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A Socio-Psychological Analysis of Eating Behaviors at Fast Food Restaurants

by

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Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Master of Arts Degree in Sociology

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An Abstract of
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The purpose of this study was to explore the mutual interaction of attitude toward taste and the nutritional information of fast foods to explain fast food consumption behavior. The Health Belief Model (HBM) was used to examine from the mutual interplay of attitude toward taste and nutritional information of fast food, which factor is prioritized by consumers in predicting fast food consumption. In this cross-sectional, non-randomized study, an electronic self-administered survey was used as the primary mode of data collection. The survey was sent out to the students, staff, and the faculty members of the then College of Arts and Sciences at the University of Toledo. The statistical tests (using SPSS 20) revealed that attitude toward taste did not influence fast food consumption; nutritional information did not influence fast food consumption; and moreover, attitude toward taste did not influence nutritional knowledge. From the non-significant results from the statistical tests no conclusion could be drawn about the mutual relationship of attitude toward taste and nutritional information of fast foods.

This thesis is dedicated to my parents Mr. Anil Kumar Chakraborty and Mrs. Ratna Chakraborty; to my sisters Anindita Bandyopadhyay, Ishita Chattopadhyay and Dipanwita Banerjee; and, to my husband Dr. Pratik Banerjee and my beloved son Priyam Banerjee.

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List of Abbreviations

ANOVA.....	Analysis of Variance
Asymp. Sig.....	asymptotic significance
BMI.....	Body Mass Index
CALSCALE.....	Calorie measuring scale
CPEHN.....	California Pan-Ethnic Health Network
CS.....	Conditional Stimulus
FATSCALE.....	fat measuring scale
FFC.....	Fast Food Consumption
FFR.....	Fast Food Restaurant
HBM.....	Health Belief Model
IRB.....	Institutional Review Board
MSG.....	Mono sodium Glutamate
NAFLD.....	Non Alcoholic Fatty Liver Disease
NRA.....	National Restaurant Association
NUTRSCLE.....	Nutrition information measuring scale
SERISCALE.....	Scale measuring perceived seriousness
SES.....	Socio Economic Status
SODSCALE.....	Sodium measuring scale
SPSS.....	Statistical Package for Social Sciences
TFA.....	Trans-Fatty Acid
THRSCALE.....	Scale measuring perceived threat
US.....	Unconditional Stimulus
US.....	United States
USDA.....	United States Department of Agriculture
UT.....	University of Toledo

Chapter 1

Introduction and Literature Review

1.1. Statement of the Problem

The collective effects of modernization, urbanization, and globalization have greatly impacted common dietary practice over the last few decades. Addition of fast foods in the regular diet has been so popular that in many countries traditional diets are often being replaced by ‘modern’ westernized fast foods. The prevalence of increasing fast food consumption is mostly seen in the developed and developing countries where fast food has become an inseparable part of regular diet. ‘Fast food’ is rapidly losing its Western connection in terms of its growing availability around the world. The idea of ‘fast food’ has been so much assimilated with the social life, transcending its boundaries of just a eating phenomenon, that George Ritzer in his book “*The McDonaldization of Society*” makes ‘McDonaldization’ an idiomatic expression to describe an overwhelming social process which is predominant over other traditional social practices and establishing a global homogeneity in eating habits (Ritzer, 2000). Fast foods, with new tastes and looks are invading the developing countries and inspiring a new interest among the consumers. Fast foods are convenient, attractive and are often associated with a sense of smart urbane feeling in the non-Western countries. The so called fast paced lifestyle of

developed/developing nations may be seen as the main motivating factor in the rise of fast food industries. In contrast, the developed nations such as in the United States, fast foods have become a part of the regular diet. A study by the USDA Continuing Survey of Food Intakes by Individuals ¹ in 1994 - 1996 suggests that 56% of US adults reportedly eat out on any given day, and about 33% of these eating out places are fast food outlets (French et.al., 2000; USDA Continuing Survey of Food Intakes by Individuals, 1994-96). The data from the National Restaurant Association (NRA) suggest that the number of restaurants grew by 89% from 1972 (203,448) to 1995 (385,442) (NRA, 1998). Also, the number of fast food restaurants grew 147% from 72,850 in 1972 to 180,205 in 1995 (NRA, 1998). Between 1977 and 1995, the percentage of meals and snacks eaten at fast food restaurants increased by 200% and other restaurant use increased by 150% (NRA, 2000). In 1970, the percentage of money spent on away-from-home food represented 25% of total food spending, whereas by 1995 it increased to 40% of total food spending (Lin *et al.*, 1999). It was anticipated that by 2010, 53% of total food spending will be spent on away-from-home foods (NRA, 2000). Recent data suggest that in the United States 49% of the total food dollar (estimated \$604 billion) is projected to be spent on restaurant foods in 2011 (NRA, 2011). Apart from the convenience, one of the major factors motivating eating away from home includes enjoyment. In the United States 88% of the adults reported that they enjoy restaurant foods, 62% stated that they like the taste and flavors of restaurant foods which they think cannot be reproduced at home (NRA, 2011). This attitude toward away from home food may partially explain the rise of fast food consumption worldwide. Recent data indicate that the fast food consumption rate is

¹ The study does not appear to have been conducted in a later date

growing alarmingly. In a fast paced world the pleasures of eating out certainly involves convenience, ease and often offer opportunities for socialization without the hassle of cooking at home.

The reasons for fast food consumption have been well studied in contemporary sociological research. However, there have been limited sociological research studies conducted to understand the psychology behind human eating habits and fast food consumption. There is literature that focuses on human food intake processes and examines why individuals are prone to certain properties of taste of foods but most of the time they signify general eating processes, rather than social or cultural patterns for making food choices. Previous studies on taste as a predictor of fast food consumption has received very limited scientific attention. Along with that, rarely previous studies have focused on attitudes toward taste as a major predictor of fast food consumption. This issue is important in the backdrop of increasing growth of fast food consumption in the Western world, and especially in the United States. A psychological exploration of the relationship between fast food consumption pattern and attitudes, perceptions associated with the taste of fast foods may discover new dimensions of fast food eating behaviors. The sense of pleasure derived from the taste of palatable foods may be a key factor in developing attitudes toward specific foods. Since previous social and behavioral researches has seldom addressed the issue of taste or palatability of fast foods in understanding fast food consumption behavior, this study is an attempt to connect the gap in the research on fast food consumption behaviors.

1.2. Sociological Relevance of the Problem

The escalating trend of eating fast food is an important characteristic of American eating behaviors. The sociological relevance of this trend gets intensified as the impact of this collective behavior transcends the individual consequences to the whole society. Fast food is such an intrinsic part of the American food culture that its availability is assured even outside of the fast food restaurants. Vending machines, large buildings, school cafeterias, academic institutions, airports; and even hospital cafeterias sometimes offer fast foods/some sort of fast foods or/and soft drinks. Not only that, even some fast food restaurants offer and advertise kids meals that are often cheap and/or free. This trend, at its face value, may seem to be very convenient and commensurate with the busy lifestyle of the 21st C., but at its root it may be restricting the consumers from developing healthy eating habits by allowing them the easy option of fast food for their meals. The child population, on the other hand, is developing the habit of having fast food for their meals from an early age. As they are being socialized to have fast food for meals with their family the importance of fast food as ‘food’ is reinforced in them from the very beginning.

The increasing frequency of fast food restaurant visits and reliance on convenience foods, especially fast food, brought a radical change in the dietary practice of developed and developing countries over the last 30 years (Pingali, 2007; van der Horst et al. 2011a). Restaurant foods are appetizing and convenient to fit the demands of fast-paced lifestyle of the contemporary society. Individuals may depend more on restaurant foods and ready-to-eat food when they are more occupied with their other roles in society. A common assumption is that individuals are aware of the possible health

risks of eating fast foods in different degrees, but the increasing rates of fast food consumption behoove behavioral scientists to ask why, despite the health risks, individuals engage in such behaviors (Martin et al. 2008; Werthmann et al. 2011). Also, it raises a serious question of whether consumers are aware of the extent to which the fast foods can be detrimental for their health (Dumanovsky et al. 2010).

The general assumption in this study is that, to different extents, consumers are aware that consumption of fast food is not an overall healthy option. Their level of awareness of the negative health outcomes of fast food consumption is a significant issue in analyzing food choice behavior at fast food restaurants. Furthermore, factors such as, whether they perceive susceptibility to deleterious outcomes; their overall knowledge of nutrition facts; and the cultural trend/ pattern/dynamics of fast food restaurant usage are also important to consider. In this study, the overall fast food consumption behavior will have a universal focus theoretically, but the data, used in this study, is drawn from a U.S. subsample.

1.3. Literature Review

In order to fully examine the relationship between behavior and food choices, it is important to understand the social as well as psychological influences that promote eating behaviors. An examination of fast food consumption behavior becomes extremely important considering the negative effects of fast foods on health. Therefore, the literature review has been developed to address the effects of fast food consumption on

human lives and other influences that may explain the increasing consumption trend of fast food. In this discussion the psychological and possible subconscious motives in human food choice trends, and the relative importance of taste or palatability of foods over other socio-structural factors have been equally emphasized based on the available literature

1.3.1. The Association between Fast Food and Diseases

As dependence on fast food is growing, its long term effects on consumer health have been evident in numerous ways. Excessive consumption of fast food can predispose its consumers to a disproportionate intake of nutrients to calories and, therefore, can aggravate certain health conditions. Repeated consumption of fast foods has been associated with a number of non-communicable diseases such as obesity, cardio vascular diseases, Type II diabetes, or hypertension (Stender et al., 2007). Though the direct association of fast food consumption and the causes of these diseases need to be supported by more scientific evidence, the effects of fast food on the degeneration of these health conditions cannot be ignored.

As society is becoming technologically more advanced and informative, individuals tend to be more aware about their own health. As part of this awareness, more attention is now given to a healthy lifestyle involving diet and exercise habits. Though the level of awareness varies from individual to individual, the fact that fast food and its nutrition content may worsen certain health conditions, or may invite health problems is now well-known (Pereira et al., 2005; Strazzullo et al., 2009). In spite of the growing awareness, the use of fast food is increasing and leaving generations where obesity, heart diseases, hypertension, diabetes etc are common in many families. The effect of this

problem can be seen with the increasing rates of childhood obesity and other diet-related health problems (Bowman et al., 2004; Paeratakul et al., 2003; Bauer et al., 2008). Increased fast food consumption may lead to increased intake of fat, especially animal fats, salt, sugar and other non sugar sweeteners. When accompanied by less physical activity, this excess load of fat and calories in the diet, may invite chronic health problems. In this regard, it is important to note that the changing pattern of food-related health problems has been a historical phenomenon and has generated substantial interest among the researchers. The historical journey from the stages of malnutrition and famine, poor sanitation problems, and other communicable diseases to the recent escalating trend of the consumption of excess food (especially in the developed and even in developing countries) and overweight/obesity and other chronic diet related non communicable diseases has been shown by researchers (Bezerra et al. 2012; Omran, 1971; Popkin and Gordon-Larsen, 2004; van der Horst et al. 2011b, 2011a, Widome et al., 2009). Health problems relating to malnutrition have been mostly receding worldwide with the exception of few countries, and have been replaced by chronic health problems such as obesity and problems with overweight, diabetes, high cholesterol, hypertension, and coronary heart diseases. These current patterns of health problems mostly involve non-communicable diseases and are, for the most part, lifestyle related.

Recent data suggest that the growing rates of chronic degenerative diseases have a direct connection with diet, and especially with the consumption of fast food. Frequent consumption of fast food has been directly associated with weight gain and Type Two diabetes in a US based population (Pereira et al., 2005). The increased consumption of fast food has been shown to be positively related to an increase in BMI (Duffey et al.,

2007). Fast foods are often rich in salt content. Recent studies show a positive relationship between increased salt intake and stroke and other cardiovascular diseases (Strazzullo et al., 2009).

1.3.2. Impact on Traditional Diet Patterns

The growing fast food culture has also its effects on the food traditions of different nations. It has not only brought changes into the traditional pattern of foods, but it is changing the qualitative value of foods. Qualitative value here refers to the nutritional value of traditional foods in different nations. As fast foods have entered into the regular diet in many countries, the traditional nutritional balance is disrupted by an excessive load of calories, excessive fat and cholesterol. The non western countries are mostly affected by this trend. The traditional diets in countries such as Japan, Thailand, South and East Asia, and the Mediterranean region, have been associated with lower rates of mortality, coronary heart diseases and some forms of cancer. (Matsuzaki, 1992; Kangsadalampai and Pratheepachitti, 2008; Kangsadalampai and Plaingam, 2008; Sukprasansap et al., 2008; Mukarami et al., 1994; World cancer Research Fund, 2007; Trichopoulou et al., 2003). However, the consumption of fast food has increased in these countries and the use of high caloric foods, excessive sugar, and animal fat in their new diets has been linked with health problems like obesity, hypertension, diabetes and cardiovascular diseases (Seubsman et al., 2009). The growing rates of problems with overweight and obesity and the early onset of diabetes and hypertension now have a degenerating effect on population health in these countries (Hossain, Kavar & Nahas, 2007).

1.3.3. Predictors of Fast Food Consumption

Eating at fast food restaurants fundamentally signifies the occasion of skipping homemade food and replacing it with foods available at fast food restaurants. Here fast food restaurants means restaurants without any wait services (USDA Continuing Survey of Food Intakes by Individuals, 1994 – 1996; Biing-Hwan and Frazao, 1997). Various causes may be responsible for this growing trend of eating at fast food restaurants. ‘Fast food’ as the name itself implies is the provision of the availability of foods that may be attained fast without any hassle of a long wait. In other words, speedy delivery of foods makes the prepared food purchasing process convenient for the customers. The attempt to investigate the reasons of fast food consumption reveals numerous predictors, ranging from social, personal to behavioral characteristics/attributes, that alone or combined together influence eating behaviors at fast food restaurants. Existing literature on predictors of fast food culture largely focus on some socio-structural factors of fast food consumption such as convenience, cost, socio-economic status. Behavioral predictors include behaviors that promote or restrain from fast food consumption, such as maintaining strategic diet planning, television viewing, sports team participation etc (French et al, 2001). Less attention has been given so far on psychological predictors such as various attitudes toward fast food consumption, perception of the self motivation of eating and restraining away from fast foods, and attitudes toward self health status as a motivator of fast food consumption. Additionally, the cultural influence on attitudes toward fast food consumption cannot be ignored.

Consumption of fast food is different in different nations and cultures.

Researchers have found that adolescents and adults from United States showed a greater consumption of fast food and lower consumption of healthier foods than immigrant US adolescents and adults (Bauer, 2008; Unger, 2004). Existing research data, though insufficient, show that the acculturation to the United States implies a greater prevalence for risky lifestyle related behaviors, predominant among them is the risky dietary behavior (Bauer, 2008; Unger, 2004). Assimilation to the US culture in Asian American and Hispanic populations suggests a significant shift from the traditional healthy foods to energy dense, high fat and sugary foods and especially fast foods (Unger, 2004). It has been shown that recent immigrant families in the US maintain their culture specific healthier food habits than their US counterparts and thus are benefited in terms of healthier eating habits (Bauer et al, 2008). Similarly, attitudes toward consumption of fast food and taste of fast food have culturally diverse implications too. The perception of what is being termed as 'tasty' may differ from culture to culture. Here it is important to note that 'fast food' itself may have different implications in different cultures too. While fast food may be an integral part of everyday life in the Western world, in other cultures (such as in Asia) it is considered more as an indulgence into an experience of something different in nature than everyday homemade meals. The experience of fast food in Asia is perceived to be a tastier alternative than its homemade counterpart. So the expectation is that fast food may signify different connotations to people from different ethnic backgrounds. While discussing the predictors of fast food consumption, it is important to remember that the interactions of different predictors of fast food consumption are very complex. Human eating behavior is characterized by multiple factors and it is extremely

difficult to comprehend whether a single factor or multiple factors are playing together to define food choices.

Considering the insufficient scientific discussion of the details of eating behavior at fast food restaurants, the literature review for this study attempts to provide a detailed discussion on the physiological, biological, psychological and moreover environmental factors that explain liking for certain properties of food, especially taste. Inclination toward specific tastes of foods can be explained by certain physiological and biological factors. The general liking for certain properties of taste may be applicable to fast food consumption behaviors. Human physiological attributes may explain human inclination, both conscious and subconscious, towards certain tastes for foods. On the other hand, attitude is developed throughout the life course and can be shaped by different individual, social, cultural and environmental influences.

1.3.4. Existing Food Choice Models

Eating behavior, whether general or at fast food restaurants, is multifaceted in nature and may involve numerous internal and external cues. According to Pilgrim (1957), internal attitude developed by individual physiological factors with some external factors influence an individual's perception of the sensory aspects of foods (Pilgrim, 1957). Another food choice model by Shepherd (1985) emphasizes three factors behind food choice. These factors are, physical properties (e.g. flavor, texture, appearance), chemical components (e.g. the amount of protein or carbohydrate), and nutrient content of food itself (Shepherd, 1985). Human factors of food choice includes an individual's perception of the sensory properties of food beliefs, values and habits that are developed

from prior experience with foods, socio-economic environment , food brands, price and attitudes to sensory aspects of food or nutritional values of food. Another model of food choice, developed by Furst et al. (1996), describes three basic components for being responsible in making food choice decisions. These are: a) life course- individual's experiences; b) influences, such as, ideals, personal factors, resources, social framework and food context; c) personal strategies with negotiating values in making choices, such as, an evaluation of the sensory perceptions, financial concern, convenience, nutrition, health, quality and relationship management in food choice pattern (Furst et al, 1996). In analyzing the psychological determinants of eating behavior Eertmans et al. (2001) introduced a model of food choice and intake. The model comprises (a) internal factors that include sensory aspects, and (b) external factors- information, the social context and the physical environment (Eertmans et al, 2001).

When analyzing eating behavior at fast food restaurants, it is appropriate to assume that the factors behind general food choice can be equally applicable to the food choice behavior in fast food restaurants. The factors behind choosing a particular fast food restaurant (cost, convenience etc.) may vary from individual to individual, but the psychology behind the inclination to certain properties (such as taste, smell, texture) of food is assumed to function in the similar way in overall food choice process. Before going into the details of eating behaviors at fast food restaurants, it is important to look at the biological explanations of taste as a major predictor of food choice. The following literature review will broadly discuss the biological validations of taste preferences. Then the argument will explore how fast food restaurants are centering their business strategies on this biological inclination, and the impact of this strategy on human health and society.

1.3.5. Sensory Aspects of Food Choice

For any living being, food is one of the most important necessities for survival. It is the major source of energy to carry on biological functions and contributes to physical as well as psychological well-being. Liking for taste and the sensory properties of food has been considered to be one of the major contributors of human food choice (Coward, 1981; Rozin & Zellner, 1985; Rozin & Schulkin, 1990; Savage, Fisher, & Birch, 2007). In the western world, especially in the United States, the emerging concern regarding human food choice and eating behavior centers around certain health consequences, predominant among these being the overweight status and obesity (Drewnowski & Darmon, 2005; Stender et. al., 2007; Bauer et. al., 2008). Normally, palatable foods may attract everyone and tend to be high calorie and have other taste enhancing yet unhealthy ingredients.

Fast food restaurants focus on maximizing their profit by making fast foods more appealing on sensory grounds (Glanz et al., 2007). This tendency may pose an enormous threat to human health by predisposing them to various chronic diseases such as overweight status/ obesity, cardio-vascular diseases, diabetes and high cholesterol-related problems.

The fast food industry spends millions of dollars to obtain ‘desirable’ taste data from consumer surveys and taste panels. Along with developing ‘tasty’ foods and with billions of dollar spent each year on advertising, it becomes almost impossible for the consumer to resist the products. Reports published jointly in September, 2005 and in 2012 by the Consumer Union and the California Pan-Ethnic Health Network (CPEHN)

revealed that advertisement spending of food, beverage, candy and restaurant companies was \$11.26 billion in 2004, while only \$9.55 million was spent to advertise the Five A Day – a campaign aimed at promoting eating five or more servings of fruits and vegetables daily (Consumers Union, 2005; Consumers Union, 2012).

The portion size of a meal also has a direct relationship with the amount of nutrients or calories that are consumed. As ‘Super-sizing’ of meals is becoming more conventional than ever, the consumers may be conditioned to consume ‘more’ for less spending, having little or absolutely no knowledge of impending deleterious health effects. Nutritionally, most of the fast foods are high in both fats and carbohydrates. As the portion sizes increase, consumption of excess fat and carbohydrates and other nutrients increase, predisposing individuals to various health threats caused by the intake of excess nutrients. Here it is important to note that increased intake of carbohydrates physiologically contributes to fat storage within the human body in particular with lack of physical exercise. Biologically, fat storage within adipocytes can occur when insulin levels are high; and the intake of carbohydrates elevates insulin levels appreciably (Nasser, 2001). So, in a typical meal in a fast food chain, the ‘combo’ of sandwich, fries and soft-drinks make a risky combination: the sandwich supplies the carbohydrate and the fries supply fat, which in turn elevate the fat storage in adipocytes (Nasser, 2001; Ekblad et al, 2000). Therefore, an increase in fast food restaurant visits also may augment the intake of overtly excessive calories and fat, resulting in fat deposition in the body and elevated blood glucose levels. Studies on the frequency of fast food restaurant use have suggested positive relationships between intake of total energy and fat percentages, and negative associations between total energy intake and total fiber consumption (French

and Harnack, 2000; McCrory et al., 1999). For example, a longitudinal study of 891 adult women showed an increased frequency of fast food restaurant visits over a 3-year period of time was associated with an increased consumption of hamburgers, French fries and soft drinks (French and Harnack, 2000). The study observed an increase of percent fat intake (+ 0.6%/day) and increased energy consumption (+56 kcal/day) with an increased body weight of 43% among those who increased their fast food consumption in that three year period.

The paradox is that the ingredients which are not so ‘health friendly’ are often ‘taste bud friendly’. When it comes to formulating a fast food menu, the health aspects may be superseded by the taste aspect. For example, to maintain the palatability, fast foods are often made high in sodium and trans fats. The sodium (in salty foods) acts as a great taste enhancer, and the richness and mouth-filling feeling of a food is contributed by trans fats. As described earlier, the simple addition of salt to a food is an easy and cost effective way to enhance taste. It has been shown that salt is a primary taste reinforcer in animal (and human) models of ingestion (Nasser, 2001). In experimental set-ups, it was found that animals prefer food with higher sodium than those with lower sodium (Nasser, 2001; Ekblad et al., 2000). Monosodium glutamate (MSG), a food ingredient used to enhance taste has been found to have possible adverse effects on neural systems (de Andrade, 2006). MSG has no nutritional value whatsoever. Like sugar, it stimulates taste buds, making a basic change in the cognitive perception of how a food tastes. More concerning data reveals deleterious effects of MSG, for example, a recent study found that MSG aggravates Trans-Fatty Acid (TFA)-induced nonalcoholic fatty liver disease (NAFLD) in animal models (Collison et al., 2008). In this context, the health, sensory

and the cognitive effects of one of the most common taste modifiers – *sugar* - is worth discussing. Numerous studies have found that the level of dopamine (a neurotransmitter associated with pleasure) increases during sugar ingestion (Nasser, 2001; Ekblad et al, 2000; Avena, 2009; Lutter, 2009). Keeping these sensory attributes in mind, food scientists formulate fast foods with taste and flavor enhancing additives that people ‘craves’. The fast food industry appears to concentrate on the taste enhancement as part of their survival strategy in maximizing their profit. Serving comparatively healthy and unpalatable foods may prove unprofitable for them. Thus most of the fast foods become a ‘compromising’ option for consumers when considered from health aspects.

1.3.6. Biological Models of Taste as a Predictor of Food Choice

Human physiology has a characteristic tendency of acquiring and preserving energy for future utilization. Research shows that under laboratory conditions humans and rats maximize their calorie density by maximizing volume intake (Rozin, 2000; Rozin et al, 2001). The energy regulation system acts with an inclination to sense and prefer two characteristics with high energy density: sweet taste and fatty texture. Rozin also points to the fact that humans, born with a system that indicate energy deficit has a predisposition to satiate the deficit by choosing specific types of nutrients from the environment (Rozin, 2000; Rozin et al, 2001).

There are stronger evidences of innate taste preferences. Research studies on innate food and flavor preferences are heavily focused on the facial reflexes of neonates (Drewnowski, 1997). Researchers identified facial expressions as hedonistic responses toward stimuli that include various tastes and flavors (Cowart, 1981; Birch, 1990;

Drewnowski, 1997). Neonates' expressions suggest an innate preference for sweet taste by facial expressions such as a slight smile, licking of the upper lip (Drewnowski, 1997) and aversions, dislikes or rejection of the bitter and sour taste, by the tendency to vomit or spit (Drewnowski, 1997). Studies have shown a strong link between the sweetness response and the release of endogenous opiate peptides, or endorphins relevant to the calming effect of these tastes on neonates (Drewnowski, 1997). Similar calming effect is obtained from animal studies when fat emulsions are added to water (Drewnowski, 1997). These studies strongly suggest that specific taste preferences in humans have a firm physiological connection that in some part may explain certain taste preference behaviors. Research findings reveal that preference for sweet taste has a strong relation with nature. Previous studies have connected this preference for sweetness with infant feeding behavior by implying a sense of satisfaction derived from that experience (Drewnowski, 1997). Similarly the instinct to avoid bitter taste suggests an innate tendency of securing protection from bitter poisons (Drewnowski, 1997). Hedonistic responses towards salty tastes seem unstable during early childhood, though the transformation from a neutral or negative to positive hedonistic value is developed during late childhood followed by a constant intake experience (Cowart, 1981). The fact that intake experience during early infancy may influence the acquisition of salt preference has been suggested by researchers (Harris et al., 1990).

Apart from an innate predisposition toward food likes, individuals may be inclined to certain food likes through a mechanism of acquired food preferences. The major processes involving food liking behaviors are briefly mentioned in the following paragraphs.

Pavlovian conditioning refers to the introduction of a subject to the continuous interaction between a Conditional Stimulus (CS) and an Unconditional Stimulus (US), resulting in a favorable response of the subject toward the CS which can be seen as a combined effect of both stimuli (Rozin and Zellner, 2006). This classical model may be used to explain how the process of the development of food like and dislike initially takes place, and there is considerable research supporting the idea that this food development process can occur through direct experience of the association of certain stimuli and food likes or dislikes and through verbal messages (Pelchat and Pliner, 1995; Rozin and Schulkin, 1998)

Apart from stimulus recognition, a repeated exposure to a stimulus (specific foods) enhances the affirmative response toward the stimulus and has the potential of overcoming an initial negative response towards it (Zajonc, 1968; Zajonc et al, 1974; Moreland and Zajonc, 1977; Fang et al, 2007). In the context of food tasting preferences, this mechanism can explain the influence of exposure to certain food experiences in early childhood in developing certain preferences. Limited bodies of literature suggest the possibility of the exposure of the unborn child to flavors in the amniotic fluid and human milk that may later contribute to preferences for certain flavors (Beauchamp and Bartoshuk, 1997). Researchers investigating the relationship between increasing exposure and food preference support the hypothesis that food preference is a function of exposure frequency (Birch and Marlin, 1982; Pliner, 1982; Savage, Fisher and Birch, 2007).

1.3.7. Social Model

The development of human eating behavior cannot be fully understood without the social context in which the behavior occurs. It is particularly evident in young children, as their eating habits and behaviors can be moderately shaped by parents, or other influencing individuals. In this process, the parents, peers, siblings and other adults serve as social agents and may influence the eating process by means of exposure (Eertmans, 2001). The social contexts in which the foods are offered to young children are extremely important in the formation of children's food preferences. Research shows that neutral foods, that are neither very much liked or disliked by children, when offered as a reward or paired with attention, increase food intake of children (Birch et al, 1980). It is also found that food preferences do not change significantly when foods are offered in a non-social context or at snack times (Birch et al, 1980). Often young children develop a negative attitude towards disliked foods or neutral foods even though they are evaluated positively by others, but the foods offered as rewards may be favorably evaluated by them (Birch et al, 1980, 1982, 1984).

The above literature summarizes the subconscious and conscious drives/motivations for individual preferences in food choice behavior. The fast food industry's constant effort to maximize sales and profits and a simultaneously increasing trend of more reliance on fast food restaurants raises the question: does an individual's attitude toward palatable foods become a causal factor behind frequent restaurant visits?

1.3.8. Increasing Reliance on Fast Food Restaurants

The frequency of eating out has increased dramatically in the last few years.

In examining this trend of eating out, researchers have been able to associate certain socio-demographic characteristics with the increased frequency of fast food restaurant visits. A study on the dietary, behavioral, and demographic characteristics among women found that frequency of fast food restaurant visits was associated with young women, especially those with non-white ethnicity and lower income groups, higher body weights, fewer low-fat eating behaviors (French et al., 2000). Researchers suggest that fast food consumption has a positive relationship with higher fat and lower vegetable intakes in African Americans (Satia et al., 2004). Another study focusing on the predictors of food consumption suggests that taste and cost are prioritized over the nutritional values of the foods consumed (Glanz et al., 1998). Similarly, Glanz (2003) emphasizes taste of foods being significantly influential on food choice behaviors. In another study, examining the influencing factors in making dietary choices focus group discussions revealed several factors perceived as influencing food choices (Neumark-Sztainer et al., 1999). Remarkable of them included hunger and food cravings, appeal of food, time constraints, convenience, food availability, parental influence especially according to their cultural and religious influences on eating behaviors, benefits of foods (including health), mood, body image, habit, cost, media, and vegetarian food habits (Neumark-Sztainer et al., 1999). According to this study, major barriers preventing healthy food choices (fruits, vegetables, and dairy products) included having less perceived concern about self-health, and having taste preferences for other foods. Furthermore, according to a USDA recent survey (2006), 10.9% of the US households, particularly with children, report food insecurity, signifying that they do not have access to enough food for lack of resources (USDA , Economic Research Service, 2007). Another study examining the difference in

eating habits between food secure and food insecure teenage students, reports that food insecure groups perceived that healthy eating was inconvenient and did not taste good (Widome et al, 2009). The food insecure groups reportedly had more fast food usage, fewer family meals and breakfasts, more fat intake, and a greater Body Mass Index (BMI), though the two groups had comparable benefits from healthy eating.

1.3.9. Palatability of Foods, Overeating and Addiction: *From Medical Perspective*

Recent literature has associated overeating with drug addiction from the perspective of overconsumption and a sense of pleasure and satiety derived from the consumption (Wang et al, 2004; Gearhardt et al, 2011). This phenomenon is particularly evident in obese individuals (Wang et al, 2004). Scientific studies by researchers have found that in obese individuals the brain function differs significantly than non obese individuals (Wang et al, 2004). The study shows that obese individuals have an increased sensitivity to palatable foods. The increased activation in the brain (parietal cortex- a region in the brain that controls the sensitivity of organs associated with eating such as mouth, lips and tongue) is associated with the sensory perception of palatable foods suggesting conceiving food as rewarding and consequently results in overeating (Urasaki et al, 1994, Wang et al, 2004). Also, obese individuals have lesser receptors for dopamine in their brain compared to non obese individuals (Wang et al, 2004). Dopamine controls the emotions such as satisfaction and pleasure associated with food. Having fewer dopamine receptors predisposes obese individuals to a delayed response to satiety from consuming foods and consequently promotes overeating in obese individuals (Wang et al, 2004).

1.3.10. Fast Food Consumption and a Greater Need for Nutrition Knowledge

Previous research suggests three types of knowledge about nutrition (Rogers, 1983). The first of them is awareness - an understanding of the relationship between diet and disease. The second is the knowledge of principle, i.e., the general knowledge such as cholesterol is found from animal food sources. The third is 'how-to' knowledge, such as knowledge on how to select low fat foods and of properly understanding a food label. An understanding of the three types of knowledge, mentioned above, may facilitate the general food choice behavior as well as food choice at fast food restaurants.

In the context of fast food consumption and nutritional knowledge, a study was conducted on the nutritional knowledge and fast food eating habits of 1788 adult patients in a primary care setting in North Carolina (Gaskins et al, 2007). The study revealed that approximately one third of the respondents reported that they consume three or more fast food meals in a week on average. Approximately the same number of respondents (29%) consumed high sugar beverages at a frequency of three or more drinks per week. Approximately twenty two percent respondents of the same study reported consumption of three or more high fat snacks weekly. The study concluded that those patients, who are at high risk to develop chronic diseases in future, have poor nutritional knowledge making dietary decisions (Gaskins et al, 2007). Contextually, the examination of the nutrient contents shows the presence of high fat content in some popular fast foods (French et al, 2001).² The presence of an increased amount of energy, fat, sodium and

² A Big Mac (216 g, 8 oz) contains 570 kcals and 32g of fat; a medium French Fry (147 g) contains 450 kcals and 22 g of fat. Together they represent 1020 kcals and 54 g fat, over half of the total daily energy

other nutritional components in fast food may be a result of the increased portion sizes of fast foods. The consumption of excess energy and nutrition is associated with increased energy deposition. Research suggests that knowledge of the nutritional requirements and nutritional facts of foods starts at the family levels (Nelson et al, 2009). Parental influence on the level of nutritional knowledge is predictive of the adolescents' nutritional knowledge. It can be a stepping stone to healthy or unhealthy dietary choices for the future (Nelson et al, 2009). Also, it may encourage lower calorie, lower saturated fat and lower sodium intake (Kim et al, 2008).

The paradox that individuals engage in behaviors that might result in damaging health consequences has attracted considerable interests of social researchers. Scientific research in psychology has tried to explain individual behaviors that may result in deleterious health impacts (Gearhardt et al., 201; Shepherd, 1999; Wang et al, 2004; Weinstein, 1987, 1989; Werthmann et al. 2011). Shepherd's research on food choice focuses on the psychological attitudes that impact food choice behaviors (Shepherd,1989). Shepherd tries to explain the phenomenon by using two psychological terms 'optimistic bias' and 'ambivalence' (Shepherd, 1999). 'Optimistic bias' refers to the fact when individuals consider themselves at less risk than others from risky behaviors (Weinstein, 1987, 1989). Researchers have demonstrated that it is a common individual tendency to underestimate personal risks than others (Weinstein, 1989). Shepherd suggests that the phenomenon of 'optimistic bias' is significant when it comes to personal control over a behavior that might have certain negative health impacts (Shepherd, 1999). Though the reason for 'optimistic bias' is not clear to the researchers,

requirement and 83% of total fat requirements as per the daily recommendation of 2000 kcal/day diet (McDonalds Corp, 2000).

Shepherd explains that a sense of personal control over a behavior reduces the perceived risk emerging from that behavior (Shepherd, 1999). Consequently ‘optimistic bias’ can lead individuals to a position where taking proper preventive measures or nutritional information or dietary care can be heavily compromised for the lack of perceived risk from a certain behavior (Shepherd, 1999). Shepherd’s work on attitudes towards food identifies ‘optimistic bias’ as the major causal factor of food choice where individuals are psychologically biased to choose a food and consider him or herself as less susceptible to the health risks associated with food choice (Shepherd, 1989). Shepherd also recognizes ‘ambivalence’ or the absence of a particular attitude that influences food choice behavior (Shepherd, 1989; Shepherd, 1999). Shepherd explains that there is a popular tendency to define food as something tasty yet unhealthy. In such a backdrop it is often natural for individuals to have mixed feeling about foods and their own eating behaviors. The absence of a definite attitude or ‘ambivalence’ can lead to situations where there is no link between attitude and behavior (Shepherd, 1999). Here both the terms ‘optimistic bias’ and ‘ambivalence’ can be applied to understand increasing fast food consumption behavior. The tendency to underestimate personal risk from fast food consumption than others might lead to over consumption. On the other hand, lack of a definite attitude about fast food may make individuals less concerned about their own consumption patterns and may hinder proper evaluation of their own eating behaviors. Both of these phenomena may make individuals less aware about their own health and prompt them not to take proper preventive measures.

General food choice behavior is a complex process and involves other factors such as beliefs and attitudes toward food (Shepherd, 1989). These beliefs and attitudes

are extremely personal and may have different social, cultural, and religious implications. The increasing trend of fast food consumption is intensely culture-specific (Seubsman et al., 2009). Attitudes toward fast food consumption might have been developed differently in various cultural groups depending on their socio-cultural preferences. The availability of food may also be a major contributor in developing food-related attitudes and preferences.

In short, this literature depicts a chain of physiological (Cowart, 1981; Birch 1990; Drewnowski, 1997), psychological (Zajonc et al., 1974; Shepherd, 1999; Fang et al., 2007), and social factors (Birch et al., 1980; Eertmans, 2001; Seubsman et al., 2009) that may work together, consciously or subconsciously, to predict human eating behaviors. The food choice models concentrate on factors such as sensory properties of food, exposure, or experience that contribute to making specific food choice attitudes. A close examination of taste reveals a strong physiological connection that is explained in the literature. Most of the existing studies on the predictors of fast food consumption focus on the macro-social and demographic factors- such as the convenience, cost, socioeconomic status, etc. Among the limited studies explaining the physiological and psychological determinants of food choice behaviors at fast food restaurants, very few focused on the predictor of attitudes on palatability or the pleasure component of fast food. A significant gap in the literature barely portrays the consumers' self perception of their susceptibility to health risks associated with a poor diet.

1.4. Objective of the Proposed Study

Despite the negative health implications of fast food intake, consumption of fast food is increasing. Fast food industries are continuing to spread their operations in different global corners. Simultaneously, due to the advancement of information technology and especially electronic media, the general health and nutrition awareness are growing too. Consumers are now more aware of their general health and nutrition demands. The paradoxical coexistence of growing fast food consumption and a supposedly 'aware' population, in terms of general health awareness, certainly has its merits of being a subject of sociological research. A fundamental factor behind food intake is taste preference (apart from the cause of food intake for survival). Individuals are more likely to prefer the foods that satisfy their taste preferences. This may be true in case of fast food preferences, if seen from a fundamental psychological point of view. Also, individuals may have different attitudes toward taste of fast food as a motivating factor of fast food consumption. There have been very limited studies before to examine the relationship between the attitude to taste of fast food and its growing consumption rates. An attempt has been made in this project to look at this phenomenon from a socio-psychological perspective. Individuals' perception of fast food as tasty in predicting fast food consumption has been examined in this study. Another focus of the study is to examine whether this taste preference may overcome the need to know the nutritional information of fast foods, thereby ignoring the adverse effects of fast foods on health.

Another significant aspect of this project is to examine the general health and nutritional knowledge of the subjects. The data collected from the subjects is intended to

examine the subjects' perceived beliefs about their own health statuses, their knowledge about the fast food nutrition information. The purpose is to examine the relationship between their fast food restaurant visits and their overall nutritional knowledge about fast foods, and their attitude to the taste of fast food. The theoretical structure of the study is framed on Becker's Health Belief Model (HBM, 1974) that describes how individuals' tentative preventive health behavior is directed by their beliefs about their own health. HBM is centered on the mutual calculation of the benefit and barrier ratio of a certain preventive health action. The proposed study will first examine the association between the subjects' attitude to taste of fast food and their fast food restaurant visits. Secondly, the study will examine whether the subjects' fast food restaurant visits are commensurate with their reported knowledge about the nutritional information of fast food. Lastly, the study will examine whether the attitude to taste may serve as a 'barrier' to reduce fast food consumption frequency in the presence of good nutritional knowledge about fast food.

Lastly it is important to note that eating habits are culturally individual. The attitude toward taste as an impulse to eat may be culture-specific too. Whether this attitude works in the same way in terms of fast food eating behavior is examined in this study. Whereas fast foods serve as important parts of daily meal patterns (such as breakfast, lunch, dinner, snack) in the United States, in other countries such as in India, Bangladesh fast foods remain/are perceived more as a delicious snack item, mostly available as street foods. So, individuals may have different perceptions regarding the attraction of fast foods and may vary in their attitude toward taste as an inviting factor for fast food consumption. In this study the proposed relationships will be evaluated from

other demographic characteristics of the sample population such as gender, ethnic origin etc in order to examine the presence of any significant findings relating to the main objectives of the project.

Chapter 2

Theoretical Framework

2.1. Health Belief Model

This study proposes to employ the Health Belief Model (Becker, 1974), HBM, as the theoretical background to examine the relative interaction of individual attitude and other forces that influence eating behavior at fast food restaurants. Since the study will concentrate on attitude towards taste, and on the possibility of whether attitudes can undermine the necessity to take preventive health actions, HBM is the right theoretical support for this study. The HBM looks at the mutual interplay of certain attitudes and factors that predict whether a specific health behavior will be adopted (Figure 2-1). The earlier representation of the HBM (Becker, 1974) focuses on three stages that motivate individuals to take preventive health behavior: *perceived susceptibility to disease X*, and *perceived seriousness of disease X*; *perceived threat of disease X*, and *the likelihood of taking recommended preventive health action*.

2.1.1. Historical Perspective of the HBM

The HBM (Hochbaum, Kegeles, Leventhal and Rosenstock), demonstrated a novel approach for explaining the motivational intention of perceivers toward a particular health behavior. As Rosenstock addressed the issue: “...it is the world of the perceiver that determines what he will do and not the physical environment, except as the physical environment comes to be represented in the mind of the behaving individual” (Rosenstock, 1974, p.2). The orientation of the researchers was to develop a collaborative theoretical framework that would explain not only a particular problem, but also could be used to explain other behavioral problems (Rosenstock, 1974). The early construction of the HBM was influenced by theories of Kurt Lewin in its implication that an individual’s life space consists of three regions: a region positively valued (positive valence), negatively valued (negative valence) and neutrally valued. Lewin’s principle presupposes individuals’ activities as continuous processes adjusted between positive forces and negative forces. Rosenstock describes this adjustment: “Diseases, if they were represented in the life space at all, would be regions of negative valence which could be expected to exert a force moving the person away from that region, unless doing so would require him to enter a region of even greater negative valence” (Rosenstock, 1974, p.3). The HBM proposes that any intention to initiate any positive step toward a health behavior originates at the psychological level of an individual.

The fundamental proposition of the Health Belief Model (Becker 1974) focuses on three principal points. These are perceived susceptibility and perceived severity of a certain disease; perceived threat of a disease and a calculation of the perceived benefits and perceived barriers of the recommended action (preventive health behavior). Each of these perceptions operate at the mind of the individual who has been posed to a health

risk, and is likely to respond to the situation by taking a preventive action. The modifying factors and cues can only influence these three perceptions, but the decision taking process is actually the outcome of the mutual interaction of these three basic perceptions.

2.1.1.1. Perceived Susceptibility

Perceived susceptibility refers to the perception of an individual that he/she may be susceptible to a certain disease (Rosenstock, 1974). It is operative more in the personality or attitudinal spheres of an individual, indicating that his/her perception of personal susceptibility may result in both denial and acceptance of the susceptibility (Rosenstock, 1974).

2.1.1.2. Perceived Seriousness

Perceived seriousness of a given health condition also operates at the psychological level and is demonstrated through an individual's attitude or behavior. The seriousness can be measured by the outcome of a disease in an individual's life and how he/she is responding to the outcome in his/her life (Rosenstock, 1974). Robbins suggests two factors operating behind the stimulation of the degree of seriousness- an emotional arousal as result of the thought of a particular disease, and the impending difficulties the disease may bring to a person's life (Robbins, 1962). Rosenstock suggests that the degree of perceived seriousness of a certain disease may intensify when an individual becomes concerned of a disease, not as a medical or clinical issue, but as an indication of the social, occupational distress affecting family life, social relations, and workplace (Rosenstock, 1974).

2.1.1.3. Perceived Threat and the Interaction between Benefits and Barriers

The recognition of the susceptibility of the disease to occur, and the acceptance of its seriousness are more likely to pose a health threat to an individual and force him/her to adopt a health behavior (Becker, 1974). The HBM suggests that it is an individual's beliefs about the available alternative methods that can reduce the seriousness of the health threat. The HBM emphasizes the personal attitudes and beliefs over the objective information regarding available remedies. An individual's beliefs about the effectiveness of the available ways of reducing the health threat determine his/her possible course of action. Often, the likelihood of adopting courses of action to address the health threat is determined by a cost-benefit ratio made by the individual. A person's likelihood of adopting preventive health behavior is largely dependent on the positive ratio of perceived benefit over perceived barriers. When perceived benefits of the recommended action exceeds the perceived barriers associated with the implementation of that action, the more likely a person is going to take preventive health actions. The course of action to reduce the health threat may become a barrier if it is inconvenient, expensive, unpleasant, or even painful, thus affecting an individual's intention to perform that (Rosenstock, 1974). Thus a perceived barrier may delay or negatively affect the intention to adopt a health behavior.

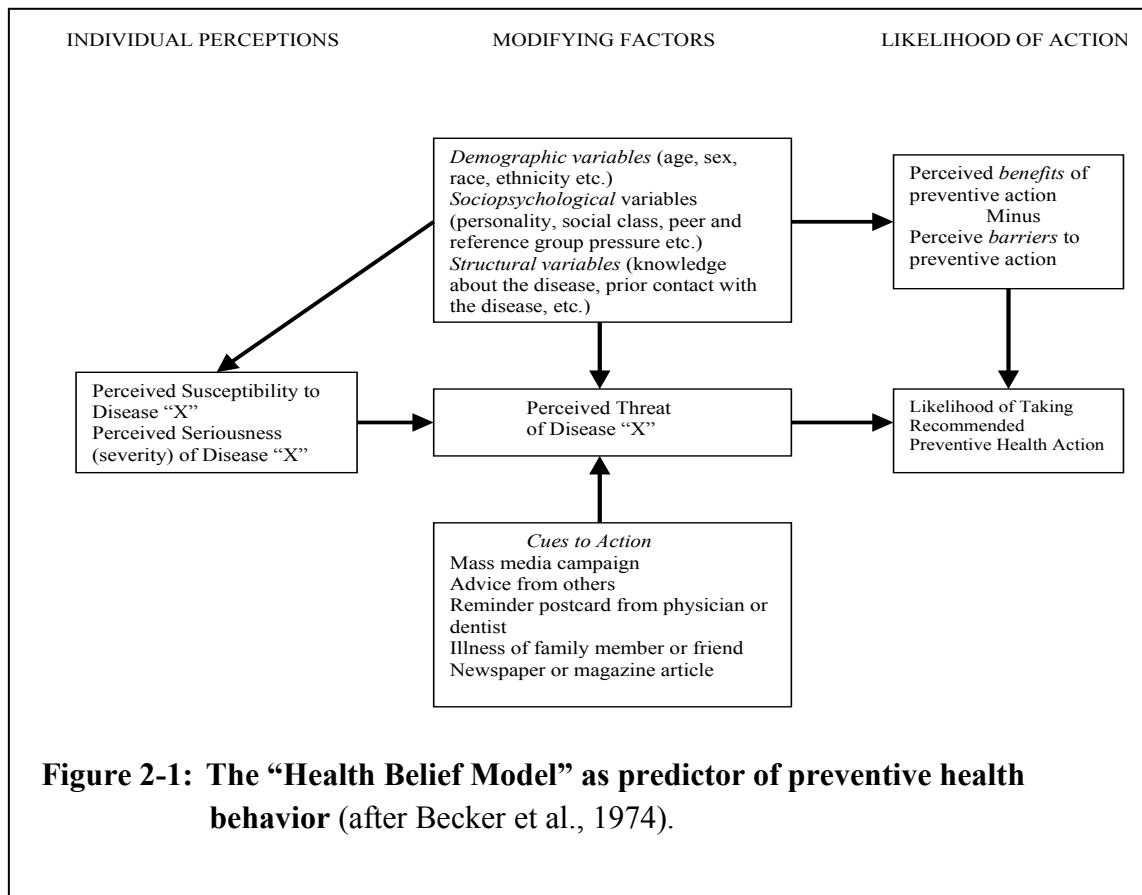
Rosenstock (1974) addresses several possibilities regarding the interaction between perceived barriers and the intention to adopt certain health behaviors. He suggests that if the negative aspects of certain courses of action are considered weak and the readiness toward the action is high, there is the possibility that the action will be taken. If the readiness of the intention is low and the possible barriers are relatively

strong, then the negative aspects of the course of action are more likely to prevent the action. If the readiness to act is great and the probable negative aspects of that course of action are equally high, a conflict might arise. The individual may equally be forced to adopt a specific course of action to prevent the health threat and, at the same time, may be motivated to avoid the action for its negative aspects. Such a situation may provoke an individual to look for alternative ways to attain the benefits of that action. Rosenstock (1974) suggests such conflicting situations may lead to two behavioral outcomes. An individual may maintain a psychological distance from the conflicting situation by adopting means that are not helpful in reducing the health threat. The other possibility is that such conflicting situations may lead to an increased state of fear and anxiety (Miller, 1944) and may negatively affect rational thinking and hinder an individual's intention to adopt a proper health behavior to reduce the threat.

2.1.1.4. Cues to Action

The HBM identifies the presence of cues as motivating factors for an individual to act even in the presence of the combined effect of perceived susceptibility and perceived severity. The HBM suggests that with enough susceptibility and severity of the health threat, and with a perceived benefit of the health action, sometimes a cue acts as a trigger to take the recommended health action. As Rosenstock suggests, these cues can be internal (perception of bodily states) as well as external (advice from other sources, media, and campaigns). The degree of the intensity of cues and its effect on behavior varies with the degree of intensity in perceived susceptibility and severity. The HBM suggests that a relatively strong cue is required to adopt health actions for one with less

perceived susceptibility and severity. On the other hand, a weak cue is sufficient with a high susceptibility and severity to adopt a health behavior. However, proper identification of cues and their instigating impacts on behavior need to be examined to understand adopting proper health behavior. The level and intensity of the significance of cues are important as transitory significance of cues can be weakened with the passage of time and may not have enough instigating effect on behavior.



2.1.1.5. Modifying Factors

The HBM includes some modifying factors that influence the perceived susceptibility of a disease as well as the perception of benefits and barriers of a health action/ inaction. These are demographic variables such as age, sex, race, ethnicity; socio-

psychological variables such as personality, influence of peers, and some other structural factors such as, knowledge of the disease, prior experience with the disease which directly influence the decision. These modifying factors can influence the perceived threat as well as taking preventive action toward a health problem.

2.1.2. HBM and Fast Food Consumption Behavior

The fundamental premise of the Health Belief Model examines the likelihood of engaging in preventive health behavior influenced by certain beliefs regarding a given health condition. These beliefs, in most cases, originate from certain micro level factors (personal choices), rather than from the individual's socio-structural conditions (macro level factors). The Health Belief Model (Rosenstock, 1974) is based on a psychological analysis that seeks to explain and predict the likelihood of taking health behaviors by focusing on the attitudes and beliefs of individuals.

The application of the HBM (1974) to describe the phenomenon of why people ignore the health consequences of eating fast foods can be explained by referring to the hedonistic attributes of the eating experience as a perceived barrier that hinders individual's ability to consider the slow but steady health effects of fast foods. The decision to reduce/ adjust eating out frequency might be controlled by other factors, for example, gender, lack of resources, and information about the possible health risks of palatable foods, which the HBM calls modifying factors. These modifying factors play together with the perceived barriers and influence individual's rational decision making

process. Figure 2-2 illustrates how fast food consumption can be influenced by a cost-benefit calculation process primarily raised by attitude toward taste. The model shows several other factors that may influence the consumption process separately but simultaneously.

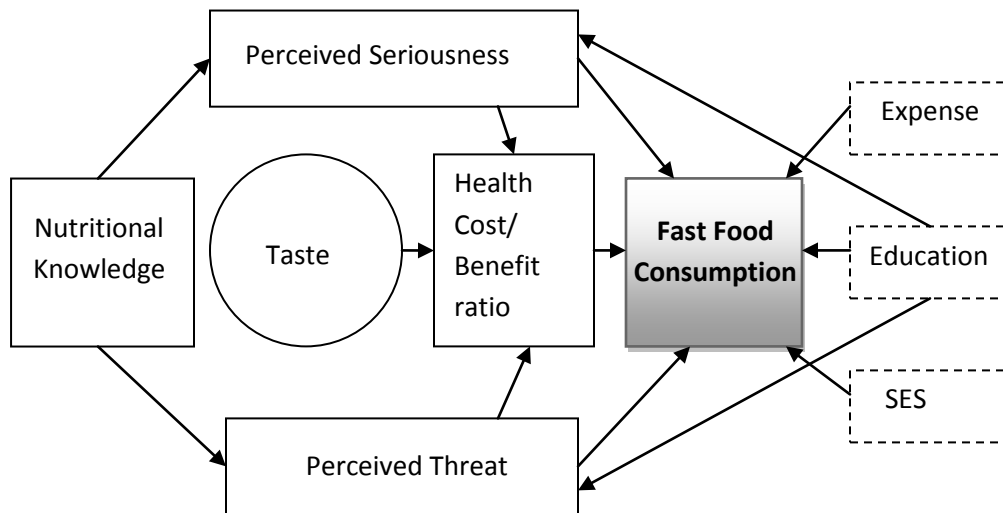


Figure 2-2: The effect of taste/palatability and nutrition knowledge on fast food consumption.

[Adopted and extended from The Health Belief Model (Becker et al., 1974)]

While eating behavior at fast food restaurants is assessed under the framework of the Health Belief Model (Becker, 1974), the very first question that arises is whether the fast food consumers feel themselves susceptible to the long-term consequences of frequent fast food consumption. Fast food consumption has increased in the last few decades in the United States. The food environment of the United States has been labelled as ‘obesogenic’ considering its vast storage of high energy dense foods and the increase in the average body weights of its population (Jeffery and Utter, 2003). Fast food

consumption has been indicated to be a major predictor of especially obesity and overweight status, and other health problems such as high cholesterol, cardiac problems, hypertension, diabetes mellitus (Bowman et al., 2004; Paeratakul et al., 2003; Stender et al., 2007; Bauer et al., 2008). Given such an association between fast food consumption and possible health risks, it is a significant issue whether the fast food consumers feel that they are susceptible to these health conditions with repeated consumption. According to the HBM, the perception of any such susceptibility is controlled by the individuals beliefs and attitudes. The consumers may either accept or deny their susceptibility to these health risks.

Apart from susceptibility, an individual's perception of the seriousness of a disease that may arise or worsen with frequent fast food consumption is also important in adopting a preventive action. The seriousness can be assessed by how an individual responds to the impacts of fast food consumption and the associated health risks in his/her life. In a sense, the greater the impact of fast food consumption, the serious an individual is likely to be about the prevention of that impact. HBM elaborates that in most of the cases it is the psychological arousal of the impending difficulties of certain diseases in a person's life that makes that person serious about it. For example, if repeated fast food consumption makes an individual obese or overweight, he or she may evaluate his or her body image; social acceptability, occupational as well as physical distress and this assessment might inspire his or her seriousness about the problem and may instigate that individual to take preventive action.

Consequently the susceptibility and seriousness of the disease together may reinforce the threat of a disease. As the HBM suggests, it is the threat or the fear of a

disease that forces an individual to finally take some preventive health behavior (Becker, 1974; Rosenstock, 1974). What is most significant about adopting a preventive action is that whether it is adopted or not is determined by a psychological calculation of its cost–benefit ratio by individuals. For example, if we consider the previous instance of fast food consumption and its association with different diseases, then a threat of diseases ideally should prompt an individual to take a preventive health behavior, i.e., to reduce or stop fast food consumption. But whether the individual would reduce or stop fast food consumption as a preventive measure is largely dependent upon the calculation of its benefits and barriers aspects.

If the benefits of fast food consumption exceed the barriers of reducing or stopping fast food consumption, the individual may not control fast food consumption. This benefit-barrier conflict of the HBM is the most significant part of this present study's theoretical support. As per the theory, the intention to adopt a preventive action becomes weak if it is inconvenient, expensive, unpleasant, and painful. Similarly, if reducing or stopping fast food consumption becomes a barrier for any of these above mentioned reasons, an individual may not adopt it as a preventive health action. Here the implication is that, it is not the knowledge or the information that motivates an individual to choose an action appropriate for him. Rather it is the attitudes or beliefs of the individual that controls the entire course of action. In the present study it is hypothesized that a positive attitude toward taste may motivate an individual to temporarily undermine the negative effects of fast food consumption. Attitude towards taste here refers to the hedonistic experience that comes through the consumption of fast food. In fact, the hedonistic experience from consuming any food may come from different aspects. It may

come from the smell, taste, color, texture of foods that stimulates our mental and physical sensations and creates an attraction toward that food. For example, the smell, prior experience of the taste of a particular food, or just the sight of foods may motivate an individual to consume fast foods. Sometimes, it is our inclination towards a particular taste that creates an arousal to obtain a particular food. For example, attraction for sweet taste may trigger an individual to have some sugar sweetened beverage from a fast food restaurant. Naturally, in these cases there is a pleasure component with the consumption of foods that created a stimulation to have that food, and the pleasure accompanied with a sense of satiety may arrive from the accomplishment of that emotional and physical arousal.

In this context, when the awareness to reduce or stop the consumption for the health risks is growing, the pleasure obtained from tasting fast foods can be considered as a benefit to the consumers to control fast food consumption. This attitude may manipulate the consumers' mind as fast food consumption usually has no immediate health risks, rather long-term health consequences. In this context, if we consider the attitude toward taste as a perceived benefit and the knowledge of nutritional information of fast foods as a perceived barrier that explicitly suggests cutting down on fast food consumption, then likely the attitude toward taste may pervade over the intention to reduce fast food consumption. This cost- benefit relationship may be applied to this present study in two consecutive but distinct ways. First, from the consumers' point of view, attitudes about the taste of fast food can be viewed as a perceived benefit over the cost i.e., cutting down fast food consumption. Secondly, attitude toward taste may be considered as a perceived barrier that prevents a necessary preventive health behavior i.e., controlling fast food

consumption. This assumption may be stronger when the consumers are aware of the significance of knowing the nutritional information of fast foods in their lives but still are not willing to cut down fast food consumption mainly because they like its taste.

As the theory suggests, there are several factors that control the dynamics of this benefit-barrier relationship. The application of the HBM to this study suggests that if the readiness to reduce fast food consumption is high and the negative aspects of reducing fast food consumption (decrease in eating pleasure, taste) is low then supposedly the preventive health action can be taken, i.e., fast food consumption can be reduced or stopped. Vice versa, if the readiness to reduce fast food consumption is low and the pleasure derived from eating fast foods are high then the preventive health behavior, in this case reducing or stopping fast food consumption, may not take place. If the readiness to control fast food consumption and the desire to consume fast food for its taste are equally high, then a conflicting situation might arise. In such a case, an individual may have the intention to control fast food consumption and at the same time, may intend to avoid it or look for other ways to get the same benefits (may choose to have rigorous physical exercise so that the nutritional balance is maintained). As Rosenstock has suggested, in such conflicting situations an individual may maintain a psychological distance from the real problem by adopting means that will not solve the problem (Rosenstock, 1974). For example, an individual may continue with fast food consumption without making any changes that are required to prevent a health threat from the consumption. Another possibility is that a heightened fear and anxiety (Miller, 1944) may persuade the individual to think irrationally and take some measures that are not helpful to the situation.

Sometimes with enough susceptibility and severity of a health problem, the motivation to adopt a preventive health behavior gets stronger with the presence of a cue. According to Rosenstock, a cue can be both external and internal (Rosenstock, 1974). In analyzing fast food eating behavior internal cues may be the perception of being overweight or having increased blood sugar perceived by the consumer that may lead to control fast food consumption. Examples of external cues can be advice from friends or health campaigns, advertisement on particular diseases. The HBM identifies several modifying factors such as demographic factors like gender, race or ethnicity; social-psychological factors such as attitudes, and factors like knowledge and previous experience of the disease that may impact the decision to control fast food consumption. The cues and the modifying factors alone or together can reinforce the perception of individual susceptibility and severity of a particular disease. Most importantly, individual perceptions of benefit and barrier may greatly vary with a variation in these modifying factors which is believed to be the key motivating factor in choosing a particular health behavior.

Under the HBM framework, the study is proposing to investigate, first whether attitude toward taste can be a predictor of fast food consumption. Secondly, the study examines whether the knowledge of the nutritional information of fast foods influences fast food consumption. Moreover, the study will examine the presence of any conflicting relationship between the attitude towards taste of fast food and the respondents' knowledge about the health impacts of fast food consumption. The study will examine whether fast food consumers are caught in a conflict of interests that arises out of a positive inclination toward fast food for its palatability that supersedes their knowledge of

the negative health impacts of fast food consumption. More specifically, the study will examine whether eating pleasure undermines the negative health effects of consuming fast foods.

Apart from testing the main hypotheses, the study also proposes to examine fast food consumers' various perceptions and reactions to the adverse health effects of fast food. It proposes to look at several relationships that are not mentioned in the central hypotheses of this study. But they are important as they are integral to understanding the web of complex relationships that may influence individual eating behavior. The study will try to concentrate on the respondents' various attitudes and perceptions and other external factors, such as, their attitude toward their present health status, perceived threat of certain health problems, perceived seriousness of the threat; and the presence of other cues or influences in their fast food consumption.

Chapter 3

Research Design and Methodology

The research design of the current study used a quantitative method as it collected the data through a survey. The study was mostly explanatory in nature as it sought to answer why despite the negative health risks, people engage in fast food consumption. The study attempted to explain the relationship between attitude toward taste and fast food consumption; nutritional knowledge and fast food consumption and, moreover, the multifaceted relationship between attitude toward taste, nutritional knowledge and fast food consumption. An electronically-administered survey method was the primary mode of data collection for this study. The survey was electronically distributed to the students, staffs, and faculty members of the then College of Arts and Sciences of the University of Toledo, in 2009.

3.1. Major Propositions of the Study

The study proposed to examine three major propositions. First, the study examined whether attitude toward taste/palatability was a major predictor of fast food consumption. Second, the study examined whether nutritional information decreased fast food consumption, and finally it examined whether liking for taste superseded the need

for nutritional awareness in fast food consumption. Based on these propositions three hypotheses were formulated to be examined in this study. Hypothesis one stated that a positive attitude toward taste increases fast food consumption. Hypothesis two stated as nutritional information increases, fast food consumption decreases. Hypothesis three tested the supposition that as liking for good taste increases, nutritional awareness decreases.

Other relationships to examine included the perceived seriousness about and perceived threat of certain specific diseases by the subjects and their fast food consumption patterns. These variables are important to understand the subjects' underlying psychology that might have influenced their motivations to take preventive health actions.

3.2. Conceptualization and Operationalization of Variables

Attitudes toward taste

In the questionnaire, the variable 'attitudes toward taste' refers to whether the respondents have a positive or negative attitude to the view that tasting experience of fast food is good. It was measured from Question # 12 in the survey (*On a scale of 1 to 5, please indicate how would you rate each of these statements.*). The respondents were asked to rate a statement "Fast food tastes good". The question format followed the Likert-like format and gave the respondents an opportunity to show their degree of approval or disapproval with the statement. The categories of responses ranged from Strongly disagree, Disagree, Neutral, Agree to Strongly Agree. Each of the categories had been assigned a score from 1 to 5, for example, the respondent who strongly disagreed

with a statement got 1, while someone who strongly agreed was given 5. The higher a respondent's score, he/she represented a positive/ favorable attitude toward taste, and likewise, the lower scores represented a negative/ unfavorable attitude toward taste.

Frequency of fast food consumption

The frequency of fast food consumption referred to how often the respondents consumed fast food. It was measured by Question # 4 in the survey that asked the number of times respondents ate fast food in the last week before taking the survey (*How many times in the last week did you eat at a fast food restaurant?*). The answer categories were 1-5 times, 6-10 times and more than 10 times per week. The responses were coded as 1-5 times = 1, 6-10 times = 2, and more than 10 times = 3.

Nutritional awareness or nutritional information

Nutritional awareness and nutritional information both measured whether the respondents were aware of the nutritional information of fast foods. Nutrition information on fast foods were measured using a group of questions, in which the respondents were asked to specify the approximate amount of calories, saturated fat, and milligrams of sodium from some popular fast food items. First, three different scales (CALSCALE, SODSCALE and FATSCALE) were created to measure the respondents' nutritional information about calorie, sodium and saturated fat contents in those fast food items. For creating CALSCALE, first the responses from the Question 21 (*Approximately how many calories do you think there are in the following fast food items?*) were recoded. The fast

food items included Sausage/Egg/Cheese Biscuit, Big Mac, Double Quarter Pounder w/Cheese, Medium French Fry, Caesar Salad with Grilled Chicken, Extra Crispy Chicken Breasts and Hand Tossed Cheese Pizza. The respondents were instructed to check the approximate calorie for each of the food items. Each of the items created individual variable in SPSS software. The responses were recoded by grouping the correct value and the values close to the correct answer as 'Correct' that best described the respondent's knowledge and was assigned a value = 1. The other category had the responses that were far away from the correct answer was recoded 'Incorrect' and was assigned a value = 0. For example, if the right caloric value of Medium French Fry was 240, then 240 and 340 was coded as correct and the values 440, 540, 640, 740 and Don't know were recoded as incorrect. The respondents were given some allowance in guessing the approximate values, as sticking to the exact value had the opportunity of easily labeling the responses as incorrect, and some of the respondents checked values which were very close to the exact value. Thus a dummy variable was created for each of the food items in the calorie questions. After that, all the dummy variables were grouped together to create CALSCALE. In the similar way, dummy variables were created for each of the fast food items in calorie, sodium and fat questions: 'Correct' that best described the respondent's knowledge and was recoded 1, and the 'Incorrect' value was recoded 0. Here it is important to note that, the questions on sodium and fat contents used the same fast food items mentioned in the calorie question. In the similar way, the dummy variables in the sodium and fat questions were summed up to make SODSCALE and FATSCALE. Reliability tests were performed to test the reliability of each of these scales (Cronbach's Alpha for CALSCALE = .621, SODSCALE = .706 and for FATSCALE = .763). And

finally these three scales were summed up to create nutrition information scale ‘NUTRSCLE’ with a considerably substantial reliability score (.728) to measure nutritional awareness or nutritional information. The purpose of creating just two categories for each fast food item’s calorie, sodium and fat values was that, the distribution of the values of some food items lacked similar patterns. For example, in the answer categories, the values of some of the food itmes started with their exact values. Therefore, recoding them as ‘too low’ from the exact value was not possible. Also, some of the values were very close to the exact values. For example, in fat questions checking 5 % of saturated fat instead of 3% had the trap of making an almost correct answer as incorrect. But recoding the exact answer and close to exact answers as ‘Correct’ (that best describes the respondents’ approximate guess about the values of food nutrients) had the privilege of obtaining substantial reliability scores from all of the scales. Table 3.1 visually illustrates a generalized recoding process as described above.

Table 3.1: A generalized depiction of recoding strategies of original values of calories/sodium/fat

Approximately how many calories/sodium/fat do you think there are in the following fast food items?

	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7
Fast food 1	Incorrect	Incorrect	Correct	<input checked="" type="checkbox"/> Exact	Correct	Incorrect	Incorrect
Fast food 2	<input checked="" type="checkbox"/> Exact	Correct	Correct	Incorrect	Incorrect	Incorrect	Incorrect

Incorrect = 0

Correct = 1

Perceived threat

‘Perceived threat’ measured whether having certain diseases created a fearful situation or posed a threat to good health. The perceived threat was measured by Question # 18 in the survey in which respondents was asked to indicate their beliefs whether certain diseases indicated a threat to good health (*Do you believe the following health problems indicate a threat to good health? On a scale of 1 to 5, please indicate how you would rate each of these health problems as a threat.*). The health problems included obesity, coronary heart diseases, hypertension, high cholesterol, diet related respiratory disorder and diabetes. The question used a Likert-like format and the response categories were No threat, Low threat, Neutral, Some threat and High threat. Responses in No threat, Low threat and Neutral were recoded as 0 (no) whereas, responses in Some threat and High threat were recoded as 1 (yes). Thus a dummy variable was created by collapsing the response categories into two categories, ‘yes’ and ‘no’. All the statements about the health problems under this question (Question 18) were summed up to make a perceived threat scale, ‘THRSCALE’ with a substantial reliability score of .802.

Perceived seriousness

Perceived seriousness measured what the respondents believed they would do if they had any of the diseases mentioned before. It was measured from Question #19 (*On a scale of 1-5, how would you feel if you had any of the health problems described earlier?*). In this question also the health problems remain the same as in the threat question i.e., obesity, coronary heart diseases, hypertension, high cholesterol, diet related respiratory disorder and diabetes. Question #19 in the survey described the courses of

actions the respondents would take if they were predisposed to any of the diseases mentioned above. The courses of actions were: I would be very anxious, I would discuss with friends and family, I would visit a doctor, I would follow the recommended actions and I would do none of the above. . With each of these statements the response categories were Strongly disagree, Disagree, Neutral, Agree and Strongly agree. The responses in the categories Strongly disagree, Disagree, Neutral in the first four statements (i.e., I would be very anxious, I would discuss with friends and family, I would visit a doctor, I would follow the recommended actions) were recoded as 0. But the responses in the categories Strongly disagree, Disagree, Neutral in the last statement (I would do none of the above) were recoded as 1. On the other hand, the responses in the categories Agree and Strongly agree in the first four statements were recoded as 1 whereas the responses in Agree and Strongly agree categories in the last statement (I would do none of the above) were recoded as 0. Thus, a dummy variable was created for each of the statements. The perceived seriousness scale ‘SERISCALE’ was created by summing up the dummy variables together. . It had a reliability score of .654 suggesting again a substantial reliability to measure the respondents’ perceived seriousness.

3.3. Data Collection

An electronic survey was administered to the students, staff and faculty members of the College of Arts and Sciences of The University of Toledo in November, 2009. A survey method was the primary mode of data collection as survey is an appropriate method for predicting the behaviors of a population. The current study was a cross-

sectional non-randomized study. Once IRB approval was received, the survey questionnaire, developed by the Student researcher and the Principal Investigator of the project, was electronically sent to the email addresses of the students, staff and faculty members of the College of Arts and Sciences of The University of Toledo (see Appendix A-the Survey Questionnaire). A link in the email (sent to the subjects) connected the respondents to the survey page. The email included directions on how to complete the survey as well as the required IRB information regarding ethical considerations for the research. The survey was sent twice to the respondents. A reminder email was sent to the respondents two weeks after the original email was sent, expecting an increase in the response rate of the survey at the first time. The reminder email did also have a link to the survey page. The survey was active for next two weeks and then was closed and withdrawn from the system.

The program through which the survey was designed and administered converted the results numerically in Excel format, and later the Excel spreadsheet was imported to SPSS.

Sample Selection

The survey was sent to approximately 4450 students, staff and faculty members in the College of Arts and Sciences in Fall semester (November), 2009. The response rate of the survey was 11.01%. Despite the presence of most of the students, faculty and staff members, the expectation of a higher response rate from the survey did not meet. Perhaps the lower response rate was due to the fact that, the time when the survey was administered, the population of this study had busy schedules. The lower response rate

may be due to the fact that, it was an internet-based survey. Internet-based surveys often suffer from lower response rates, since the participants are not in any way pressurized to respond to the surveys. The general expectation was that the data was more likely to provide a close proxy of the population of the Greater Toledo area, since the data included a large number of commuter and non-traditional students and staff.

The study used non-probability sampling. The samples were chosen on the basis of convenience or availability at the time of the semester when the survey was sent. Though the initial plan of the study was to send the survey to the entire University email listing, only the email listings of the College of Arts and Sciences were available. Since the College of Arts and Sciences had a substantial number of students, staff and faculty members, the study still had a larger sampling frame for data collection. The advantage of this sampling method was that it was easy to conduct, and with a UT email, everyone from the College of Arts and Sciences was easily accessed at once. The disadvantage of selecting a convenience sample was that the results could not be representative of the whole population. In this case, we cannot generalize from our results that our findings apply to the general United States population, or even the whole University population. The most significant reason is that, The University of Toledo students, faculty and staff represent a population, which is affiliated to an academic institution. The findings may not be applied to those affiliated to non-academic institutions. But, the results may provide some insights on which future research can be based.

3.4. Survey Development

The survey for the study was developed by using a website (www.surveymonkey.com) that specializes in providing tools to create internet based surveys for data collection. The survey was in the form of a self-administered questionnaire that was available through clicking on a link in the emails sent to the subjects in the study. The respondents could answer the questions mostly by clicking on the answers they felt appropriate. The survey included few questions where the respondents had to type their answers. The questionnaire included questions about the respondents' dietary practices, their fast food consumption habits and their frequency of fast food restaurant visits. The questionnaire contained questions about the respondents' attitudes toward taste of fast foods, and asked questions on their views on of taste and other possible predictors of fast food consumption. Also, the survey contained questions on whether the respondents are aware of the nutritional facts of fast foods. Questions were formulated to examine whether they feel themselves susceptible to certain diseases, and how serious they believe the diseases could be for them. The survey also contained questions that measured socio-demographic data. Mostly, the questions measuring the respondents' attitude or beliefs were in the Matrix Question Format using a Likert-type scale (Babbie, 2003) where the respondents showed the degree of their positive or negative attitudes toward certain issues.

The study proposed to examine difference in attitudes toward health, nutrition, fast food consumption, attitude toward taste by several factors, such as, gender, race, and affiliation status at the university. The purpose is to see any significant variance in the attitude by social and demographic differences.

Advantages and disadvantages of survey research

The most significant advantage of survey as a mode of data collection is that a large number of populations can be accessed with it. Especially, in this study with the internet-based survey a significant number of populations had been reached with a click of a mouse. Using internet to send the survey nevertheless saved time and effort from the part of the researchers to reach their subjects and at the same time it did not pressurize its subjects to take part in the survey. Often with traditional survey methods such as telephonic surveys, interview surveys, surveys administered to a gathering, the subjects may feel pressurized and obligated to take part in the survey. But in this study the internet based survey gave its subjects the opportunity to respond to the survey at their will and ease. Another significant advantage of employing survey method is that surveys are good tools to predict the characteristics of a large population. Significant patterns can be derived from observing trends from survey results. Besides, using internet based survey in this study was very cost effective.

A great disadvantage of the survey method is that surveys largely use close-ended standardized questions. An already-established form of questions widely used in social research often fails to capture the range of meanings surrounding a particular topic. To elaborate this issue, surveys offer limited answering options. Sometimes, a respondent's view of a particular issue may not properly fit into the answers provided in the questionnaire. The answers often may not portray respondents' actual personality, or may capture their biased, subjective views on a particular issue which may not represent the actual personality. Especially, the pre-established structure fails to properly capture the

complex issues. For example, in this particular study several psychological perceptions had been measured using survey. Questions had been framed using as much caution as possible to measure complex psychological variables, as the researchers wanted them to be measured. Lastly, it is important to keep in mind that survey results are based on self reports of the respondents. Any falsification from the part of the respondents may result in the collection of data that may not be the true portrayal of reality.

Chapter 4

Results

The data for this project have been analyzed by using statistical process. The quantitative data, which was collected through an internet-based survey, has been analyzed using SPSS 20 statistical software. This chapter will focus on the quantitative data analysis and will present the findings that will help to understand eating behaviors at fast food restaurants. The implications of the findings, or in other words, what the data suggests in a broader social perspective has been analyzed in the next Chapter (Chapter5).

4.1. Demographic Description

The survey was sent to the students, staff and faculty members (approximate N = 4450) of the then College of Arts and Sciences of the University of Toledo in November, 2009. The sampling process used in this study was a non-probability sample, chosen by convenience. In the first 15 days 348 responses were returned. A follow up email was sent after 15 days from sending the survey, another 143 respondents returned totaling 491

responses. So the response rate of the survey method was approximately 11.01 %.³The total number of participants in the survey was 491. One respondent was deleted from the data set as it had very extreme numbers in most of the questions. The purpose of the deletion was to make sure that the extreme numbers cannot affect the results. Out of 490 responses, there is one missing response leading to a total of 489 responses. Of the total sample, 323 (66.1%) responses come from undergraduate students, 79 (16.2 %) from graduate students, totaling 82.3% from the student group. Faculty members accounted for 13.3% (n=65) of the participants. Staff members accounted for 4.5% (n=22) of the participants who responded to the survey (Table 4.1). It is likely that majority of responses coming from the student population, is an artifact of the faculty to student ratio with student population being much larger than the faculty and staff population. A graphical representation of the data in Figure 4-1 is useful to understand the frequency distribution.

Table 4.1: The frequency distribution of the academic rank.

Academic Affiliation	Frequency	Percent
undergraduate student	323	66.1
graduate student	79	16.2
faculty	65	13.3
staff	22	4.5
Total	489	100.0

³ The distribution list was automatically generated and the exact numbers of the survey recipients were not known. The approximate numbers were provided by the office that sent the survey.

The survey was sent to approximately 4000 students (both undergraduate and graduate), and approximately 450 faculty and staff members. A comparison of the response rates among the groups revealed that nearly 10 % respondents from the students group(402 out of 4000 students), and approximately 5 % respondents from the combined

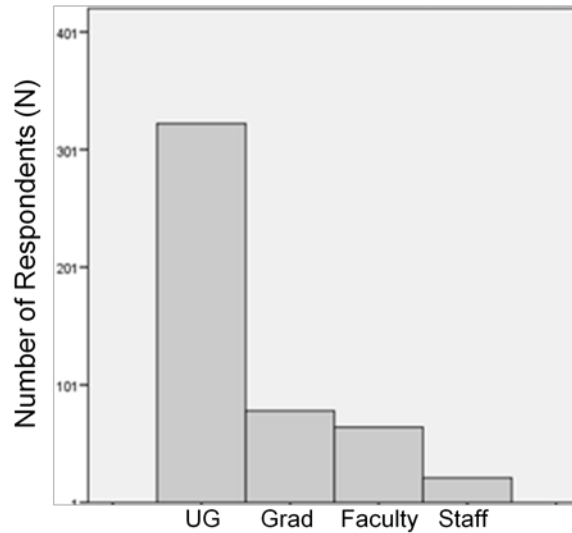


Figure 4-1: Histogram presenting the graphical distribution of the respondents by their employment status.

UG – undergraduate student; Grad – graduate student; Faculty – faculty member; Staff – staff member

faculty and staff groups (87 out of 450 faculty and staff members) responded to the survey.

Another interesting characteristic of the sample is the ethnic backgrounds of its participants. Table 4.2 shows the distribution of participants based on their race /ethnic origin. It shows a major portion of the respondents (83.3%) are White, while respondents from African American origin comprises only 5.8% of the total 486. 2.7 % of the respondents are Hispanic and 3.1% of the respondents are from Asian Background. 2.7%

of the respondents describe themselves as ‘Mixed- race’ and 2.5% describe themselves as ‘Other’.

Table 4.2: Frequency distribution of race/ethnic origin.

Race/ethnic origin	Frequency	Percent
White	405	83.3
African American	28	5.8
Hispanic	13	2.7
Asian	15	3.1
Mixed race	13	2.7
Other	12	2.5
Total	486	100.0

The responses in this survey are dominated by female respondents. Typically it is observed that women respond more to surveys than men. In that respect, this study is not an exception. Among the 482 respondents only 144 (29.9 %) are male and 338 (70.1 %) respondents are female. The distribution is illustrated in Table 4.3.

Table 4.3: Frequency distribution of gender.

Gender	Frequency	Percent
male	144	29.9
female	338	70.1
Total	482	100.0

In order to understand the difference in the fast food restaurant visits by gender, a cross tabulation was performed. Table 4.4 reveals that overall women (N=292) visit fast food restaurants more than men (N=117). It also reveals that both men (96.6%) and

women (94.2%) visit fast food restaurants 1-5 times in most of the times. Their frequency of visiting fast food restaurants 6-10 times is relatively less. To better understand the eating frequencies⁴ by men and women, their mean eating frequencies were compared. Table 4.5 shows the difference in the average fast food consumption between male and female respondents.

Table 4.4: Cross tabulation of the respondents fast food restaurant visit frequency by gender.

Frequency of fast food restaurant visits	Male	Female
1-5 times/ week	96.6%	94.2%
6-10 times/ week	3.4%	5.8%
100% (N = 409)	(117)	(292)

Table 4.5: Comparing means of female and male respondents in terms of their fast food restaurant visits.

what is your sex	Mean	N	Std. Deviation
male	1.03	117	.182
female	1.06	292	.235
Total	1.05	409	.221

Table 4.5 reveals that though more number of females (n=292) than males (n=117) report eating at fast food restaurants, their mean eating frequency is almost similar, i.e., 1.03 for males and 1.06 for females. It reveals that females visit fast food

⁴ The eating frequency of fast foods or the fast food Restaurant visits were measured by the variable that measure the frequency of fast food restaurant visits by the number of times the respondents visited fast food restaurants last week before taking the survey.

restaurants slightly more than males. Here it is important to note that fast food restaurant visits are coded as 1= 1-5 times/week , 2=6-10 times/week and 3 = more than 10 times/week in the data set . So, 1.03 and 1.06 mean eating frequency refers to slightly more than 1-5 times/week. Apart from the fact that females outnumber their male counterparts, their eating frequencies (mean= 1.06, sd =.235) are also slightly more varied than males (mean= 1.03, sd =.182) as the standard deviation is higher for females than males, though it is not a wide spread.

In order to examine if the gender differences in fast food eating frequencies are significant, a Chi square test was performed. The descriptive table (Table 4.6) shows that in both categories females visit fast food restaurants more than males (70.9% versus 29.1% in 1-5 times restaurant visits/week, and 81% versus 19 % in case of 6-10 times restaurant visits/week). But the Chi square statistic = .990 with a Asymp. Sig =.320 suggests that the relationship is statistically non significant.

Table 4.6: Chi square test of the frequency of fast food restaurant visits by gender.

Frequency of fast food consumption	male	female	Total
1-5 times	29.1%	70.9%	100.0%
6-10 times	19.0%	81.0%	100.0%
Total	28.6%	71.4%	100.0%

A graphical illustration helps to look at the difference in the fast food restaurant visits by gender more clearly. Figure 4-2 graphically illustrates more number of female than male respondents in both categories (1-5 times /week and 6-10 times /week) of fast food restaurant visits.

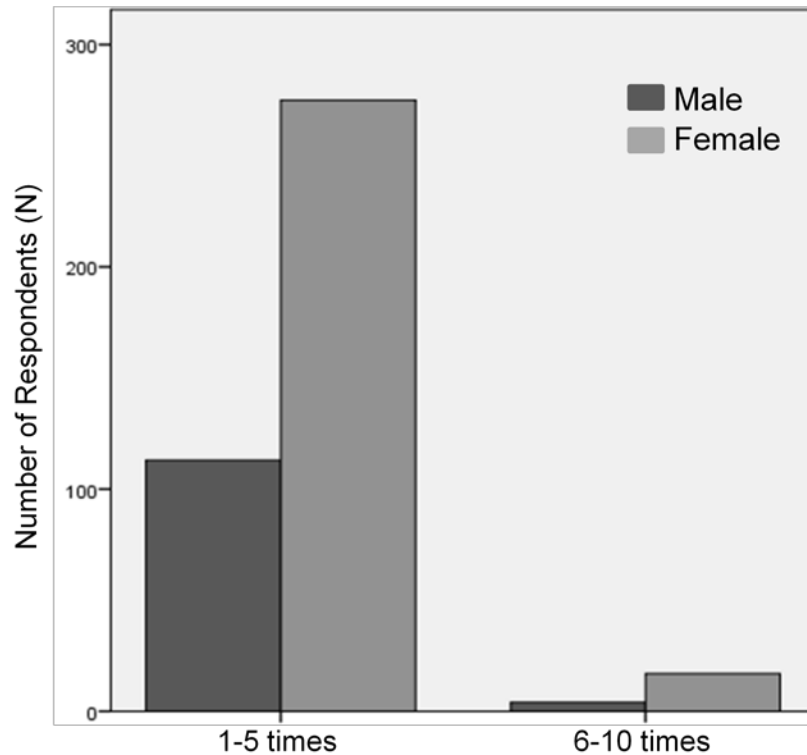


Figure 4-2: Bar graph representing fast food restaurant visits by gender of the respondents.

4.2. Behavioral Description

Though the trend of fast food eating frequency has been discussed in the earlier section in the context of gender differences, in this section, the overall trend of eating behaviors of the participants will be analyzed. Apart from the description of their fast food restaurant visits, a detailed analysis of their eating patterns, choices of portion sizes

and some other related behaviors is expected to bring some light on their overall eating behaviors.

First, a look at the frequency distribution of the fast food restaurant visits of the respondents in Table 4.7 reveals that a notably greater number of respondents (95%) report visiting fast food restaurants 1-5 times/week where only 5% report visiting 6-10 times/week.

Table 4.7: Frequency distribution of fast food restaurant visits.

Restaurant visits	Frequency	Percent
1-5 times	396	95.0
6-10 times	21	5.0
Total	417	100.0

In order to analyze the eating frequencies by the employment status a cross tabulation was performed. The cross tabulation in Table 4.8 also suggests that majority of the respondents visited the fast food restaurant 1-5 times/week. It also indicates that only student group (including undergraduate and graduate students) visited fast food restaurants 6-10 times/ week. In contrast, both the faculty and the staff groups visited fast food restaurants 1-5 times/ week. To examine whether this distributions are statistically significant, a Chi square test was performed. The Chi square test statistic 3.970 with an Asymp. Sig= .265 suggests that the relationship is non-significant (Table 4.8).

Table 4.8: Cross tabulation of fast food restaurant visits by employment status.

Restaurant visits	undergraduate student	graduate student	faculty	staff
1-5 times	94%	93%	100%	100%
6-10 times	6%	7%	0	0
100% (N=416)	(290)	(68)	(42)	(16)

In order to examine whether these frequencies of restaurant visits are usual, less or more for the respondents, a cross tabulation was performed and the results are displayed in Table 4.9. All the groups reported that their previous week's eating frequencies were more than their usual frequencies, and the data provide largest percentages in 'more than usual' categories for all groups. Among all groups, the highest percentages in 'more than usual' category represented the undergraduate student groups (62.3%); the highest percentages in 'less than usual' category represented the faculty groups (34.9%), and the highest percentages in 'about the same' category represented the staff groups (31.2%).

Table 4.9: Cross tabulation of average eating pattern by respondents.

Previous week's fast food consumption pattern	undergraduate student	graduate student	faculty	staff
less than usual	20.8%	30.0%	34.9%	18.8%
about the same	14.2%	10.0%	16.3%	31.2%
more than usual	62.3%	57.1%	48.8%	43.8%
don't know	2.8%	2.9%	0.0%	6.2%
100% (N=418)	(289)	(70)	(43)	(16)

Apart from description of the respondents' frequency of fast food restaurant visits, several behavioral tendencies were examined in this study. These tendencies include whether they supersize, i.e., whether they choose larger portion sizes; and whether the respondents look at the nutritional information of fast foods before they buy them. To examine whether the respondents supersize, a cross tabulation was performed to see the distributions among the participants. Table 4.10 shows the distribution of responses. Among 420 participants, majority in all groups responded negatively, i.e., they do not supersize. The undergraduate students groups represent the highest percentages (94.5%) in this category (do not supersize), but the other groups report similar percentages too. Only few participants reported that they supersize, and among that the percentages are highest for the graduate students (8.6%), while the other groups show that they supersize even less than the graduate students.

Table 4.10: Cross tabulation of the tendency to supersizing among the participants.

Do you supersize	undergraduate student	graduate student	faculty	staff
Yes	5.2%	8.6%	7.0%	5.9%
No	94.5%	87.1%	93.0%	94.1%
Don't know	0.3%	4.3%	0.0%	0.0%
100% (N=420)	(290)	(70)	(43)	(17)

Also, the participants were asked whether they look at the nutritional facts of fast foods before they buy them. In order to examine this behavior, another cross tabulation was performed between the respondents and the variable that asked the respondents to report how often they look at the nutrition facts of fast foods. Table 4.11 shows that the tendency of never looking at the nutrition facts is greater than always looking at them, in all groups. The tendency to 'never' look at nutrition facts is comparatively higher in the undergraduate students group (41.5%) than the other groups. The tendency to 'always' look at nutrition facts is comparatively higher in the staff group (11.8%) than the other groups. A subgroup comparison between the combined students group (undergraduate and graduate) and the combined faculty and staff group reveals that 71.5 % of the students (undergraduate and graduate) never look at the nutrition facts of fast food while this percentage is 53.7% for the combined faculty and staff group. On the other hand the 16.9 % of the students (undergraduate and graduate) always look at the nutrition facts of fast food while this percentage is 21.1% for the combined faculty and staff group. The data also reveals that 50.6% of the combined students and 64.3% of the combined faculty and staff group rarely look at nutrition facts. Subgroup comparison

reveals similar percentages between these two groups in terms of occasionally looking at nutrition facts of fast foods.

Table 4.11: How often the respondents look at nutrition facts before buying fast foods.

How often respondents look at nutrition facts	undergraduate student	graduate student	faculty	staff
Never	41.5%	30.0%	30.2%	23.5%
Rarely	26.3%	24.3%	34.9%	29.4%
Occasionally	25.3%	35.7%	25.6%	35.3%
Always	6.9%	10.0%	9.3%	11.8%
100% (N= 419)	(289)	(70)	(43)	(17)

4.3. Analysis of the Respondents’ Psychological Perceptions

Apart from the demographic and behavioral analysis, a significant part of the study focuses on the respondents’ perceptions about their own health status and other health conditions. It has been assumed in the study that the perceptions play an important role in taking preventive health actions by shaping respondents’ attitudes toward different things. In this section of data analysis, the respondents’ perceptions about different health problems (such as obesity, coronary heart diseases, hypertension, high cholesterol, diet related respiratory disorder and diabetes) have been analyzed. Mostly, their perceptions about the health problems as a possible threat to good health, their perceived seriousness if they feel they had these diseases and their perception about their own health status has been examined. To be specific how these perceptions interact with their fast food eating

frequency has been analyzed in this section. First, what the respondents perceive about their own health has been analyzed. Table 4.12 shows the distribution of the respondents by how they rate their own health status. It shows that out of 487 respondents who answered the question, 60.4 % stated their health as good, where 24.2% state their health as excellent, 13.6% as fair and only 1.8% state their health as poor

Table 4.12: Frequency distribution of the respondents' perception of own health status.

Health status	Frequency	Percent
excellent	118	24.2
good	294	60.4
fair	66	13.6
poor	9	1.8
Total	487	100.0

Next, the participants' perception about the effect of fast food on health in general has been analyzed. A frequency distribution of the respondents' beliefs about whether fast food is good for health is shown below (Table 4.13). It indicates that 67.1% strongly agree with the statement that fast food is not always good for their health, while 25.8% agree, 5.2 % are neutral, .8% disagree and 1% strongly disagree with the statement. It indicates overall that most the respondents recognize that fast food is not always good for their health.

Table 4.13. Frequency distribution of the respondents' perceptions of the impacts of fast food on health.

Fast food is not always good for my health	Frequency	Percent
strongly disagree	5	1.0
disagree	4	.8
neutral	25	5.2
agree	125	25.8
strongly agree	325	67.1
Total	484	100.0

Whether the respondents perceive several health problems (related with the consumption of fast food) as threats to good health, a scale variable (THRSCALE) was created to measure perceived threat. To examine how reliable the scale is in measuring the perceptions, a reliability test was done on the scale and it produced a Cronbach's Alpha = .802⁵ indicating a substantial reliability score. Similarly another scale perceived seriousness (SERISCALE) was used to measure how serious the respondents would be if they had the same diseases. The reliability score for this scale was .654, again indicating substantial reliability.

In order to measure whether perceived threat of health problems (obesity, coronary heart disease, hypertension, high cholesterol, diet related respiratory disorders and diabetes) and perceived seriousness of the disease are associated with the respondents' fast food consumption, a Spearman's correlation was performed. Here the Spearman's correlation was chosen based on the fact that the dependent variable, i.e., frequency of fast food restaurant visit is a categorical variable. The correlation matrix is

⁵ Measurement of reliability score: 0.00-.20= poor, .21-.40=slight, .41-.60=moderate, .61-.81=substantial and more than .81 =almost perfect.

shown in Table 4.14. The correlation does not show any significant association among the perceived threat, perceived seriousness and fast food restaurant visits. . The associations between perceived seriousness and fast food restaurant visits ($r = -.095$) and between perceived threat and fast food restaurant visits ($r = -.012$) are both weak but are negatively associated i.e., if perceived seriousness or perceived threat increases, fast food consumption decreases. Both the associations are not statistically significant. The only statistically significant relationship is between perceived threat and perceived seriousness ($r = .175$, $\text{sig}=.000$), indicating a positive but weak relationship. The positive relationship suggests both perceived threat and perceived seriousness increases or decreases in the same direction. Or in other words, if the perceived threat increases, then perceived seriousness increases and if the perceived threat decreases, then perceived seriousness decreases too.

Table 4.14: Correlation matrix of perceived threat, perceived seriousness and fast food restaurant visit frequency.

Correlations	THRSCALE	EATINGFREQ	SERISCALE
Threat of diseases	1.000		
How many times in the last week did you eat at FFR	-.012	1.000	
Seriousness about health problems	.175**	-.095	1.000

Sig (2-tailed) = .000

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

4.4. Hypothesis Testing

This section involves the analysis of the major hypothesis testing, which is the most important part of the data analysis. In this study three major hypotheses were proposed to be examined.

Hypothesis 1

Hypothesis one states that a positive attitude toward taste increases fast food consumption. The null hypothesis states that there is no relationship between attitude toward taste and fast food consumption. In this hypothesis the independent variable is attitude toward taste and the dependent variable is fast food restaurant visit frequency.

In this hypothesis both the independent variable (attitude toward taste) and the dependent variable (fast food restaurant visit frequency) are categorical variables and a Chi square test was performed to test the relationship. In this hypothesis Chi-square test was chosen because the data is a non- parametric data, specifically both the independent and dependent variables are ordinal variables, representing ranks among the categories. Chi square significance test is usually used to examine the significance of the difference between a set of observed frequency and expected frequency. A greater difference between the observed and expected frequency is more likely to suggest a significant relationship between two variables. In this hypothesis, the Chi square test examined the frequencies of fast food restaurant visits among respondents who differ in their attitude toward taste. The Chi square results are presented in Table 4.15. The descriptive table shows total 414 responding participants and the number of respondents in each categories of the independent variable. It shows that out of 414, 45 respondents strongly agrees with the statement that ‘fast food tastes good’, 201 respondents agrees, 111 respondents are

undecided or neutral about the statement, while 31 respondents disagree and 5 respondents strongly disagree with the statement. Apparently it seems from the descriptive Table that the respondents who agree with the statement that fast food tastes good, visit fast food restaurants more frequently than others.

Table 4.15. Chi square test: Frequency of fast food Restaurant visits by attitude toward taste.

Fast food tastes good	1-5 times	6-10 times	Total
strongly disagree	5	0	5
disagree	31	0	31
neutral	111	6	117
agree	201	11	212
strongly agree	45	4	49
Total	393	21	414

The Chi square test statistic that examines the significance of the association shows a non significant relationship (Pearson Chi square = 2.903; Asymp sig = .574) between attitude toward taste and fast food restaurant visit frequency. In this hypothesis, high significance level (Asymp sig = .574) suggests the possibility of the presence of chance as a factor for the observed pattern. So, in this case we cannot prove our research hypothesis that a positive attitude toward taste increases fast food consumption. We accept the null hypothesis that in this study attitude toward taste makes no difference in fast food consumption.

The relationship is visually illustrated with a bar graph in Figure 4-3.

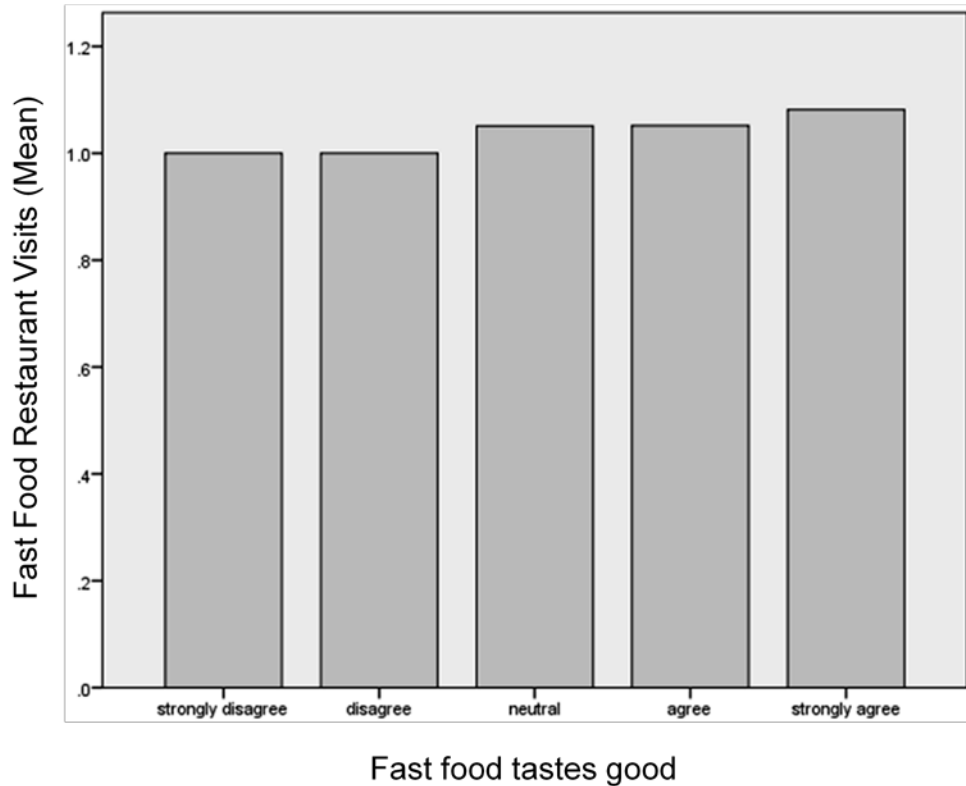


Figure 4-3: Bar chart representing average fast food consumption by attitudes toward taste.

Hypothesis 2

Hypothesis two states that as nutritional information increases, fast food consumption decreases. The null hypothesis suggests that nutritional information does not make any difference in fast food consumption. In this hypothesis the independent variable is NUTRSCL (value label: nutritional information of fast foods) and the dependent variable is fast food restaurant visit frequency.

To examine this hypothesis, a Spearman's correlation was performed to see the nature of the relationship between NUTRSCL (nutritional information of fast foods) and

fast food restaurant visit frequency. Spearman's correlation was chosen in this hypothesis as the independent variable was a numeric variable (NUTRSCL) and the dependent variable (fast food restaurant visit frequency) was categorical in nature. The data from the correlation matrix in Table 4.16 shows a statistically significant relationship between nutrition information of fast foods (NUTRSCL) and fast food restaurant visit frequency. The data suggests that the relationship is a weak relationship in terms of strength ($r = -.123$) suggesting that the change in the fast food restaurant visit frequency is very less due to nutritional information. But the relation is negative ($r = -.123$) suggesting that if nutrition information increases, then fast food restaurant visit frequency decreases. Since fast food consumption is measured by the variable fast food restaurant visit frequency, it can be suggested that nutritional information does influence fast food consumption in a negative way. This relationship is also statistically significant ($\text{sig} = .013$) suggesting that this relationship is not due to simple random chance.

Table 4.16: Spearman's Correlation of NUTRSCL and fast food restaurant visit frequency.

Correlations	EATINGFREQ	NUTRSCL
How many times in the last week did you eat at FFR	1.000	
Nutritional information of fast foods	-.123	1.000

Sig (2-tailed) = .013

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

In order to further understand the significance of the relationship between nutrition information and fast food restaurant visits, one way ANOVA was performed, since one way ANOVA is a more substantial significance test than correlation. The result from the analysis does not show any important pattern in fast food restaurant visits in terms of the respondents' nutritional knowledge. It shows that the respondents who have little or higher nutritional knowledge does not differ notably when their frequency of restaurant visits are examined. The F-test statistic ($F = .768$; $sig = .739$) from the analysis suggests that the difference is statistically non significant. As a result, it cannot be said that nutritional information of fast food makes any difference in the respondents' fast food restaurant visits. So, we accept the null hypothesis that nutritional information of fast foods does not make any difference in the frequency of fast food restaurant visits.

Table 4.17: One way ANOVA of NUTRSCL and EATINGFREQ.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.677	18	.038	.768	.739
Within Groups	19.253	393	.049		
Total	19.930	411			

Hypothesis 3

The research hypothesis in Hypothesis three states that a positive attitude toward taste decreases nutritional awareness. The null hypothesis states that attitude toward taste does not make any difference in nutritional awareness. In this hypothesis the independent

variable: attitude toward taste and the dependent variable is NUTRSCL (value label: nutritional information of fast foods).

To test the association one way analysis of variance (ANOVA) was performed since the independent variable, attitude toward taste, is a categorical variable and the dependent variable NUTRSCL (value label: nutritional information of fast foods) is a scale variable. The descriptive table (Table 4.18) shows the distribution of the respondents in each categories of the independent variable. It shows that among 484 respondents, the largest number of the respondents agree (N=230) with the statement that fast food tastes good, while the rest of the distribution of the respondents in the categories of the independent variable does not show any significant pattern. The mean knowledge of the nutritional information is more or less similar among the groups. Only the respondents in the category who agree that fast food tastes good have higher means of nutritional information (9.0043) than the other groups, specifically from the group who disagree with the opinion (7.9474). But it is interesting to note that those who strongly disagree, disagree and strongly agree with the opinion have comparable means which is not much lower than those from who agree and are neutral about the opinion. The comparative lesser number of respondents with similar means of nutrition knowledge may mean that they have actually high nutritional knowledge. So it suggests that respondents who strongly disagree, disagree and strongly agree with the opinion have comparatively higher nutritional knowledge than who agree and are neutral with the view that fast food tastes good. The standard deviation is also similar-only presents slight more variation in the neutral group, suggesting that their distribution of the nutritional knowledge is comparatively wider. Most importantly, the lower F-test statistic (.304 with

sig .872) from the ANOVA Table reveals that the relationship is not significant. So, the research hypothesis is rejected. In this case we accept the null hypothesis that attitude toward taste does not influence nutritional awareness.

Table 4.18: One way ANOVA: nutritional information by attitude towards taste.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.627	4	6.907	.309	.872
Within Groups	10704.481	479	22.348		
Total	10732.107	483			

Summary

The analyses above suggest that attitude toward taste of fast food does not have any significant effect either on fast food consumption or on nutritional information. The results from the data do not support any of the hypotheses. Even though from the distribution of data it seems like there are relationships as predicted in the research hypothesis, the significance tests do not support the associations. For example, in Hypothesis 1, the distributions suggest that respondents who agreed with the statement that fast food tastes good have more frequent fast food restaurant visits. But the significance test reveals that the association is non-significant. Neither of the hypotheses produces statistically significant results in order to prove the research assumptions. Specifically in Hypothesis 3 the findings suggest that attitude toward taste does not influence nutritional awareness about fast food. Therefore, based on the findings from the

study we can conclude that attitude toward taste does not supersede nutritional information by increasing fast food consumption. The only statistically significant association the findings suggest, a positive association between perceived threat of certain health problems and perceived seriousness about that. The non significant associations among perceived threat, perceived seriousness and fast food consumption reveals that neither perceived threat, nor perceived seriousness make any difference in fast food consumption pattern.

Chapter 5

Discussion and Conclusion

Fast food is an integral part of a modern urban lifestyle. Ease of access and ready availability of fast foods is very common in developed countries such as in the United States. At the same time, the invasion of fast food culture is gradually engulfing the urban lifestyle in developing countries. This study attempted to explore the mutual interaction of ‘attitude toward taste’ and ‘nutritional information’ of fast foods to explain fast food consumption behavior. In a broader sense, the aim of this study was to understand fast food eating behaviors of students, staff, and faculty members of the University of Toledo. More specifically, the study intended to examine how a perceived attitude toward taste affects respondents’ nutritional knowledge and, thus, their fast food consumption behavior. In other words, do the respondents perceive the taste of fast food as a barrier to their nutritional awareness, thereby causing an increase in their fast food consumption? The present study attempted to shed some light on the psychological determinants of individual fast food choice. Previous research on choice of fast food seldom tried to examine the psychological influences, specifically, perceptions and attitudes toward fast foods. Attitude toward taste as a predictor of fast food consumption is a relatively new approach in research on social behavior (Martin et al. 2008; Werthmann et al. 2011). The interaction between attitudes and nutritional knowledge and their combined effect in

predicting fast food consumption is also new in behavioral research. In this study, the relationship between perceived attitudes and behaviors was tested by several hypotheses to see their effects on fast food consumption behavior. It is interesting to note that the trend of fast food eating culture has taken on a global face. According to a recent comprehensive review article by Bezerra et al. (2012), it can be anticipated that individuals in developing and underdeveloped countries may increasingly be exposed to the fast food culture with their social and economic advancements in near future (Bezerra et al. 2012).

The hypotheses that were tested in this study revealed statistically non significant results. The mutual interaction between attitudes toward taste and nutrition information of fast foods on fast food consumption did not confirm the propositions made in this study, based on the findings from the statistical analysis of the survey data. In the first hypothesis, the Chi-square test produced a non-significant association between attitudes toward taste and fast food consumption. Despite the fact that there were more fast food restaurant visits reported by those respondents who agreed with the statement that fast food tastes good, the finding was not statistically significant (Pearson Chi-square = 2.903; Asymp sig = .574). So, the research hypothesis that “a positive attitude toward taste increases fast food consumption” could not be accepted. The statistically non-significant result implied the presence of other possible predictors of fast food restaurant visits apart from taste. There may be the possibility that attitude toward taste did not solely determine the fast food restaurant visits in the sample for this study. The results of data analysis indicated that mostly undergraduate and graduate students reported greater fast food restaurant visits in comparison to staff and faculty members.

The findings also suggest that fast food consumption is more prevalent especially in the undergraduate students. This trend may suggest that the undergraduate students responded more than other groups in this question. Also, the fact cannot be ignored that the number of undergraduate students was higher than other groups who responded to the survey. It may be possible that convenience played a big role in students' fast food consumption due to their busy schedule. This assumption is consistent with the findings of previous studies that investigated the predictors of fast food consumption (Bezerra et al. 2012; van der Horst et al. 2011b, 2011a). The data from a report of National Restaurants Association (NRA), 2011 overemphasized convenience over taste as being the strongest predictor of fast food consumption with a huge increase in the fast food consumption in recent years (NRA 2011). The emphasis on convenience as a prevailing determining factor in predicting fast food consumption may be attributed to busy social lifestyles. Busy lifestyles are a predominant feature of social life in the United States, when compared to other countries. Since the sample for this study was United States-based, factor such as fast, busy lifestyle and convenience might have played a big role in determining fast food consumption.

The second hypothesis that tested the relationship between nutrition information of fast foods and fast food restaurant visit frequency was tested by Spearman's correlation and ANOVA. The Spearman's correlation results revealed a statistically significant relationship between nutritional information and fast food restaurant visits ($r = -.123$; $sig = .013$). The relationship was weak but negative, suggesting that an increase in nutritional information slightly decreases fast food restaurant visits. In order to get a more substantial significance, one way ANOVA was chosen to further test the significance of

the relationship. It can be assumed that affiliation with an academic institution might have given the respondents some educational advantage.

The results showed a statistically non-significant association between nutritional knowledge of the respondents and fast food restaurant visit frequency. These results also indicated that the respondents' fast food consumption did not vary with their level of nutritional knowledge of fast foods. Respondents with lesser and greater nutritional knowledge had similar patterns of fast food consumption. With statistical non-significant result no conclusion can be drawn on the relationship between respondents' nutritional knowledge and their fast food consumption. The lack of an association between nutritional knowledge and fast food consumption may be attributed to the factors such as convenience or busy schedules of the sample. The academic affiliation of the respondents and their busy life with work pressure may partly explain the non-association of nutritional knowledge and fast food consumption. It is also important to keep in mind that students, especially undergraduate students comprise a larger portion of the sample size. Life style pressures together with the availability of fast food outlets on the University campus may have influenced their fast food consumption behavior. Or, in other words, convenience might have been prioritized over nutritional knowledge in this regard.

Other findings from this study revealed that the majority of the sample strongly agreed with a statement that fast food was not always good for their health, yet the tendency to look at nutritional information before purchasing fast foods is less among the samples. It may signify that, though the respondents were aware of the negative health impacts of fast foods, they really did not place much importance on nutritional

information as a deciding factor of fast food consumption. These findings together may partly explain the weak association of nutritional information and fast food consumption.

The third hypothesis examined whether a positive attitude toward taste decreases the behavioral effects of nutritional information on fast foods. A relationship between attitude toward taste and nutritional information was not revealed. As a result, no conclusion could be drawn whether 'attitude toward taste' or 'nutritional information' has any effect on fast food consumption. So, the estimation between taste of fast food and nutritional awareness does not appear to be supported with the findings of the study. It is possible that the respondents placed less importance on taste and nutrition information of fast foods as predictors of fast food consumption. Again, factors such as convenience or a busy lifestyle may be seen as the reasons for their fast food consumption. Or, it is possible that eating fast food is a habit for them. The respondents might have been socialized to perceive fast food consumption as a usual, regular food choice behavior, and therefore do not place much importance on why they are consuming fast food. The easy availability of fast foods may have reinforced their perceptions. The only significant association the study produces is between 'perceived threat' and 'perceived seriousness' of several health problems (obesity, coronary heart disease, hypertension, high cholesterol, diet related respiratory disorders and diabetes), as evident from the Spearman's correlation matrix (Table 4.13). Though a weak association, it suggests that the threat of a health problem can trigger some perceptions of seriousness about the health problem. Also, the correlation again suggests that perceived threat and perceived seriousness are not related to fast food consumption. So, the findings from the study could not prove the relationship between taste and nutritional information, rather, it

points to the role of factors such as perceived seriousness and perceived threat of health problems that may be more likely to influence fast food consumption.

Other results suggests that most of the respondents perceive their own health as good, though most of them infrequently look at nutritional information of fast foods before buying them. The analysis of own health status is important because in some cases, it may influence other perceptions, for example, a person with poor health may be more serious about certain health problems while persons with good or excellent health may ignore some health problems with delaying effects like obesity, diabetes. Here it is important to mention that people with higher levels of education tend to be healthier. Also, affiliation with an academic institution in most cases, provides various benefits in terms of access to exercise facilities, health insurance plans etc. The access to these benefits may motivate the groups to stay healthy. So being employed in an academic institution has most likely provided the groups the advantage of staying healthy.

Since, according to this study, students are the most frequent consumers of fast foods compared to faculty and staff members, it may be that their age plays some role in fast food eating behavior. Though in this study the age of the respondents was not analyzed, it can be assumed that the average age of the student group was lower than the average age of the faculty and staff members. It also could be assumed that with the advancement of age, individuals make better informed decisions about their dietary behaviors, given their accumulated life experiences. The importance of these findings, especially, the importance of knowing the nutritional information of fast foods can be understood in the context of findings of studies in the New York City (NYC), where

nutritional labeling of menus of fast food restaurants recently has become mandatory. Reports by Dumanovsky et al. (2010) Gordon et al. (2012) on mandatory nutritional labeling of fast foods sold in NYC reveals that such labeling increased consumer nutritional awareness with resulted in informed decision-making about fast food choices (Dumanovsky et al. 2010; Gordon and Hayes 2012). To address the growing concerns of obesity and other chronic diseases, menu labeling at quick-service restaurants has been adopted as a key policy approach. As a part of federal and state level health care reform, calorie labeling is receiving increasing attention and acceptance (Nestle 2010). At a national level, lawmakers of the United States passed a provision of Patient Protection and Affordable Care Act of 2010 which will require chain restaurants having 20 or more outlets, to post calories of the items “in a clear and conspicuous manner,” (Nestle 2010; Swartz et al. 2011). When this law will be enacted in its entirety, the consumers will have ready access to the calorie information of the foods and beverages they eat out at a restaurant; this includes any fast food restaurant chain. In light of the foregoing discussion, it is clear that several state and federal public health agencies are increasingly emphasizing consumer education and knowledge about the nutritional make-up of restaurant menus. It is expected to play an important role in food choice and food consumption, particularly in quick service restaurants. However, the present study could not find a significant relationship between nutritional knowledge and fast food consumption of the samples. In other words, the second hypothesis of the study (as nutritional knowledge increases, fast food consumption decreases) could not be accepted. This may be attributed to the peculiarity of the respondents (i.e., from an academic institution, and not from general public) who may have a faster, more busy lifestyle as

compared to general population, and therefore, may have placed convenience of fast food as a decisive factor of food choice.

The sample for this study represented more female respondents compared to male respondents. The over representation of female respondents in this survey may, primarily suggest that women were more interested as the subject of the survey might have interested them more than their male counterparts. The results also reveal that women eat fast food more than men. An attempt to analyze this phenomenon from a broader social perspective, may suggest other possible reasons for more fast food consumption by women. Generally, women are entrusted with more family and social responsibilities compared to men. In most cases, women are decision makers of family's diet planning. A working women with more family responsibilities may, depend more on fast, convenient and available food sources rather than preparing foods at home. With the ready availability of fast foods everywhere, women, especially in the United States, may become easy targets of fast food industry. In this study, the sample represented a greater number of female respondents who are all employed by the University of Toledo. So, with a working status, and easy access to the fast food outlets in campus cafeteria, and moreover, with busy schedules it is not surprising that more fast food consumption has been associated with female respondents in this study. Though this analysis cannot be applied to the general population, it may reflect, to some extent, a social reality.

Another explanation for having statistically non- significant results may be the fact that this study has not taken into account various fast food items that are available even outside the typical fast food restaurants. It may not be the fact that, respondents who

do not visit typical fast food restaurants do not eat fast foods. Fast food items can be available in other places such as traditional eat in restaurants and may have similar or even more adverse health effects. The responses in the survey might have been influenced by such disparities in understanding of concepts such as fast food consumption and, thus might have influenced the results.

The existence of so many non-significant results partly explains the inability to demonstrate the theoretical model (Fig 2-2) in this study. The factors that were conceived to have an influence on fast food consumption, such as, nutritional knowledge, taste, perceived threat, perceived seriousness, and moreover the mutual interaction of attitude toward taste and nutritional information- could not produce any causal effect on fast food consumption. In fact, these factors could not predict any relationship with fast food consumption. As a result, with so many non-significant factors with other non tested factors such as expense, education and SES-that were not the focus of this study though, the theoretical model could not be established.

Limitations

This study has several limitations that need to be noted. First, the data were based on self-reports of the respondents. There was no way to test the accuracy of the reported behavioral data. Second, the sample in the study was chosen by a nonprobability sampling method, to be specific, a convenience sample. This reliance on convenience (available data access) reduces the ability of the study to generalize its results to the behaviors and attitudes of broader society. Even though the research findings did not

prove to be significant, however, it cannot be said that the results predict the general behaviors of society, since the sample was not representative of the entire population. With 11.01% response rate, the study could not adequately reflect the behaviors of its population, and thus, the findings could not be generalized to the broader society. Third, selecting samples from an academic institution cannot deny the possibility of homogeneity in the samples. Affiliation with an academic institution represents an overall educated sample. It may represent modified, more cautious eating behavior influenced by the level of education – thus, only a partial reflection of the eating behaviors of a broader population - or even local, non-academic population. Finally, concepts such as attitude toward taste of fast food may be driven by culture. Fast food items vary in different cultures, and the taste preference of these food items vary with culture as well. The sample included individuals from different cultures, though the sample mostly represented the Caucasian respondents and a few respondents from other ethnic backgrounds. They might have represented different perceptions for their attitudes toward the taste of fast food as a predictor of fast food consumption. It was difficult to quantitatively measure abstract concepts such as ‘attitude toward taste’ in a culturally diverse population. To compensate this shortcoming, in-depth qualitative research can be helpful with more detailed information on how attitudes toward taste of fast food may differ cross culturally.

Conclusion

Consumption of fast foods has become a hallmark of modern urban and semi-urban life style, both in Western countries as well as in the developing world. There may be a universal perception that such consumption is undesirable, as such foods contain high calorie, sodium, saturated fat and sugar. Even considering all of these factors, there is an undeniably increasing trend in consumption of fast foods. This study attempted to understand the psychological motive that leads individuals to choose fast foods, despite information on several negative factors associated with the consumption of these kinds of foods. In this context, more research focusing on psychological analysis of eating behaviors examining the increasing trend of fast food consumption may reveal new dimensions on this area. Also, it is the responsibility of the fast food industry to make nutritional information of the foods they are selling easily available to the consumers. On the other hand, individuals who frequently consume fast food cannot abandon their individual responsibility to reduce fast food consumption by making healthier dietary choices both at fast food restaurants and at home. Individual consumers need to be more aware and educated about their individual dietary needs, and devise their dietary strategies for food choice according to their health. In this context, the supportive role of families and governments in making individuals, especially the younger generation, more educated about health and nutrition can make a real difference in the improvement of community health worldwide.

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Appendix A

Survey Questionnaire

Attached (next pages) is a copy of the electronic survey that was used in this study.

FF-A socio-psychological analysis of eating behaviors at fast food restaurants

1.

1. Please indicate your status at the University. (Please check one circle.)

Undergraduate student

Graduate student

Faculty

Staff

Other (please specify)

2. Do you eat at fast food restaurants? (fast food is defined as ready-to-eat food available in restaurants, but not served by waiters and waitresses)

Yes

No (If your answer is No, then go directly to question # 11).

3. What meals do you generally eat at fast food restaurants? (Please check all boxes that apply.)

Breakfast

Lunch

Dinner

Snack

4. How many times in the last week did you eat at a fast food restaurant?

1-5 times

6-10 times

More than 10 times

5. Would you say the number of times you ate fast food last week was more than you usually eat, less, or about the same? (Please fill in one circle.)

More than usual

Less than usual

- About the same
- Don't know

6. How often you look at nutrition facts before you order at fast food restaurants? (Please check one circle.)

- Never
- Rarely
- Occasionally
- Always

7. What kind of foods do you usually order? (Please check all the boxes that apply.)

- Fried foods
- Burgers
- Combos
- Salads
- Desserts
- Other (please describe)

8. How often do you usually order a type of drink? (Please check one circle for each item.)

	Never	Rarely	Occasionally	Always
Regular soda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diet soda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Milk shake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coffee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. What size drink do you usually order? (Please check one circle.)

Small

Medium

Large

10. Do you supersize?

Yes

No

Don't know

11. On a scale of 1 to 5, please indicate how you would rate each of these statements. (Please check one circle for each statement.)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The taste of fast food attracts me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The smell of fast food attracts me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The sight of fast food attracts me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The idea of eating fast food attracts me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. On a scale of 1 to 5, please indicate how would you rate each of these statements. (Please check one circle for each statement)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Fast food is convenient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food costs less.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food tastes good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food is served fast.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Eating fast food is a habit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have no access to healthy food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food is not always good for my health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Compared to others your age, how would you rate your health? (Please check one circle.)

- Excellent
- Good
- Fair
- Poor

14. Do you believe that eating fast food may cause the following health problems? On a scale of 1 to 5, please indicate how you would rate each of these statements about health. (Please check one circle for each health problem.)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Fast food causes obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food causes coronary heart disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food causes hypertension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food causes high cholesterol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food causes diet related respiratory disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fast food causes diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Please indicate whether you currently have these health problems? (Please check one circle for each health problem.)

	Yes	No	Don't know
Obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coronary heart disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hypertension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High cholesterol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diet related respiratory disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Please indicate whether you believe you might have these health problems in the future. (Please check one circle for each health problem.)

	Yes	No	Don't know
Obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coronary heart disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hypertension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High cholesterol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diet related respiratory disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Does your family have any history of the following health problems? (Please check one circle for each health problem.)

	Yes	No	Don't know
Obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coronary heart disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hypertension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High cholesterol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Yes	No	Don't know
Diet related respiratory disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Do you believe the following health problems indicate a threat to good health? On a scale of 1 to 5, please indicate how you would rate each of these health problems as a threat. (Please check one circle for each health problem.)

	No threat	Low threat	Neutral	Some threat	High threat
Obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coronary heart disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hypertension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High cholesterol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diet related respiratory disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. On a scale of 1-5, how would you feel if you had any of the health problems described earlier? (Please check one circle for each statement.)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I would be very anxious.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would discuss with friends and family.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would visit a doctor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would follow the recommended actions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would do none of the above.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Based on your knowledge, how many calories does the average adult need every day? (Please check one circle.)

- Fewer than 1200 Calories/day
- 1200-1400 Calories/day
- 1800-3200 Calories/day
- More than 3200 Calories/day

21. Approximately how many calories do you think there are in the following fast food items? (Please check one circle for each food item.)

	240 cals	340 cals	440 cals	540 cals	640 cals	740 cals	Don't Know
Sausage/Egg/Cheese Biscuit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Mac	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Double Quarter Pounder w/Cheese	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medium French Fry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caesar Salad with Grilled Chicken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extra Crispy Chicken Breasts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand Tossed Cheese Pizza	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Approximately how many milligrams of sodium do you think there are in the following fast food items? (Please check one circle for each food item.)

	220 mg	650 mg	830 mg	874 mg	1010 mg	1330 mg	1440 mg	1600 mg	Don't know
Sausage/Egg/Cheese Biscuit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Mac	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Double Quarter Pounder w/Cheese	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medium French Fry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caesar Salad with Grilled Chicken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	220 mg	650 mg	830 mg	874 mg	1010 mg	1330 mg	1440 mg	1600 mg	Don't know
Extra Crispy Chicken Breasts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand Tossed Cheese Pizza	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Approximately what percentage of saturated fat do you think is in the following fast food items? (Please check one circle for each food item.)

	3 %	5 %	8 %	10 %	14 %	19 %	25 %	Don't know
Sausage/Egg/Cheese Biscuit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Mac	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Double Quarter Pounder w/Cheese	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medium French Fry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caesar Salad with Grilled Chicken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extra Crispy Chicken Breasts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand Tossed Cheese Pizza	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. How often do you exercise?(Please check one circle.)

- I do not exercise at all
- I exercise 1-2 times per week
- I exercise 3-4 times per week
- I exercise more than 4 times per week

25. What is your height?

Feet

Inches

26. What is your weight?

Lbs

27. What is your sex?

- Male
- Female

28. What year were you born?

29. What is your current marital status? (Please check one circle.)

- Single
- Married
- Cohabiting
- Divorced
- Separated
- Widowed

30. What is your racial/ ethnic origin? (Please check one circle.)

- White
- African American
- Hispanic
- Asian
- Mixed race
- Other

31. How many years of school have you completed?

32. What is your highest academic degree? (Please check one circle.)

- Some school
- High school diploma
- Some college
- Bachelor's degree such as BA, BS
- Master's degree such as MA, MS

Professional degree beyond bachelor's degree such as MD/DDS/JD/LLB

Doctorate degree such as Ph.D or more

33. What was the total combined income, before taxes, for all the members of your family last year? (Please check one circle.)

\$ 24,999 or less

\$ 25,000 - \$ 39,999

\$ 40,000 – \$ 59,999

\$ 60,000 – \$ 79,999

\$ 80,000 – \$ 99,999

\$ 100,000 or more

Thank you for your participation

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