McDonald's were perceived by the largest number of participants to contain more calories than the comparable Applebee's meals (see Table 7), the Applebee's burger meals and chicken sandwich meals actually contain significantly more calories. For both the burger meal and the chicken sandwich meal, participants estimated that the McDonald's meal contained slightly more calories than the similar Applebee's meal. However, participants estimated that the Applebee's salad contained more calories than

the McDonald's salad. In a paired sample t-test comparison, the only statistically significant difference between meals was for the salad ( $p < 0.01$ ). Two of the three meal comparisons resulted in mean calorie estimations being inaccurately perceived as higher for McDonald's than for Applebee's. Interestingly, participants correctly identified the Applebee's salad as the more calorically dense food item compared to McDonald's.

**Table 6. Estimated vs. Actual Calories**

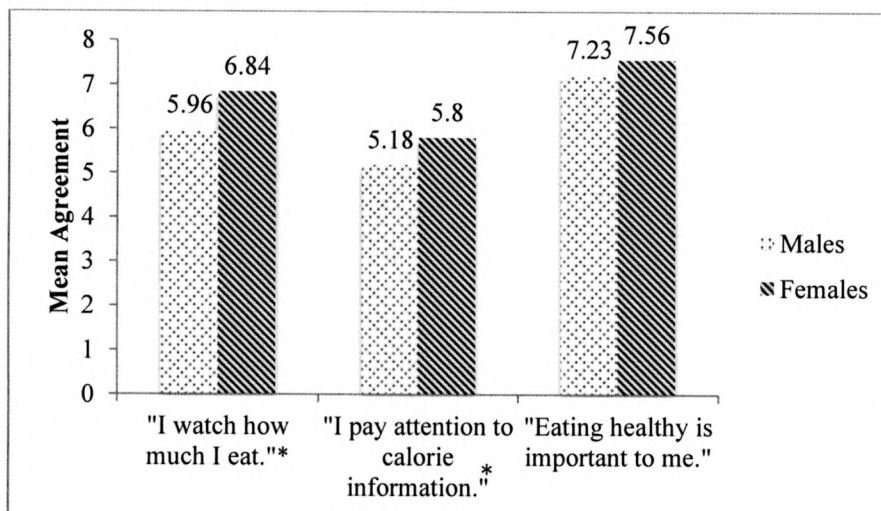
<b>Meal Item</b>	<b>Estimated calorie amounts (Mean<math>\pm</math>SD)</b>	<b>Actual calorie amounts</b>	<b>Difference between estimated and actual</b>
McDonald's Burger & Fries	1268 $\pm$ 925	940	328
Applebee's Burger & Fries	1261 $\pm$ 945	1410	-149
McDonald's Chicken Sandwich & Fries	998 $\pm$ 830	930	68
Applebee's Chicken Sandwich & Fries	979 $\pm$ 612	1410	-431
McDonald's Salad	666 $\pm$ 365	560	106
Applebee's Salad	820 $\pm$ 599	1110	-290

**Table 7. Calorie Estimation Comparisons**

<b>Meal Item</b>	<b>Higher than Applebee's Meal <i>N</i> (%)</b>	<b>Lower than Applebee's Meal <i>N</i> (%)</b>	<b>Tied with Applebee's Meal <i>N</i> (%)</b>
McDonald's Burger & Fries	83 (43)	71 (37)	38 (20)
Chicken Sandwich & Fries	93 (48)	65 (34)	35 (18)
Salad	39 (20)	119 (62)	35 (18)

**Chi-square Analysis**

A non-parametric Chi-square analysis was conducted to compare demographics with the eating consciousness Likert-scale question set ("I watch how much I eat," "Eating healthy is important to me," and "I pay attention to calorie information"). There was a significant effect for gender and "I watch how much I eat",  $\chi^2(8, N=187) = 18.89$ ,  $p = .015$ . Females indicated a higher mean degree of agreement for all three questions (see Figure 3). Statistical significance was found between age and "Eating healthy is important to me",  $\chi^2(25, N=192) = 45.61$ ,  $p = .007$ . Also, statistical significance was found between gender and "I pay attention to calorie information",  $\chi^2(8, N = 187) = 16.62$ ,  $p = .034$ .

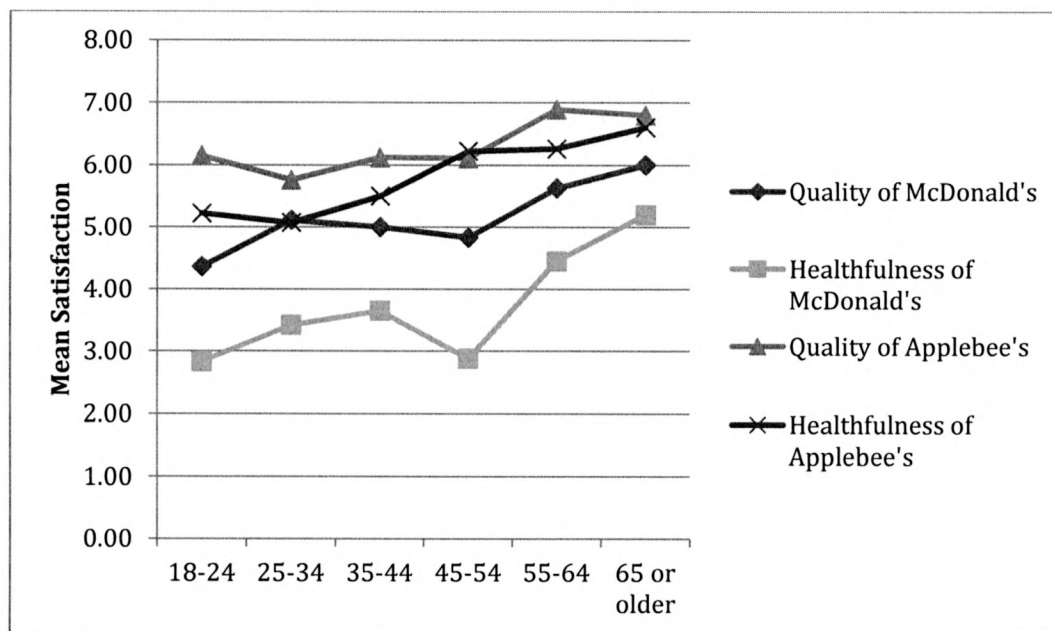


\*Statistically significant

**Figure 3. Eating Consciousness Mean Agreement Between Genders**

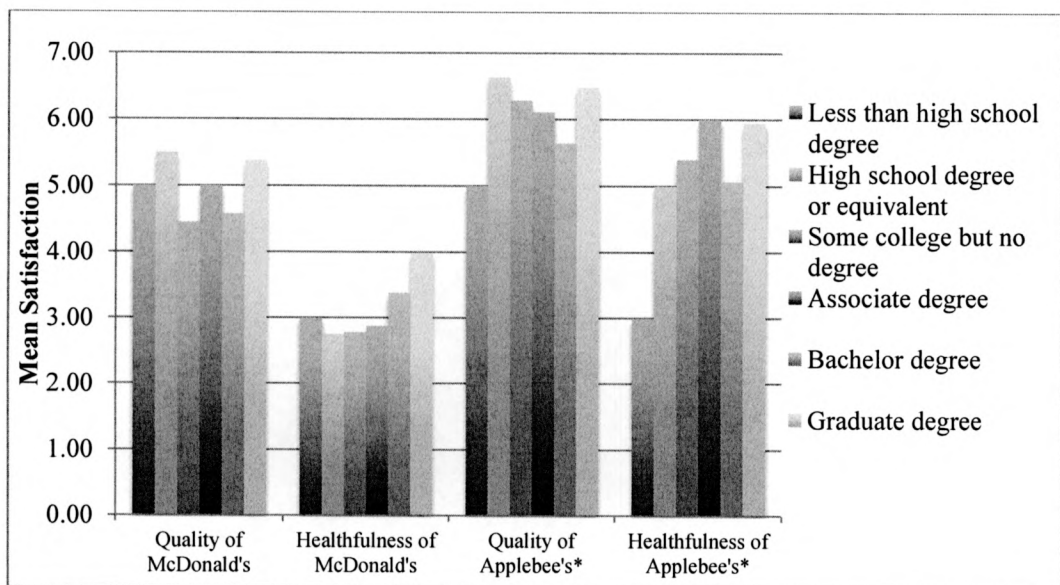
A Chi-square analysis was also conducted to compare demographics with the taste, quality, and healthfulness ratings for each restaurant. There was a significant effect for age and quality of McDonald's,  $X^2(40, N=190) = 71.88, p=.001$ , healthfulness of McDonald's,  $X^2(35, N=191) = 78.29, p=.000$ , quality of Applebee's,  $X^2(35, N=191) = 54.11, p=.021$  and healthfulness of Applebee's,  $X^2(40, N=191) = 63.75, p = .010$ . Overall, the satisfaction with the quality and healthfulness of McDonald's, as well as the satisfaction with the healthfulness of Applebee's, increased with age (see Figure 4).





**Figure 4. Satisfaction with Restaurant Qualities for Age**

Statistical significance was found between income and healthfulness of McDonald's,  $X^2(35, N=190) = 57.94, p = .009$ . The participants who were most dissatisfied with the healthfulness of McDonald's were those that reported an income of less than \$25,000 (40% of responses for "Extremely dissatisfied") or \$100,000 and above (26% of responses for "Extremely dissatisfied"). There was also a significant effect for education and quality of Applebee's,  $X^2(35, N=191) = 56.05, p = .013$ , and healthfulness of Applebee's,  $X^2(40, N=191) = 62.99, p = .012$  (see Figure 5). Those participants that were most dissatisfied were those with Bachelor degree or graduate degrees, with the majority of reported levels of dissatisfaction coming from those with some exposure to higher education. Also, the largest percentage of reported satisfaction ratings fell under the category for "Slightly satisfied", indicated mostly by those participants with some college or Associate degrees.



\*Statistically significant

**Figure 5. Satisfaction with Restaurant Qualities for Education**

## Chapter V

### Discussion

#### Discussion

##### *Demographics*

The demographics of this study presented an unrepresentative proportionality of the U.S. population as a whole. Specifically, 72% of the sample identified as being Caucasian, while the U.S. population is currently comprised of 63% of self-identified Caucasians (White, non-Hispanic, non-Latino) (“USA QuickFacts from the US Census Bureau,” 2015). Additionally, since the majority of participants reported an income of at least \$60,000, the results do not accurately reflect the perceptions and estimations of low-income individuals. This socioeconomic group is an important one, as reflected in Chapter 2’s discussion of this group’s eating and purchasing behaviors being less healthy compared to higher-income populations.

As might be expected from the sample, overall, participants were mostly White (72%), female (69%), educated (95% exposed to higher education), and high earners (60% over the national median income). Ironically, though it is expected that this study’s participants would be likely to have a greater nutrition knowledge because of their higher socioeconomic status overall, the results are contradictory. From this, it can be speculated that those of a lower socioeconomic status might have perceptions and estimations that would be even further from accurate. This inaccuracy may well be a contributor to socioeconomic health disparities.

Furthermore, based on the sampling methods employed, 30% of the student participants reported majoring in health and wellness subjects (e.g. Public Health,

Physical Education, Nutrition, Sports Science), which was thought to lead to results skewed towards accuracy because of the heightened interest and knowledge among these students. A more representative population that was not so heavily made up of students may have reported perceptions and calorie estimations that were even more so inaccurate, which is a clear health concern.

### *Health Consciousness*

Though 19% of participants disagreed with “I watch how much I eat”, using the “top box” view of the survey results, only 39% agreed or strongly agreed with the statement, leaving 60% of participants not indicating top box scores (i.e. not in strong agreement with the statement). Additionally, though 37% of participants reported that they do not pay attention to calorie information, in reality, a much larger percentage is likely to not pay attention to calorie information due to the fact that only 23% of participants indicated agreement or strong agreement with the statement. In spite of the sample population being on the advantaged side of health disparities and socioeconomic difficulties, this reinforces the fact that agreeing with the statement “Eating healthy is important to me” does not translate into healthy behaviors, as indicated by their patronage of these types of food-service establishments and the indication by many that they do not pay attention to calorie information or watch what they eat. This demonstrates the dichotomy between the perception and behavior of healthy eating and nutrition.

### *McDonald's vs. Applebee's*

It is noteworthy that frequency of participation was split evenly (50%) between the two operations, despite the fact that 90% of participants perceived Applebee's to serve the more healthful food. These results suggest that full-service restaurants may be

beneficiaries of stereotyping and halo effects. These results may also reflect the phenomenon identified by Wilcox et al. (2009), which was previously discussed in Chapter II, that the mere presence of healthy items on a menu leads consumers to perceive the menu as healthful and influences them to choose an indulgent food item. Applebee's restaurant menus include meal choices from Weight Watchers, which may have contributed to the halo effect that seems to surround the restaurant.

Further, perhaps this even split of dining frequency can be explained by the social aspect of these restaurant segments; overwhelmingly, 94% of participants said they are more likely to choose Applebee's when dining with friends or family, and 86% of participants reported they are more likely to choose McDonald's when dining alone. This may also demonstrate that, although a large majority perceives Applebee's as healthier, participants may feel awkward eating at a full-service restaurant alone, so they choose to dine at McDonald's. Another possible explanation is the fact that McDonald's is more convenient and easier to access when alone, so it is the optimum choice when consumers are solo, especially because of the drive-thru option that is available. As verified in a study that examined reasons for eating at fast-food restaurants, 67% of participants indicated some form of disagreement or indifference with the statement that fast-food "is a way of socializing with friends and family", 92% strongly agreed or agreed that fast-food restaurants were "quick", and 80% strongly agreed or agreed that fast-food restaurants were "easy to get to" (Rydell et al., 2008). Thus, the responses for which restaurant participants eat at more frequently indicate that healthfulness of the menu choices does not always influence the choice of where to dine. In fact, there is strong indication that these other factors are what drive choice, and for most consumers,

healthfulness is not part of the selection equation. Also worthy of discussing is the fact that when you consider that Applebee's is calorically higher in 2 of 3 categories, it becomes a public health issue that these are the food establishments that groups of people will seek when eating out.

In all of the perception areas of taste, quality, and healthfulness, Applebee's was considered to be the optimum provider compared to McDonald's. The most frequently identified reason (excluding "Other") for eating more frequently at Applebee's was health. However, when comparing actual calorie amounts of meals between both McDonald's and Applebee's, the perception that Applebee's is healthier is not necessarily correct.

This misconception is also evident in the results from the calorie estimations. The overestimation of both the McDonald's burger and chicken sandwich meals, and the underestimation of the Applebee's burger and chicken sandwich meals supports this theory that there is a misconception regarding the healthfulness (or rather unhealthfulness) of these restaurants overall. Further, though the salad meal at McDonald's was correctly perceived by most participants to contain fewer calories than the Applebee's salad, the caloric contents were, again, overestimated for McDonald's and underestimated for Applebee's. The participants did correctly identify the McDonald's salad meal as the lower caloric choice; this may be explained by the recent emphasis in advertising that McDonald's has implemented regarding the health benefits of their salad offerings, and the inclusion of Applebee's salads in the popular book, *Eat This, Not That* (Zinczenko, 2009).

Regarding the scales for taste, quality, and healthfulness of each restaurant, compared with the demographics, there were some noteworthy results. According to the Chi-square statistical significance results, it was apparent that quality and healthfulness of McDonald's became increasingly more satisfactory with age. Interestingly, the participants who reported being in the lowest and the highest categories for income both had high levels of dissatisfaction with the healthfulness of McDonald's. This demonstrates that there is not such a gap between socioeconomic groups regarding fast-food consumption. Also, it seems that the more education possessed, the likelihood of perceiving McDonald's as being of higher quality and healthfulness increases. It must be kept in mind, however, that these perceptions and opinions for taste, quality, and healthfulness of each restaurant are comparisons to each other, not a comparison to an ideal.

Overall, the survey instrument's results reveal that there is a dichotomy between perceived or estimated calorie estimations and the actual caloric contents of foods served at fast-food and casual dining chain restaurants. The lack of accuracy in the calorie estimations is surprising due to the fact that the sample was mostly representative of an advantaged socioeconomic and knowledgeable population. Additionally, the health consciousness scale results showed that, though many reported that eating healthy was important to them, the behavior of watching calories and portions was not always practiced. Also, the results are not in support of the previous citations (Hunt, 1997; Kiefer et al., 2005; M E Oakes & Slotterback, 2001a; Michael E. Oakes & Slotterback, 2000) that claim women are the more knowledgeable and concerned gender when it comes to nutrition and healthy eating. This research's results revealed no statistically significant

differences between gender and perceived satisfaction for either restaurant. Further, the obesity epidemic of the U.S. and the resulting negative health outcomes may be indicative of the divide between perceived health consciousness, nutrition knowledge, and actual health and eating behaviors.

### **Strengths and Limitations/Delimitations**

This research is an original contribution to the literature, which is a clear strength of the study. This type of comparative research of fast-food and full-service restaurants has not yet been performed. Further, this particular sample, though skewed towards high earning, educated women, still demonstrates results and implications for those interested in and involved with nutrition.

The outreach network limited the research sample, resulting in an unrepresentative proportionality of the U.S. population as a whole. Another limitation is that much of the survey recruitment occurred through a college listserv, which could have resulted in the unrepresentative participant demographics. Education levels were not representative of the national population as a whole due to the narrow access parameters. The research employed a convenience sample of people who could be affected through school connections and the researcher's personal network. Due to the snowball nature of this sample, the study managed to collect data from outside the school population. Thus, the results are undoubtedly skewed in terms of participants' age and level of education. A more representative study that made an effort to include other populations would provide a more generalizable result and shed light on the knowledge impacts among lower socioeconomic groups.



Like any self-administered survey, the risk of survey fatigue due to the ever-increasing preponderance in the number of surveys being sent, ambiguity of survey questions, and accurate understanding of the instrument is inherent and therefore may have placed limitations on the survey results.

Additionally, the delimitations of the study include the fact that the research was limited to two operations, Applebee's and McDonald's. A broader look across more food establishments may reveal more generalizable results. The study was also limited to perception, as opposed to an actual nutritional analysis and portion size of the food served at these establishments.

### **Future Research**

Future research could employ qualitative methodology, such as focus groups or semi-structured interviews. This could find a more nuanced understanding that may help shed light on the survey results. Additionally, the sampling method could be broadened and more representative to ensure the participants were representative of the nation as a whole, could enhance the generalizability of the results, and increase the sample size. Future research could also examine the potential for a halo effect for full service restaurants by delving further into the stereotyping and health halo perceptions of consumers.

### **Implications**

The results of this research provide evidence that there is a gap between nutrition knowledge, health consciousness, and health behaviors. Nutrition and health

professionals should utilize realistic instructive tools when educating people about healthy eating and behaviors. Actual restaurant menus and nutritional information should be explained and demonstrated, since it is revealed through the results that Americans will continue to eat outside the home, and thus, need to be educated on the food that these restaurant establishments serve. For example, a nutrition intervention program utilized fast-food menus to educate adolescents on proper meal choices when dining at fast-food restaurants, and resulted in the participants making healthier fast-food meal choices post-intervention (Allen, Taylor, & Kuiper, 2007). Programs like this could enable consumers to make educated and informed choices when dining out, whether it be at fast-food or casual dining chain restaurants.

Further, policymakers and educators should examine the impact of food advertising on nutritional choices. As evident by the results of this study, consumers are likely influenced by the portrayals in the media of fast-food restaurants as negative or unhealthy entities. Thus, influential groups could utilize a portion of the advertising and marketing funds and outlets to educate the public on healthier choices within these dining establishments.

## References

- Allen, K. N., Taylor, J. S., & Kuiper, R. (2007). Effectiveness of nutrition education on fast food choices in adolescents. *The Journal of School Nursing: The Official Publication of the National Association of School Nurses*, 23(6), 337–341. doi:10.1177/10598405070230060601
- Andreassen, T. W., & Lindestad, B. (1998). Customer loyalty and complex services: The impact of corporate image on quality, customer satisfaction and loyalty for customers with varying degrees of service expertise. *International Journal of Service Industry Management*, 9(1), 7–25. doi:http://dx.doi.org/10.1108/17506200710779521
- Andrieu, E., Darmon, N., & Drewnowski, a. (2006). Low-cost diets: more energy, fewer nutrients. *European Journal of Clinical Nutrition*, 60(3), 434–436. doi:10.1038/sj.ejcn.1602331
- Applebee's. (2015). Applebee's Nutritional Information.
- Applebee's At a Glance. (n.d.). Retrieved February 22, 2015, from <http://www.applebees.com/about-us/at-a-glance>
- Auchincloss, A. H., Leonberg, B. L., Glanz, K., Bellitz, S., Ricchezza, A., & Jervis, A. (2014). Nutritional Value of Meals at Full-service Restaurant Chains. *Journal of Nutrition Education and Behavior*, 46, 75–81. doi:http://dx.doi.org/10.1016/j.jneb.2013.10.008
- Baloglu, S. (2002). Dimensions of customer loyalty: Separating friends from well wishers. *Cornell Hotel and Restaurant Administration Quarterly*, 43(1), 47–59. doi:10.1016/S0010-8804(02)80008-8
- Beydoun, M. a, & Wang, Y. (2008). How do socio-economic status, perceived economic barriers and nutritional benefits affect quality of dietary intake among US adults? *European Journal of Clinical Nutrition*, 62(3), 303–313. doi:10.1038/sj.ejcn.1602700
- Beydoun, M. a., & Wang, Y. (2008). Do nutrition knowledge and beliefs modify the association of socio-economic factors and diet quality among US adults? *Preventive Medicine*, 46(2), 145–153. doi:10.1016/j.ypmed.2007.06.016
- Block, J. P., Condon, S. K., Kleinman, K., Mullen, J., Linakis, S., Rifas-Shiman, S., & Gillman, M. W. (2013). Consumers' estimation of calorie content at fast food restaurants: cross sectional observational study. *British Medical Journal*. doi:doi:10.1136/bmj.f2907

- Bloemer, J., Ruyter, K. De, & Peeters, P. (1998). Investigating drivers of bank loyalty: the complex relationship between image, service quality and satisfaction. *International Journal of Bank Marketing*, 16, 276–286. doi:10.1108/02652329810245984
- Bruemmer, B., Krieger, J., Saelens, B. E., & Chan, N. (2012). Energy, Saturated Fat, and Sodium Were Lower in Entrées at Chain Restaurants at 18 Months Compared with 6 Months Following the Implementation of Mandatory Menu Labeling Regulation in King County, Washington. *Journal of the Academy of Nutrition & Dietetics*, 112, 1169–1176. doi:10.1016/j.jand.2012.04.019
- Burton, J., Easingwood, C., & Murphy, J. (2001). Using qualitative research to refine service quality models. *Qualitative Market Research: An International Journal*, 4, 217–223. doi:10.1108/13522750110404799
- Burton, S., Tangari, A. H., Howlett, E., & Turri, A. M. (2014). How the Perceived Healthfulness of Restaurant Menu Items Influences Sodium and Calorie Misperceptions: Implications for Nutrition Disclosures in Chain Restaurants. *Journal of Consumer Affairs*, 48, 62–95. doi:10.1111/joca.12015
- Carels, R. A., Konrad, K., & Harper, J. (2007). Individual differences in food perceptions and calorie estimation: An examination of dieting status, weight, and gender. *Appetite*, 49, 450–458. doi:http://dx.doi.org/10.1016/j.appet.2007.02.009
- Cassady, D., Jetter, K. M., & Culp, J. (2007). Is Price a Barrier to Eating More Fruits and Vegetables for Low-Income Families? *Journal of the American Dietetic Association*, 107(11), 1909–1915. doi:10.1016/j.jada.2007.08.015
- Centers for Disease Control and Prevention. (2014). Overweight and Obesity: Adult Obesity Facts. Retrieved from <http://www.cdc.gov/obesity/data/adult.html>.
- Chandon, P., & Wansink, B. (2007a). Is Obesity Caused by Calorie Underestimation? A Psychophysical Model of Meal Size Estimation. *Journal of Marketing Research (JMR)*, 44, 84–99. doi:10.1509/jmkr.44.1.84
- Chandon, P., & Wansink, B. (2007b). The Biasing Health Halos of Fast-Food Restaurant Health Claims: Lower Calorie Estimates and Higher Side-Dish Consumption Intentions. *Journal of Consumer Research*, 34, 301–314.
- Chandon, P., & Wansink, B. (2011). Is Food Marketing Making us Fat? A Multi-disciplinary Review. *INSEAD Working Papers Collection*, 1–72.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests\* If~ j. cronbach. *Psychometrika*, 16(3), 297–334.

- Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, 24(3), 285–290. doi:10.1037/h0033731
- Duarte Alonso, A., O'Neill, M., Liu, Y., & O'Shea, M. (2013). Factors Driving Consumer Restaurant Choice: An Exploratory Study From the Southeastern United States. *Journal of Hospitality Marketing & Management*, 22, 547–567. doi:10.1080/19368623.2012.671562
- Dumanovsky, T., Huang, C. Y., Nonas, C. A., Matte, T. D., Bassett, M. T., & Silver, L. D. (2011). Changes in energy content of lunchtime purchases from fast food restaurants after introduction of calorie labelling: cross sectional customer surveys. *BMJ (Clinical Research Ed.)*, 343(jul26\_1), d4464. doi:10.1136/bmj.d4464
- Elbel, B. (2011). Consumer Estimation of Recommended and Actual Calories at Fast Food Restaurants. *Obesity*, 19, 1971–1978. doi:http://dx.doi.org/10.1038/oby.2011.214
- Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet Research*, 15, 195–219. doi:10.1108/10662240510590360
- Fast-food. (n.d.). *Merriam-Webster's Collegiate Dictionary*. Retrieved from <http://www.merriam-webster.com/dictionary/fast-food>
- Fisher, R. J., & Dube, L. (2011). Development and validation of an eating norms inventory. Americans' lay-beliefs about appropriate eating. *Appetite*, 57, 365–376. doi:10.1016/j.appet.2011.05.308
- Friestad, M., & Wright, P. (1994). The People Persuasion Cope with Knowledge Persuasion Model : How Attempts. *Journal of Consumer Research*, 21(1), 1–31. doi:10.1086/209380
- Fryar, C. D., & Ervin, R. B. (2013). Caloric Intake From Fast Food Among Adults. *NCHS Data Brief*, (114), 1–7.
- Fryer, C. D., & Ervin, R. B. (2013). Caloric intake from fast food among adults: United States, 2007-2010. *NCHS Data Brief*, 1–8.
- Glanz, K., Resnicow, K., Seymour, J., Hoy, K., Stewart, H., Lyons, M., & Goldberg, J. (2007). How major restaurant chains plan their menus - The role of profit, demand, and health. *AMERICAN JOURNAL OF PREVENTIVE MEDICINE*, 32, 383–388.
- Gold, B., & Salkind, W. (1974). What Do "Top Box" Scores Measure? *Journal of Advertising Research*, 14(2), 19–24.
- Goodman, L. A. (1961). Snowball Sampling. *The Annals of Mathematical Statistics*, 32(1), 148–170.

- Hanna, N., Wozniak, R., & Hanna, M. (2013). Consumer Perception. In *Consumer Behavior: An Applied Approach* (pp. 73–108). Kendall Hunt.
- Harnack, L., & French, S. (2003). Fattening up on fast food. *Journal of the American Dietetic Association, 103*(10), 1296–1297. doi:10.1053/S0002-8223(03)01239-2
- Hendrickson, D., Smith, C., & Eikenberry, N. (2006). Fruit and vegetable access in four low-income food deserts communities in Minnesota. *Agriculture and Human Values, 23*(3), 371–383. doi:10.1007/s10460-006-9002-8
- Howlett, E. A., Burton, S., Bates, K., & Huggins, K. (2009a). Coming to a Restaurant Near You? Potential Consumer Responses to Nutrition Information Disclosure on Menus. *Journal of Consumer Research, 36*(October), 494–503. doi:10.1086/598799
- Howlett, E. A., Burton, S., Bates, K., & Huggins, K. (2009b). Coming to a Restaurant Near You? Potential Consumer Responses to Nutrition Information Disclosure on Menus. *Journal of Consumer Research, 36*, 494–503.
- Hunt, M. (1997). Measures of Food Choice Behavior Related to Intervention Messages in Worksite Health Promotion. *Journal of Nutrition Education, 29*(1), 3–11. doi:10.1016/S0022-3182(97)70140-7
- James, W. P., Nelson, M., Ralph, a, & Leather, S. (1997). Socioeconomic determinants of health. The contribution of nutrition to inequalities in health. *BMJ (Clinical Research Ed.), 314*(7093), 1545–1549. doi:10.1136/bmj.314.7093.1545
- Kardes, F. R., Posavac, S. S., & Cronley, M. L. (2004). Consumer Inference: A Review of Processes, Bases, and Judgment Contexts. *Journal of Consumer Psychology (Lawrence Erlbaum Associates), 14*, 230–256.
- Keller, K. L. (1993). Conceptualizing, Measuring, Managing Customer-Based Brand Equity. *Journal of Marketing, 57*(January), 1–22. doi:10.2307/1252054
- Kiefer, I., Rathmanner, T., & Kunze, M. (2005). Eating and dieting differences in men and women. *Journal of Men's Health and Gender, 2*(2), 194–201. doi:10.1016/j.jmhg.2005.04.010
- Kim, D., & Leigh, J. P. (2011). Are Meals at Full-Service and Fast-Food Restaurants “Normal” or “Inferior”? *Population Health Management, 14*(6), 307–315. doi:10.1089/pop.2010.0071
- Kim, H. J., Park, J., Kim, M.-J., & Ryu, K. (2013). Does perceived restaurant food healthiness matter? Its influence on value, satisfaction and revisit intentions in restaurant operations in South Korea. *International Journal of Hospitality Management, 33*, 397–405. doi:http://dx.doi.org/10.1016/j.ijhm.2012.10.010

- Kozup, J. C., Creyer, E. H., & Burton, S. (2003). Making Healthful Food Choices: The Influence of Health Claims and Nutrition Information on Consumers' Evaluations of Packaged Food Products and Restaurant Menu Items. *Journal of Marketing*, 67, 19–34.
- Lansky, D., & Brownell, K. D. (1982). Estimates of food quantity and calories: Errors in self-report among obese patients. *American Journal of Clinical Nutrition*, 35(4), 727–732.
- Lê, J., Dallongeville, J., Wagner, a, Arveiler, D., Haas, B., Cottel, D., ... Dauchet, L. (2013). Attitudes toward healthy eating: a mediator of the educational level-diet relationship. *European Journal of Clinical Nutrition*, 67(8), 808–14. doi:10.1038/ejcn.2013.110
- Lee, A. Y., & Labroo, A. a. (2004). The Effect of Conceptual and Perceptual Fluency on Brand Evaluation. *Journal of Marketing Research*, 41(2), 151–165. doi:10.1509/jmkr.41.2.151.28665
- Lee, K., & Shavitt, S. (2009). Can McDonald's Food Ever Be Considered Healthful? Metacognitive Experiences Affect the Perceived Understanding of a Brand. *Journal of Marketing Research (JMR)*, 46, 222–233. doi:10.1509/jmkr.46.2.222
- Lichtman, S. W., Pisarska, K., Berman, E. R., Pestone, M., Dowling, H., Offenbacher, E., ... Heymsfield, S. B. (1992). Discrepancy between self-reported and actual caloric intake and exercise in obese subjects. *The New England Journal of Medicine*, 327(27), 1893–1898.
- Lim, C., & Loh, S. (2014). Gen Y consumers' perceptions of quick service restaurant and the mediating role of purchase intentions. *European Journal of Tourism Research*, 7(1), 31–44. 14p. Retrieved from <http://ejtr.vumk.eu/>
- Livingstone, M. B. E., & Black, A. E. (2003). Markers of the validity of reported energy intake. *The Journal of Nutrition*, 133 Suppl , 895S–920S.
- MacArthur, K. (2006). McD's steels for assault on image. *Advertising Age*, 77(14).
- McDonald's. (2015). McDonald's USA Nutrition Facts for Popular Menu Items.
- Min, H., & Min, H. (2011). Benchmarking the service quality of fast-food restaurant franchises in the USA: A longitudinal study. *Benchmarking: An International Journal*, 18(2), 282–300. doi:10.1108/14635771111121711
- Monsivais, P., & Drewnowski, A. (2007). The Rising Cost of Low-Energy-Density Foods. *Journal of the American Dietetic Association*, 107(12), 2071–2076. doi:10.1016/j.jada.2007.09.009

- Mozaffarian, D., Benjamin, E. J., Go, a. S., Arnett, D. K., Blaha, M. J., Cushman, M., ... Turner, M. B. (2015). Executive Summary: Heart Disease and Stroke Statistics--2015 Update: A Report From the American Heart Association. *Circulation*, *131*, 434–441. doi:10.1161/CIR.000000000000157
- Nation's Restaurant News. (n.d.). Casual Dining. Retrieved from <http://nrrn.com/segments/casual-dining>
- Oakes, M. E. (2003). Differences in judgments of food healthfulness by young and elderly women. *FOOD QUALITY AND PREFERENCE*, *14*, 227–236.
- Oakes, M. E. (2005). Stereotypical thinking about foods and perceived capacity to promote weight gain. *Appetite*, *44*, 317–324. doi:10.1016/j.appet.2005.03.010
- Oakes, M. E., & Slotterback, C. S. (2000). Nutritional habits and motivations to eat after a palatable pre-load. *Current Psychology*, *19*(4), 329–337. doi:10.1007/s12144-000-1024-6
- Oakes, M. E., & Slotterback, C. S. (2001). GENDER DIFFERENCES IN PERCEPTIONS OF THE HEALTHINESS OF FOODS. *Psychology & Health*, *16*, 57–65.
- Oakes, M. E., & Slotterback, C. S. (2001a). Judgements of food healthfulness: food name stereotypes in adults over age 25. *APPETITE*, *37*, 1–8.
- Oakes, M. E., & Slotterback, C. S. (2001b). What's in a name? A comparison of men's and women's judgements about food names and their nutrient contents. *APPETITE*, *36*, 29–40.
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA: The Journal Of The American Medical Association*, *311*, 806–814. doi:10.1001/jama.2014.732
- Paeratakul, S., Ferdinand, D. P., Champagne, C. M., Ryan, D. H., & Bray, G. A. (2003). Fast-food consumption among US adults and children: Dietary and nutrient intake profile. *JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION*, *103*, 1332–1338.
- Pallant, J. (2007). *SPSS Survival Manual* (3rd editio). New York, NY: McGraw-Hill.
- Pampel, F. C., Krueger, P. M., & Denney, J. T. (2011). Socioeconomic Disparities in Health Behaviors. *Annu Rev Sociol.*, *36*, 349–370. doi:10.1146/annurev.soc.012809.102529.Socioeconomic
- Patient Protection and Affordable Care Act (2010).



- Pew Research Center. (2014). Fast Food Statistics. Retrieved from <http://www.statisticbrain.com/fast-food-statistics/>
- Provencher, V., Polivy, J., & Herman, C. P. (2009). Perceived healthiness of food. If it's healthy, you can eat more! *Appetite*, *52*, 340–344.  
doi:<http://dx.doi.org/10.1016/j.appet.2008.11.005>
- Raghunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The Unhealthy = Tasty Intuition and Its Effects on Taste Inferences, Enjoyment, and Choice of Food Products. *Journal of Marketing*, *70*, 170–184.
- Reber, R., & Schwarz, N. (1999). Effects of perceptual fluency on judgments of truth. *Consciousness and Cognition*, *8*(3), 338–342. doi:10.1111/1467-9280.00008
- Roberto, C. a., Larsen, P. D., Agnew, H., Baik, J., & Brownell, K. D. (2010). Evaluating the impact of menu labeling on food choices and intake. *American Journal of Public Health*, *100*(2), 312–318. doi:10.2105/AJPH.2009.160226
- Roe, B., Levy, A. S., Brenda, M., & Derby, B. M. (1999). The Impact of Health Claims on Consumer Search and Product Evaluation Outcomes: Results from FDA Experimental Data. *Journal of Public Policy & Marketing*, *18*(1), 89–105.
- Rustad, C., & Smith, C. (2013). Nutrition knowledge and associated behavior changes in a holistic, short-term nutrition education intervention with low-income women. *Journal of Nutrition Education and Behavior*, *45*(6), 490–498.  
doi:10.1016/j.jneb.2013.06.009
- Rydell, S. A., Harnack, L. J., Oakes, J. M., Story, M., Jeffery, R. W., & French, S. A. (2008). Why Eat at Fast-Food Restaurants: Reported Reasons among Frequent Consumers, *108*(12), 2066–2070. doi:10.1016/j.jada.2008.09.008
- Ryu, K., Han, H., & Kim, T.-H. (2008). The relationships among overall quick-casual restaurant image, perceived value, customer satisfaction, and behavioral intentions. *International Journal of Hospitality Management*, *27*, 459–469.  
doi:<http://dx.doi.org/10.1016/j.ijhm.2007.11.001>
- Schacter, D. L., Gilbert, D. T., & Wegner, D. M. (2010). *Psychology* (2nd ed.). Worth Publishers.
- Schwarz, N. (2004). When thinking feels difficult: meta-cognitive experiences in judgment and decision making. *Medical Decision Making: An International Journal of the Society for Medical Decision Making*, *25*(1), 105–112.  
doi:10.1177/0272989X04273144
- Schwarz, N. (2006). Feelings, Fit, and Funny Effects: A Situated Cognition Perspective. *Journal of Marketing Research*, *XLIII*(February), 20–23.

- Seiders, K., & Petty, R. D. (2004). Obesity and the Role of Food Marketing: A Policy Analysis of Issues and Remedies. *Journal of Public Policy & Marketing*, 23, 153–169.
- Shaharudin, M. R., Mansor, S. W., & Elias, S. J. (2011). Food Quality Attributes among Malaysia's Fast Food Customer. *International Business and Management*, 2(1), 198–208.
- Shannon-Missal, L. (2013). *Most Americans Have Dined Out in the Past Month, and Among Type of Cuisine, American Food is Tops Followed by Italian*.
- Smith, D. P. (2013). FSR 50: Five Segments, Fifty Leaders. *FSR Magazine*. Retrieved from <http://www.fsrmagazine.com/fsr50/2013/casual-dining>
- “Student”'s t Test (For Paired Samples). (n.d.). Retrieved from <http://www.ruf.rice.edu/~bioslabs/tools/stats/pairedttest.html>
- Swartz, J. J., Braxton, D., & Viera, A. J. (2011). Calorie menu labeling on quick-service restaurant menus: an updated systematic review of the literature. *International Journal of Behavioral Nutrition and Physical Activity*, 8(1), 135. doi:10.1186/1479-5868-8-135
- Tangari, A. H., Burton, S., Howlett, E., Yoon-Na, C. H. O., & Thyroff, A. (2010). Weighing in on Fast Food Consumption: The Effects of Meal and Calorie Disclosures on Consumer Fast Food Evaluations. *Journal of Consumer Affairs*, 44, 431–462. doi:10.1111/j.1745-6606.2010.01177.x
- The Global 30 - QSR magazine. (n.d.). Retrieved February 22, 2015, from <http://www.qsrmagazine.com/content/global-30>
- Thorndike, E. L. (1920). A constant error in psychological ratings. *Journal of Applied Psychology*, 4, 25–29. doi:10.1037/h0071663
- Tooze, J. A., Subar, A. F., THompson, F. E., Troiano, R., Schatzkin, A., & Kipnis, V. (2004). Psychosocial predictors of energy underreporting in a large doubly labeled water study. *American Journal of Clinical Nutrition*, 79(5), 795–804.
- Turrell, G., & Kavanagh, A. M. (2006). Socio-economic pathways to diet: modeling the association between socio-economic position and food purchasing behaviour. *Public Health Nutrition*, 9(3), 375–383.
- U.S. Independent Restaurants Account for 87 Percent of Industry Traffic Losses Since 2008. (2012). Vocus PRW Holdings LLC.
- USA QuickFacts from the US Census Bureau. (2015). Retrieved April 5, 2015, from <http://quickfacts.census.gov/qfd/states/00000.html>

- Vartanian, L. R., Schwartz, M. B., & Brownell, K. D. (2007). Effects of soft drink consumption on nutrition and health: A systematic review and meta-analysis. *American Journal of Public Health, 97*(4), 667–675. doi:10.2105/AJPH.2005.083782
- Walters, A., & Long, M. (2012). The Effect of Food Label Cues on Perceptions of Quality and Purchase Intentions among High-Involvement Consumers with Varying Levels of Nutrition Knowledge. *Journal of Nutrition Education and Behavior, 44*, 350–354. doi:http://dx.doi.org/10.1016/j.jneb.2011.08.008
- Wansink, B., & Chandon, P. (2006). Meal Size, Not Body Size, Explains Errors in Estimating the Calorie Content of Meals. *Annals of Internal Medicine, 145*, 326–W84.
- Ward, C. B. (2013). Would You Prefer Fries or Fruit with That Order?- How Well Are Fast Food Restaurants Satisfying Their Customers? *Society for Marketing Advances Proceedings, 25*, 26–27.
- Wilcox, K., Vallen, B., Block, L., & Fitzsimons, G. J. (2009). Vicarious Goal Fulfillment: When the Mere Presence of a Healthy Option Leads to an Ironically Indulgent Decision. *Journal of Consumer Research, 36*, 380–393.
- World Cancer Research Fund International. (2014). Continuous Update Report.
- Wright, K. B. (2006). Researching Internet-Based Populations: Advantages and Disadvantages of Online Survey Research, Online Questionnaire Authoring Software Packages, and Web Survey Services. *Journal of Computer-Mediated Communication, 10*(3), 00–00. doi:10.1111/j.1083-6101.2005.tb00259.x
- Zinczenko, D. (2009). *Eat this, not that! The best (& worst) foods in America*. Emmaus, Pennsylvania: Rodale Inc.

**Appendix**  
**Research Study Survey**

1. Have you eaten at McDonald's in the past 12 months?
  - a. Yes
  - b. No
  
2. Have you eaten at Applebee's in the past 12 months?
  - a. Yes
  - b. No
  
3. What is your gender?
  - a. Male
  - b. Female
  
4. What is your age group?
  - a. 18-24
  - b. 25-33
  - c. 34-44
  - d. 45-54
  - e. 54-65
  - f. 66 or older
  
5. What is your ethnic background?
  - a. Caucasian
  - b. Hispanic
  - c. African American
  - d. Asian
  - e. Other
  
6. What is your household income?
  - a. Less than \$25,000
  - b. \$25,000 - \$39,999
  - c. \$40,000 - \$59,999
  - d. \$60,000 - \$79,999
  - e. \$80,000 - \$99,999
  - f. \$100,000 and above
  
7. What is your education level?
  - a. Did not graduate high school
  - b. High school graduate or GED
  - c. Some college
  - d. College graduate
  - e. Postgraduate degree
  
8. Are you currently a student?

- a. Yes
- b. No

8.1. If yes, what is your major? \_\_\_\_\_

9. Please indicate your agreement with the following statements.

a. Eating healthy is important to me.

Strongly Disagree	Disagree	Moderately Disagree	Mildly Disagree	Neither Agree nor Disagree	Mildly Agree	Moderately Agree	Agree	Strongly Agree
1	2	3	4	5	6	7	8	9

b. I watch how much I eat.

Strongly Disagree	Disagree	Moderately Disagree	Mildly Disagree	Neither Agree nor Disagree	Mildly Agree	Moderately Agree	Agree	Strongly Agree
1	2	3	4	5	6	7	8	9

c. I pay attention to calorie information.

Strongly Disagree	Disagree	Moderately Disagree	Mildly Disagree	Neither Agree nor Disagree	Mildly Agree	Moderately Agree	Agree	Strongly Agree
1	2	3	4	5	6	7	8	9

10. In your opinion, which establishment serves more healthful food?

- a. McDonald's
- b. Applebee's

11. Which restaurant do you eat at more frequently?

- a. McDonald's
- b. Applebee's

11.1. Why do you eat at McDonald's/Applebee's more frequently?

- a. Price
- b. Health
- c. Convenience
- d. Speed of Service
- e. Other

12. How often do you eat at McDonald's?

- a. Twice or more a week
- b. Once a week
- c. Twice or three times a month
- d. Once a month
- e. Once every few months
- f. Almost never
- g. Never



Unlikely	Unlikely	Unlikely	Unlikely	Likely nor Unlikely	Likely	Likely	Likely	Likely
1	2	3	4	5	6	7	8	9

20. Estimate the calories of the following burger meals:

a. McDonald's: **Bacon & Cheese Quarter Pounder** (A quarter pound\* of juicy, 100% beef with melty American cheese, thick-cut Applewood smoked bacon, crinkle-cut pickles, crisp red onion, ketchup and mustard, stacked on a toasted bakery-style bun), **medium French Fries** \_\_\_\_\_ calories

b. Applebee's: **Bacon Cheddar Cheeseburger** (Cheddar cheese and crispy Applewood smoked bacon crown our thick 'n hearty burger on a toasted bakery bun. Served with lettuce, tomato, onion and pickles), **side of fries** \_\_\_\_\_ calories

22. Estimate the calories of the following chicken sandwich meals:

a. McDonald's: **Premium Grilled Chicken Bacon Clubhouse Sandwich** (Thick-cut Applewood smoked bacon, caramelized grilled onions, white cheddar\*, crisp leaf lettuce and fresh tomato top our grilled chicken breast fillet. Served on our artisan roll with our Big Mac special sauce), **medium French Fries** \_\_\_\_\_ calories

b. Applebee's: **Artisan Grilled Chicken Ciabatta Sandwich** (This sandwich features a white wine artichoke spread with tender grilled chicken topped off with Swiss cheese, crisp Applewood smoked bacon, tomatoes and smoky mayo, all on a ciabatta bun), **side of fries** \_\_\_\_\_ calories

23. Estimate the calories of the following salads:

a. McDonald's: **Premium Bacon Ranch Salad with Crispy Chicken** (Crispy, chicken breast filet tossed with up to 16 varieties of mixed greens, juicy grape tomatoes, shaved carrots, jack and cheddar cheeses and thick cut Applewood smoked bacon. Made just for you and served with Newman's Own Ranch Dressing) \_\_\_\_\_ calories

b. Applebee's: **Fried Chicken Salad** (Juicy breaded chicken, Jack-cheddar, tomatoes and eggs on fresh salad greens. Served with Honey Dijon dressing) \_\_\_\_\_ calories