THE "NAUGHTY BUT NICE" CONFLICT BETWEEN THE ID AND SUPER-EGO IN YOUNG PERSONS CONSUMING PACKAGED SNACKS IN BANGKOK, THAILAND

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Abstract

Efforts to improve public health through raising awareness about the links between certain consumer choices and increased risks to mid- and long-term health are motivated by a general acceptance that knowledge shapes attitudes and attitudes steer the decisions behind consumer behavior. This dissertation surveyed teenagers in Bangkok, Thailand to assess both their knowledge of healthy living and eating habits and the extent to which having or not having this knowledge influences the decision-making processes that determine the teenagers' packaged snack–consumption habits. This decision-making process is conceptualized as a manifestation of the *id* (i.e. the desire for immediate pleasure) vs. *superego* (i.e. what I know society expects me to do and what I believe is best for me in the long-term) conflict described by Freud. This dissertation therefore used the information-forming-attitudes-and-attitudes-influencing-behavior model as its research method and thus provides a way to directly assess how accurately this model describes the process driving consumer behavior.

The results show that teenagers' primary sources of information on packaged snack health impacts are packaging labels, Facebook, Instagram, and various other online sources. Thai teenagers generally know the difference between healthy and unhealthy habits, but this knowledge is less important than immediate desires when making dietary decisions; even overweight teenagers choose to eat sweet and fatty snacks.

These research findings reflect id-dominated patterns of food consumption amongst Thai teens with the desire for momentary pleasure outweighing the knowledge they have on the mid- to long-term impacts that packaged snacks have on health.

Keywords: Packaged Snacks; Teenagers consumption; Freudian Theory; Id and Super Ego

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INTRODUCTION

One of the more alarming global developments over the last fifty years is the indisputable rise of obesity. People are now wealthier (World Health Organization, 2014) and hence able to consume more food, which, for related reasons, is now more readily available. This, coupled with a widespread change in employment from manual labor to cerebrally focused endeavors, explains obesity's prevalence as we are consuming more and expending fewer calories with the surplus calories deposited as body fat.

The World Health Organization (2014) defines an obese person as someone with an "excess fat accumulation that presents a risk to health." The ratio of a person's weight in kilograms to the square of their height in meters, or their body mass index (BMI), is commonly used as a crude proxy for this fat accumulation. Most systems classify a person with a BMI of 30 or higher as obese and a person with a BMI of 25 or higher as overweight.

All segments of society in almost every country are gaining weight. Thailand is no exception, and its rising obesity rate is Southeast Asia's second highest. Of particular concern is the global rise, at rates some describe as epidemic, in child and teenage obesity. Regarding this trend, Thailand is again no exception with its childhood obesity rates doubling between 1996 and 2009 (Asian Development Bank Institute, 2017).

Many of the same causal factors that have occurred or are occurring in western countries, such as the shift from manual to cerebral labor, are also present in Thailand. A sharp rise in the nation's urban-to-rural population ratio has been accompanied by changes in consumption habits, including a greater reliance on processed foods, such as fast foods and snacks (Neumark-Sztainer et al., 1997).

Occurring contemporaneously with this rise in obesity has been a period of intense competition and corresponding consolidation within the processed food industry as demand in emerging markets grew. Because of the frequent takeovers during this period, essentially every major processed food brand is now owned by one of only ten companies. This competition likely contributed to global obesity as, if long-term health concerns are pushed aside, people generally prefer fats and sugars and adding more fats and sugars to recipes is a cheap way to make a snack taste better. As a result of this nutritional "race to the bottom," the processed food industry now provides consumers with an increasingly large range of cheap "empty calorie" foods. (Galbraith-Emamiand and Lobstein, 2013).

Obesity is both directly and indirectly linked to many major ailments and thus reduces an individual's life expectancy while increasing the strain on national health and social resources. Also, children and teenagers are the main consumers of salty and "empty calorie" snacks; as consumers get older, their consumption of salty snacks decreases. Because obesity has significant social costs and because protecting minors is a fundamental

duty of government, what should be the public health policy response to the recent rise in childhood obesity rates, and what changes should the ten companies that own the processed food industry make or be required to make?

The most relevant precedents for using public policy to address obesity are those that were set by the efforts made first in the United States 30–40 years ago to discourage smoking and other forms of tobacco consumption. Like obesity, tobacco use is linked by abundant evidence gathered over decades to a list of major ailments that collectively create a significant social burden. Over the last 30 years, governments have overridden concerns from advocates for personal liberties, as well as protests from the tobacco industry, and endeavored to reduce tobacco use through a two-pronged approach: (a) change public perceptions about the dangers of smoking through mass-media messaging campaigns, warning labels on cigarette packs, bans on tobacco product advertisements, etc., and b) disincentivize consumption through taxes on tobacco products, fines for smoking in certain areas, and other measures aimed at making smoking less socially acceptable and socially acceptable places to smoke inconvenient to access. This has been a generally successful strategy as levels of smoking in many countries are now in decline.

The efforts made 30–40 years ago to address smoking as a public health challenge are analogous to the efforts being made to address obesity today as both efforts are fundamentally about confronting consumer behavior that chooses immediate gratification over avoiding mid- or long-term risks to both oneself and society. Better understanding what drives this aspect of consumer behavior is thus necessary for crafting effective policy proposals. This research assessed the present level of consumer awareness concerning what snack-foods are in terms of ingredients, nutritional value, and health effects, and how this knowledge or lack of knowledge affects the decisions consumers make. Sigmund Freud's *id* (i.e. the desire for immediate pleasure) vs. *super-ego* (i.e. what I know society expects me to do and what I believe is best for me in the long-term), or, more simply, "what I know I should do compared to what I actually do" conflict was used here to conceptualize the common consumer's decision-making process. This conceptualization helps to explain why consumers continue to consume unhealthy products despite knowing that doing so is unhealthy. (Agbonifoh, Ogwo, Nnolim, and Nkamnebe, 2007; Blythe, 2008; Kassarjian, 1971; Williams, 1981).

Packaged snacks are classified as either internationally packaged or locally packaged. In Thailand, internationally packaged salty snacks (often referred to as "kiddy snacks"), including fried potato chips, fried packaged snacks, and prawn crackers, collectively compose Thailand's most popular category of snack with 300,000 tons consumed per year (AC Nielsen Thailand, 2012).

The Thai government cannot reasonably ban empty calorie snack items, but can it make or should it make them less attractive to deter consumption? Also, is the processed food industry liable for damages caused by intransigence and continuing to sell products that it knows consumers eat in unhealthy amounts, or are they protected by the consumer "right to choose" argument?

Debates about the ethics surrounding these questions and predictions of the potential efficacies of different public policy options can be improved with better knowledge of the average consumer's knowledge and if and how this knowledge affects behavior.

OBJECTIVES OF THE STUDY

The purpose of this study is to provide insights into the psychological dynamics driving the consumption of snack foods and thus raise the caliber of discussions about how to address the recent rise in obesity rates. More specifically, this study is an attempt to gain insights into the knowledge/behavior dynamics by surveying teenagers in Bangkok about their snack food consumption habits and using Freud's concept of id–superego conflict to conceptualize the survey results. To support this overarching purpose, the following four main objectives were set:

1. characterize the packaged snack food consumption patterns of a representative sample of Bangkok's teenagers (ages 13 to 19 years);
2. quantitatively assess the amount and accuracy of the teenagers' knowledge of packaged snack foods;
3. assess the teenagers' general knowledge of food consumption, healthy eating habits, the nutritional value of packaged snacks, and the effects of consuming these snacks; and
4. understand if and why there is a conflict between what teenagers know about nutrition and health and how they choose to behave.

CONCEPTUAL FRAMEWORK

This research is based on two fundamental conceptual constructs in relation to packaged snack food consumption:

- the formation of attitudes and the use of information in their development, and
- the relationship between attitudes/knowledge and behavior.

Attitude formation is determined by information received and experiences gained. The teenagers in this study are likely to be heavily biased by years of exposure to advertisements and industry media campaigns. Personal experiences such as gaining weight or watching someone else gain weight during periods of excessive snack food consumption, however, are more likely to lead to skepticism of information originating from industry.

The second concept, which forms the conceptual core of this research, relates attitudes to behavior and assesses whether the two agree. Established research sources (Shchiffman and Kanuk, 2004) have demonstrated that one's attitude toward an object is translated into behaviors that are consistent with that attitude.

In this case, however, there is often a conflict between one's primordial desires (the id) and one's desire for success over the long-term via social acceptance (the superego), with the ego being the moderating influence. Does behavior follow attitude in such cases, and how does the id–superego conflict influence this apparently natural progression? (Blackwell, Miniard, and Engel, 2007; Schiffman and Kanuk, 2010; Solomon, 2011). The research model here is therefore the interlocking of behavior and the attitude formation that leads to this behavior (Blackwell et al., 2007; Schiffman and Kanuk, 2010).

Research Hypotheses

There are four major hypotheses associated with this research, although within each hypothesis there may be sub-hypotheses, which were determined as the research progressed.

Hypothesis 1: The majority of teenagers accurately understand how snack food consumption impacts health and no noticeable differences in awareness were observed amongst different demographics.
Hypothesis 2: Noticeable differences in awareness and knowledge of food consumption–related health issues were observed amongst different demographics.
Hypothesis 3: There is a positive relationship between awareness and knowledge associated with food consumption and health-related issues. (Consumers who are more aware and knowledgeable with reference to healthy eating consume fewer packaged snacks.)
Hypothesis 4: There will be significant differences in patterns of packaged snack food consumption amongst different demographics.

These four hypotheses are illustrated in the conceptual framework below.

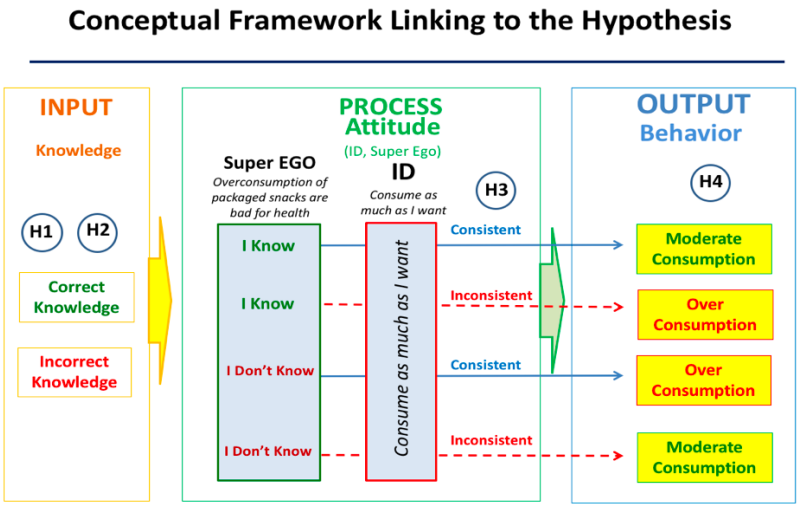

Figure 1. Conceptual framework incorporating both the decision-making process and Freudian theory hypotheses

LITERATURE REVIEW

Consumer Decision-Making Processes

Schiffman and Kanuk (1991, p. 550-551) stated that a decision is the action performed on two or more alternative choices and starts when there is a need or problem. These needs or problems vary from simple needs that occur frequently and can be fulfilled almost automatically, such as the need for food and the purchasing a pack of snacks (impulse purchase) to complex needs such as driving a car for several years and considering buying a new one to avoid higher repair expenses. Harrison (1991) indicated that there are different levels of decision making, the most basic being the individual acting to satisfy his or her own physiological needs.

Because decision making is complex and is both a conscious and unconscious process, research should be conducted to understand both its conscious as well as unconscious drivers. Schiffman and Kanuk (1991, p. 553) broke their consumer decision-making model into the phrases described below:

1. input components that consumers draw from external influences, or how sources of information about particular products influence consumer product-related values, attitudes, and behaviors;
2. psychologically driven processes (motivation, perception, learning, personality, and attitudes) and other processes such as need recognition, repurchased search, and evaluation of alternatives; and

3. the outputs related to the two post-decision activities of purchase behavior and post purchase evaluation.

Decision-making processes sometimes seem almost automatic and based on very little information, and in other cases, such as purchasing a new house, many days or weeks are spent gathering information and weighing options before the actual purchase happens (Solomon, 1991).

Consumers make three types of purchases: trial purchases, which are usually done by purchasing new brands of already-used products; repeat purchase, which happen when consumers are happy with the products they have purchased in the trail phase; and long-term commitment purchases, which involve long-lasting durable goods, such as refrigerators, washing machines, cars, etc. The decision-making process is made up of three stages, with the knowledge, time investment, and speed in each stage varying according to the risk of the purchase. Purchases of packaged snacks are usually done quickly and thus often referred to as impulse purchase.

Personality

Marketing literature has connected a consumer's decision-making behavior to that consumer's personality (Blackwell, Miniard, and Engel, 2007; Schiffman and Kanuk, 2010; Solomon, 2011). Personality shapes how an individual interacts with the external environment. Taste, preference, and values are indicative of a personality type, which is determined by unconscious drivers, environmental influences, and cognition (Myers, 1995; Burger, 2000; Fanzoi, 2000; Blythe, 2008).

Personality is difficult to define given its dynamic and diverse nature; therefore, no single generally accepted definition of the concept exists (Karsanrjian, 1971; Pierre, Harthem, and Dwight, 2011; Gangaijail, 2009). Blackwll, Miniard, and Engel (2007, p. 271) defined personality as " ... an individual's unique psychological markup, which consistently influences how a person responds to his or her environment," and Kotler and Keller (2009, p.197) defined it as " ... a set of distinguishing human psychological traits that lead to relatively consistent and enduring responses to environmental stimuli."

Shchiffman and Kanuk (2004, p. 120) defined personality as those inner psychological characteristics that both determine and reflect how a person responds to his or her environment. These inner traits distinguish one individual from another and affect the way consumers respond to different factors influencing choices and behaviors.

Schiffman and Kanuk (2004, p. 120) classified the nature of personality into three distinct properties:

1. personality reflects individual differences with no two individuals being exactly alike;
2. personality is consistent and enduring but an individual's consumption behavior can vary depending on changes in factors besides personality;

3. personality can be changed by major life events, such as the death of a loved one, or by other significant circumstances.

To better understand the construct of personality and apply relevant knowledge to consumer behavior and decision-making, marketers, scholars and researchers have relied on Freud's psychoanalytical theory. Research focused on how demographic and cultural variables influence consumer behavior has been conducted by scholars such as Evans and Berman (1995), Kucukemiroglu (1997), Schiffman & Kanuk (2010), Solomon (2011) and Pandey and Pandey (2012), with the limitations of such approaches acknowledged by the authors. Studies on personality are scarce and generally focused more on the development and nature of the theories of personality than on personality's explanatory and predictive power with respect to decision making and behavior.

Freudian Theory

Shchiffman and Kanuk (1991, p. 121-123) attributed the psycho-analytical theory of personality, or the belief that unconscious needs act as the impetus for different personality traits and behaviors, to Austrian neurologist Sigmund Freud. The psychoanalytic theory describes human personality in terms of three theoretical constructs: the *id*, the *superego*, and the *ego*. The id is characterized as the collection of a person's primitive, instinctual biological desires and raw needs, such as hunger, thirst, sex, aggression, etc., which seeks immediate gratification with little to no concern for the implications that could follow. The id is the underlying drive of all psychic energy (Kassarjian, 1971; Williams, 1981; Agbonifoh et al., 2007; Blythe, 2008; Schiffman and Kanuk, 2010).

The superego is conceptualized as an individual's expression of norms, or morals of social conduct. The superego ensures the individual's needs are fulfilled in ways that are socially acceptable and inhibits the impulsive forces of the id by voicing the social- and moral-driven impacts that could follow an action. "It defines what is morally right and influences the individual to strive for perfection rather than pleasure or reality and, in this sense, serves as an ethical constraint on behavior" (Williams, 1981, p. 135).

The ego is an individual's conscious control balancing out the primitive and impulsive needs of the id with the moral and social constraints of the superego. The ego considers the costs and benefits of an action in terms of what is socially acceptable before deciding to act upon or to abandon impulses. The conflict between the id and superego is illustrated through the example below.

When an individual is choosing a snack to consume, assuming that there is no knowledge gap regarding the impacts that packaged snacks have on obesity and weight gain, there is a conflict between the id and superego: the id dominates when the individual knows that snacking will contribute to weight gain but still chooses to consume.

Personality theories have been applied to studies of consumer decision making with varying degrees of success. Psychoanalytic theory is more relevant to consumer behavior analysts (Blackwell, Miniard and Engel, 2007; Schiffman and Kanuk, 2010). Many scholars find psychoanalytic theory useful for predicting and explaining consumer behavior, and information and principles derived from this theory have been applied to research on product development, marketing communications, and market segmentation. Psychoanalytic theory has also been useful in motivational research by helping to uncover deeper reasons consumers choose certain products and services (Solomon, 2011).

Factors Influencing Teens' Consumption Choices

Eating behavior is complex and influenced by many factors including food taste, time, perceived benefits of eating certain foods, social influences from parents and peers, etc. (Neumark-Sztainter et al., 1999)

Taste – Taste is cited as one of the most crucial factors driving food choice and eating behavior among teens. (Neumark-Szainer et al.,1991). Some studies show that teens' expectations about the short-term consequences of consumption, such as taste and pleasure, are more important than expectations about longer-term outcomes when choosing foods (Brug & Klepp,2007).

Cost – Teens often buy their own foods (Langley-Evans, 2009) and cost can affect their food choices (Neumark-Sztainer et al., 1999). Studies have shown an association between price and food choice. Satisfying an appetite with fast foods is cheaper than satisfying it with healthier alternatives (Neumark-Sztainer et al., 1991).

Time and Convenience – Teens are constantly on the go and spend more than 28 hours per day on activities via multitasking (Synovate, 2010). They are involved in academic and extracurricular activities such as sports, after school clubs, and other social programs, leaving them little time to sit and enjoy a meal (Stang et al, 2008). This leads to teens often purchasing fast and easy food without thinking about the health-related costs and benefits of doing so (Langley-Evans, 2009). A study by Neumark-Sztainer and colleagues (1991) found that teens prefer convenient foods or foods that are easy to find, that do not demand preparation and cleaning, and that can be brought onto the bus or kept in a backpack easily.

Health Concerns – A healthy diet does not rate highly on American teens' lists of concerns because they think that they are too young to be concerned about their health and that they will worry about their health when they are older and have diseases such as heart disease (Neumark-Sztainer et al., 1999). Health concerns or expectations of health-related out-

comes do not appear to be a significant factor for teens when making decisions about food choices (Brug & Klepp, 2007).

Knowledge – Giskes et al. (2005) studied teens' knowledge in relation to eating behaviors and their actual eating behaviors by conducting qualitative interviews of 29 Australian teens, including males and females ranging in age from 13 to 15 years, on their beliefs and perceptions related to health and nutrition. The findings suggest that a minority of the teens lack proper knowledge of diet-related diseases. Responses from a survey of American teens, on the other hand, indicate that more information on healthy eating is needed for more widespread healthy eating behavior (McGee et al. 2008).

Marketing & Mass Media – Teens are the primary target of snack food company advertising from various media sources (Brown & Witherspoon, 2002) and are often aware of the brands available to them even in the pre-teenage years before they have spending power. " … as many as one in three of the tweens we interviewed had already developed a strong emotional bond with adult brands … this allegiance was likely to develop further during the teen years and on into adulthood" (Millwardbrown, 2013).

Body Image – A study of 18,177 American teens found that those who perceived themselves as overweight were significantly more likely to report eating nothing for breakfast to control their weight (Videon and Manning, 2003) and some teens who make decisions to lose weight starve themselves (Giskes et al., 2005). Beauty standards from media exposure influence concerns about being too fat, too skinny, too short, etc., and these concerns are associated with eating behaviors and food choices (Neumark-Sztainer et al., 1999).

Parents and Family – The frequency of family meals was positively correlated with consumption of fresh fruits, vegetables, and grains, and negatively correlated with soft drink consumption (Neumark-Sztainer et al., 2003). Parents who ate fresh fruits and vegetables generally had children who did the same (Pearson et al., 2008), and vice versa if the parent did not practice healthy consumption because healthier alternatives would not be easily available at the child's home (Giskes et al., 2005). Parental concerns about healthy eating reported by teens' mothers showed no association with teens' consumptive behavior, but teens' perceptions of parents' concerns for healthy eating as positively associated with teens consuming more fruit and vegetables (Boutelle, et al., 2007).

Friends – A teen's snack and soft drink consumption were associated with the related consumption of his or her peers (Wouters et al., 2010). A study of American teens indicated that friends' eating behaviors have a positive influence on an individual teen's fat and fiber intake (Stanton et al., 2007)

Availability and Accessibility of Food Choices – Having both readily accessible fruits and vegetables at home (Pearson, Biddle, and Gorely, 2008) and readily accessible snacks and soft drinks at school (Wouters et al., 2010) are associated with higher rates of teen fruit and vegetable and snack and soft drink consumption, respectively.

Healthy Eating and Government Recommendations

Teenagers' Eating Behaviors

Healthy eating should be promoted in all stages of life, but doing so is essential during childhood and adolescence (Brug and Klepp, 2007). Adolescence is the stage between childhood and adulthood (Langley-Evans, 2009) from ages 11 to 21 (Stang, Feldman, and Story, 2008; Trew et al., 2006). Adolescence is a key period for growth and development and when nutritional intake peaks (Brug and Klepp, 2007; Langley-Evans, 2009). Many studies have shown that adolescents have little concern for their health because they think that they are too young to worry about having health conditions and will start worrying when conditions, such as high blood pressure, happen to them. (Neumark-Sztainer et al., 1999). Adolescents, especially in their early teenage years, seek to be more individualistic and independent from their families. Eating behaviors developed in the early teen years are likely to continue into adulthood (Brugg and Klepp, 2007; Ogden, 2010; Trew et al., 2006; World Health Organization, 2005). Thus, establishing healthy eating habits in this period is crucial because doing so may shape lifelong dietary preferences and stem dietary-related diseases in adulthood. (Brugg and Klepp, 2007).

RESEARCH METHODOLOGY

Data Collection

This dissertation focused on only teenage consumers in Bangkok, Thailand. For this research, a target total of 400 subjects, male or female, ages 13–19, were randomly asked to fill out a paper questionnaire with 4 interview stations set up around Bangkok in locations that teens often frequently visited:

1. Siam Square
2. Central Pinklao Shopping Mall
3. The Mall Shopping Mall Bangkapi
4. Central Ladprao Shopping Mall

The process began with two screening questions: 1) What is your age? and 2) Are you a resident of Bangkok or are currently visiting from another province? If the respondent stated that they were between the ages of 13 and 19 and answered yes to question 2, then the questionnaire would be presented.

A total of 400 questionnaires were handed out and collected, meeting the target of completed questionnaires needed for this study.

Questionnaire Design

An extensive literature review on personality, Freudian theory, consumer behavior, factors influencing teens choices, and the knowledge associated with food consumption preceded the development of the questionnaire. The items in the questionnaire have standardized statements that have been tested by past research studies for reliability and validity and ad hoc statements were used to tailor the questionnaire to the social and cultural contexts of the research population. A Cronbach's Alpha of 0.7 or above indicates a high reliability of the data, a Cronbach's Alpha of 0.55-0.7 is acceptable and modification of the questionnaire is required if the Cronbach is below 0.54 (Saunders, Lewis, & Thornhill, 2012, p. 430). The set of data received a Cronbach's Alpha (Reliability) of 0.73 > 0.7 (believability, likeability, behavior). Therefore, the data is at an acceptable level to continue the analysis.

The questionnaire was divided into 4 parts, as follows:

Part 1: Personal Information

Personal information was collected by using multiple choice questions and also by asking respondents to fill in their personal information to gather and measure socio-demographic information. We collected the following: names, contact information, gender, age, weight and height, education level, and domestic living arrangements. The data will be used to analyze the behaviors of different teens demographics to see differences or similarities between the groups.

Part 2: Consumption Behavior

This part aimed to collect data and measure consumption behavior using the conceptual framework in the output stage of the conceptual model (Figure 1). This section is used to quantify the behavior of the respondents by collecting data on snack consumption frequency and amount. The frequency will be measured by time(s) consumed per day, week, or month. The average amount consumed per time will be measured by how much was spent since in Thailand snacks are sold in 5 baht (12-20 g), 10 baht (24-45 g), 20 baht (48-90 g), 30 baht (72-135 g), and more than 30 baht (140+ g) packs. The data in part 2 will help illustrate the patterns of packaged snacks consumption and, combined with the data from part 1 of the questionnaire, will allow us to see patterns of usage in different subgroups.

Part 3: Perceptions of Snacks

Part 3 of the questionnaire is structured to measure perceptions of packaged snack foods to see if consumers have the correct knowledge of the health effects of packaged snacks foods. Fresh fruits and other types of snacks are used in the questionnaire to determine how packaged snacks are perceived relative to other snacks in terms of nutritional quality, with fresh fruits and packaged snacks at different ends of the health spectrum. The scoring will use a five-point Likert scale

with 1 being strongly disagree and 5 being strongly agree to measure different attitudes towards packaged snacks.

Part 4: Health and Obesity Knowledge

Part 4 of the questionnaire quantifies current self-perceptions knowledge of snacks and health-related information pertaining to packaged snacks and also asks respondents to classify their own weight profile into 1) very overweight, 2) somewhat overweight, 3) just right, 4) underweight, or 5) very much underweight. This part of the questionnaire helps to further gather data on the teens' egos and teenagers' perceptions towards packaged snacks.

RESULTS

Demographic Analysis

Of 400 respondents, 261 (65.3%) were male and 139 (34.70%) were female, 132 (33%) were 15 or 16 years old Most of weigh between 50-59 kg. for 147 persons (36.75%) followed by 60-69 kg. for 132 person (33%), most of height between 160-169 cm. for 209 persons (52.25%) followed by 170-179 cm. for 121 persons (30.25%), most of BMI index at normal as 18.5-24.9 for 242 persons (60.50%) followed by less than 18.5 (weight less than standard) for 93 persons (23.3%)**.** (Representing Thai parameters noting all respondents are from Bangkok National Statistics Office, 2010). The sample collected for this study is a good representation of the teen population in Bangkok.

The majority of teenage respondents had a BMI index in the range of 18.5-24.9 (normal) for 206 persons 52%, followed by < 18.5 (underweight) representing 76 persons 19% and thirdly between 30-34.9 (obese) 69 persons representing 17% and 25-29.9 (overweight) 49 persons or 12% respectively.

The data shows that 17 percent of the respondent are overweight or obese compared to the Thai adult obesity rate of 32.2 percent. This gap is perhaps due to adults having less parental control, more freedom of choice in terms of consumption, more exposure to different food choices, or more sedentary lifestyles than adolescents.

Behavior and Consumption Analysis

The majority of both males and females consume packaged snacks less that once per day. The chi-square test indicates that the frequency of consumption is significantly correlated to consumers between the gender groups (X^2=1.111, Sig.=0.025<0.05)

A plurality of respondents, 194 people or 48.5 percent of those surveyed, consume packaged snacks three times per week. The majority of respondents regularly purchase snacks in 20-baht-value packages (72-135 g), which contain over 2.5 times the recommended calories suggested per serving. (Ministry of Public Health,1998). According to the Thai

RDI (Recommended Daily Intake), one 20-baht pack contains 2.5 serving size of calories. (Ministry of Public Health, 1998). The results also show that as teens get older they consume packaged snacks less frequently, but consume bigger sizes of packaged snacks per occasion.

The results also suggest that most of the the BMIs surprisingly fall within the heavy total consumption range (Underweight BMI, N=41, %=53.9%, Normal BMI, N=95, %=46.1%, Overweight BMI, N=30, %=61.2%, Obese BMI N=28, %=40.6.9%,) and across the male BMI groups the majority of users are all heavy users (Underweight BMI, N=21, %=49.0). In the female sample, we see differences in the consumption behaviors between different BMI groups, with the majority of females in the underweight and overweight BMI groups being heavy users. This could be due to the fact that male views towards nutrition are less complicated and more pleasure orientated than the female views, which are more ambivalent. Females are less satisfied with their weight and more likely to engage in restrained eating or dieting and much more likely to have eating disorders. Men, however, control their weight with exercise and diets only for health reasons (Kiefer et al., 2005).

Knowledge and Attitude Analysis

The findings illustrate females are more aware (47.2%) than males (39.5%) on the impacts of packaged snacks towards health and in both male and female groups the awareness of the impact of packaged snacks decreased with age. It seems as teens get older they have other interests and seem to be less aware about the impacts that packaged snacks have on their health. Those in the underweight BMI categories are more aware of the health impacts of packaged snacks (Underweight BMI, N=36, %=47.6 while those in the overweight and obese BMI categories are more likely to be only slightly aware or not aware of the health impacts of packaged snacks (Overweight BMI, N=32, %=65.3, Obese BMI, N=31, %=44.9%). The chi-square test indicates that awareness is correlated to BMI groups and is significant (X^2=0.135, Sig.=0.007<0.05). This is intuitive as teens with more awareness of the health impacts would be more likely to consume fewer packaged snacks and hence have a lower BMI.

The nutrition facts on the snack labels was the most frequently cited source of information on health impact of packaged snacks followed by online sources (Facebook, Instagram, Twitter (18.99%) and other Internet sources (15.73%)). The findings are in line with the behavior of teens with convenient and constant access to the Internet via smartphones. Ninety-two percent of teens go online daily, including 24% who say they go online "almost constantly," and 56% of teens go online several times per day (Lenhart, Amanda, 2015). Parents, family, and friends have less influence than a source of information. If we are to educate teens on the health benefits and impacts of packaged snacks foods on

health, then going online will be a key strategy to educate teens.

Hypotheses Testing

Is there congruence between knowledge and behavior of teens who consume packaged snack foods? The results show that teens acquire proper nutrition knowledge through back-of-the-pack reading, Facebook and other Internet sources, magazines and similar print, government campaigns, friends, and family. However, knowledge of healthy eating has no significance correlation with behavior, Thai teens tend to choose snacks based on what they want to eat or by considering only some factors such as the quantity of sugar or fat. Yet, this does not mean that they do not like eating sweet or fatty snacks because those attributes have a low impact towards Thai teens' attitudes. To answer the question "Does behavior follow attitude?," there is a possibility that attitude may have no impact towards snack consumption as it can be seen that Thai teens still choose to eat packaged snacks although they know that those snacks have few health advantages. But attitude is a multi-faceted entity, and while attitudes towards health may be followed by healthy behavior, there may be other aspects at work. Mary, Neumark-Stainer and Simone (2002) summarized the four levels of influence impacting teens eating behavior and food choices: 1) individual or intrapersonal influences (e.g. psychosocial or biological); 2) interpersonal or social environment–based influences (e.g. family and peers); 3) physical environment or community setting–based influences (e.g. schools, fast food outlets, convenience stores); and 4) macrosystem or societal influences (e.g., mass media, marketing and advertising, social and cultural norms). The aggregate influence of these four levels may work to encourage teenagers to behave contradictorily to their health attitudes.

Hypothesis 1: The majority of teenagers accurately understand how snack food consumption impacts health and no noticeable differences in awareness were observed amongst different demographics.

This hypothesis was assessed using multiple regression. The model was significant ($F = 1370.743$, $p = .000$). It was also highly fitted (adj. r-square = .873), indicating that 87.3% of the variance in understanding of health effects is related to variance in understanding of effect of fat and sugar. Examination of the coefficients show that both fat effects ($t = 15.947$, $p = .000$) and sugar effects ($t = 8.433$, $p = .000$) were significant although the constant ($t = 1.877$, $p = .0610$) was not. The regression equation for this regression model was:

$$Y_{Awareness\ of\ health\ implications} = .099 + .628_{Fat\ implications} + .342_{Sugar\ implications}$$

Effects were positive, although perceived health implications of fat contributed nearly twice as much as the perceived health implications of

sugar. These results show that the overall perceived health implications of packaged snack foods are consistent with the participants' perceptions of the implications of the fat and sugar content of these foods, and there is thus no evidence of misunderstanding of the health implications.
Therefore, **H1 can be supported.**

Hypothesis 2: Noticeable differences in awareness and knowledge of food consumption–related health issues were observed amongst different demographics.

Hypothesis 2 was tested using single regression, with individual regressions being run by sub-samples for gender (male and female) and age groups (13–14 years, 15–16 years, and 17–19 years).

Examining the outcome by gender, both the male group (F = 70.509, p = .000) and the female group (F = 94.741, p = .000) were significant. However, the model was a better fit for the female group (adj. r-square = .405) than it was for the male group (adj. r-square = .211). About 40.5% of variance in consumption was explained for female respondents, compared to 21.1% of variance in consumption for female respondents. The standardized regression equations for each group were:

$$Z_{Snack\ consumption\ (Male)} = -.463X_{Awareness\ of\ health\ implications\ (Male)}$$
$$Z_{Snack\ consumption\ (Female)} = -1.111X_{Awareness\ of\ health\ implications\ (Female)}$$

Thus, by gender, there is a significant difference, with female respondents showing a much stronger negative effect of awareness of health implications on consumption compared to male respondents.

In terms of age, once again all three models were significant, including 13–14 years (F = 107.539, p = .000), 15–16 years (F = 5.847, p = .017), and 17–19 years (F = 45.249, p = .000). However, goodness of fit varied widely. The strongest effect was seen for 13–14 years (adj. r-square = .449), followed by 17–19 years (adj. r-square = .258) and 15–16 years (adj. r-square = .034). Thus, while 44.9% of variance in consumption was explained for 13–14-year-olds, only 3.4% of variance in consumption was explained for 15-16-year-olds. The regression equations for each group were:

$$Z_{Snack\ consumption\ (13-14)} = -1.322X_{Awareness\ of\ health\ implications\ (13-14)}$$
$$Z_{Snack\ consumption\ (15-16)} = -.333X_{Awareness\ of\ health\ implications\ (15-16)}$$
$$Z_{Snack\ consumption\ (17-19)} = -.617X_{Awareness\ of\ health\ implications\ (17-19)}$$

Thus, there were also differences related to age. The 13–14-year-old demographic had the highest effect of information about health implications on consumption, followed by the 17–19- year-old demographic. The 15–16-year-old demographic had almost no effect. Awareness of health impacts was generated from home environment and school, but it might

change in the transition from childhood to teenagers (Wilke J.C. van Ansem, 2015).

As both gender and age showed significant differences, **H2 can be supported.**

Hypothesis 3: There is a positive relationship between awareness and knowledge associated with food consumption and health-related issues. (Consumers who are more aware and knowledgeable with reference to healthy eating consume fewer packaged snacks.)

Hypothesis 2 was tested using single regression. The model summary shows a moderate goodness of fit (adj. r-square = .294), indicating that 29.4% of the variance in the frequency of consumption of packaged snacks was predicted by variance in awareness of the health benefits and implications of consuming packaged snacks. The model was significant (F = 167.366, p = .000). The coefficients showed that there was a negative relationship, with the regression relationship modelled as follows:

$$Y_{Packaged\ snack\ consumption\ frequency} = 6.236 - .916X_{Awareness\ of\ health\ implications\ of\ packaged\ snacks}$$

Awareness of the health implications of packaged snack foods had a negative effect on the frequency of packaged snack consumption. However, this effect is only moderate, explaining less than 30% of variance in consumption patterns. This means that there is considerable variance remaining to be explained, which was not measured here.

Thus, **H3 can be supported.**

Hypothesis 4: There will be significant differences in patterns of packaged snack food consumption amongst different demographics.

This hypothesis was tested using chi-square tests, with demographic differences including gender and age tested. Chi-square results for gender did show a significant difference (χ^2 = 1.11, p = .025). The cross-tabulation shows that male respondents generally consumed packaged snack foods more frequently than female respondents, with 85.6% of female respondents consuming packaged snack foods less than once per week compared to 77.4% of male respondents. Thus, male respondents are generally more likely than female respondents to consume snack foods frequently.

The difference in age distribution was not significant (χ^2 = -0.411, p = 0.41). Examination of the cross-tabulation shows that in general, older respondents consumed snack foods less frequently than younger respondents. While 82.8% of those aged 17 to 19 years consumed packaged snack foods less than once per week, only 78.0% of those aged 13 to 14 years did so. Conversely, 18.2% of those aged 13 to 14 years consumed snack foods once per day, while only 14.4% of those aged 17 to 19 did so.

The two genders showed significantly different frequencies of pack-

aged snack food consumption, but different ages did not. According to Solomon (1991), older teenagers were less subject to controls from external environmental influences and thus their consumption choices were based more on their personal preferences or their unconscious decision-making. This study did not show a significant difference, however, so **H4 is not supported.**

CONCLUSION

This study focused only on teens in Bangkok, Thailand. Further studies should be conducted in other regions of Thailand and include other age groups. Healthy eating should be promoted in all stages of life, but establishing healthy eating habits during adolescence may develop lifelong dietary preferences that will prevent dietary related disease in adulthood. (Brug& Klepp,2007). The most effective way to communicate the health impacts of packaged snacks to teens is through back-of-packaging messaging and online sources.

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