

What do Women Eat?

**A Comparative Content Analysis of Food Groups and Advertising Claims appearing in
Food Advertisements found in Popular Magazines for Women**

Susan Shuo Dong

University of California Los Angeles

June 2010

Abstract

In light of the ongoing global health crisis, the present study aimed to quantify the nature and extent of food advertisements presented to female consumers in popular magazines. This study examined 137 issues of 12 popular magazines for women published in 2009. Food advertisements found in three genres of women's magazines- food, lifestyle, and health & fitness, were classified by food group and advertising claim type. A content analysis revealed "fats, oils, and sweets" to be the most frequently advertised food group across all magazine genres. However, the second most frequently advertised food groups varied depending on the magazine genre. Although it was expected that claims highlighting weight loss and emotional associations would be used to attract female audiences, claims emphasizing taste was found to be the most frequently used among all magazine genres, followed by claims emphasizing the reduction or elimination of substances, such as fat and calories. Differences in the type of food products advertised and advertising claims used in the three different genres of magazine pertain to readers and consumers with different interests. Study results complement existing research on food advertising, specifically in print advertising targeting female audiences. Understanding underlying sources that perpetuate the current health epidemic is an important step towards a healthier society. Future studies should investigate in the direct influence specific advertisements may have on its targeted audience.

What do Women Eat? A Comparative Content Analysis of Food Groups and Advertising Claims Appearing in Food Advertisements found in Popular Magazines for Women

Food is one of the essential sources required to sustain life. Food nourishes bodies and provides humans with energy that enables movement and other bodily functions. Since the industrial revolution, technological advances have allowed for increased availability of food. Over the years, modern science has discovered various techniques to preserve food, produce packaged processed food, and improve flavors of food. However, in addition to the increased convenience and abundance of large varieties of foods, long term consequences of overindulgence and its associated negative health impacts have become progressively more prevalent in today's society.

As consumers face endless decisions in their everyday lives, they are influenced by many external sources. Not only do friends, family, and the environment affect people's choices of food, activities, and behaviors, the mass media also plays a dominant role in consumers' decision making process. The mass media bombards consumers with endless messages about what is good, what is bad, what is healthy, what is not, and inevitably affects consumers' decision about what to consume. As the incidence of diet-related health problems continue to rise, nutrition labeling and health claims contribute greatly to consumer's purchasing decisions (Drichoutis, Lazaridia, & Nayga, 2006). A review of existing research on consumers' use of nutritional labeling, revealed that nutritional labels on food products influence purchasing decisions because consumers want to avoid harmful nutrients, and thus use labels to make judgments and form perceptions about various products (Drichoutis et al., 2006). While some studies have shown that use of nutritional labels affect dietary patterns, leading to healthier food choices and reduced intake of unhealthy products (Drichoutis et al., 2006), recent studies have also indicated consumers' misuse of nutritional labels and advertised health claims (Wansink & Chandon,

2007). Consumers experience informational overload as a result of the overwhelming exposure to various advertisements. In order to make sense of all the information regarding health and nutrition, consumers adopt simplifying strategies to make food choices easier (Rozin, Ashmore & Markwith, 1996).

Meanwhile, advertisers must adapt to consumer's needs and preferences for healthier food alternatives. In attempting to appeal to various audiences, advertisers use different strategies and appeals to promote food products. When there are 30 different varieties of breakfast cereals to choose from at the grocery store, knowledge of nutrition and risk-preventing substances are useful to help consumers make each choice. Consumers acquire such knowledge through various outlets, including the mass media. Since the primary food-shopper in the majority of American household are female, it is especially important to understand what advertising appeals are used to attract female shoppers. Thus, the present study aims to survey popular leisure magazines enjoyed by female audiences to determine the nature and extend of food products advertisements and associated claims used to appeal to female consumers. Analysis of advertising appeals and frequently promoted food products will promote understanding of underlying factors that contribute to the current global health issues.

Literature

Ongoing Health Crisis

Obesity has become a global health issue, and has reached epidemic proportions according to the World Health Organization (WHO, 2006). Projections in 2005 indicated that globally approximately 1.6 billions adults were overweight, and at least 400 million adults were clinically obese (WHO, 2006). Furthermore there were at least 20 million overweight children under the age of 5 in 2005 (WHO, 2006). Changes in society and in behavioral patterns of communities have led to the current epidemic. Modernization, economic growth, scientific

advancements, and globalization are just some of the major factors contributing to the global health crisis.

Obesity and weight related illness create additional risks for chronic diseases such as diabetes, cardiovascular diseases, hypertension, stroke, and certain forms of cancer (WHO, 2006). Considering the ongoing healthcare instability in the United States, those at risk for obesity and other related illnesses continue to face challenges in obtaining the proper care and facilities to treat their conditions. As health care bills are tossed around in Congress and the Senate, most recently the “Affordable Health Care for America Act” passed by the House of Representatives (2009), people are forced to deal with uncertainties in the future of their healthcare and personal wellness. Thus it has undeniably become crucial for both children and adults to gain more knowledge about nutrition and how to lead active and healthy lifestyles. While average consumers may not have control over the outcome of the healthcare debate, consumers do hold responsibility when making food choices.

Media Effects

The mass media influences people in various aspects of their daily lives. Images and messages communicated via various media platforms influence our behaviors, attitudes, experiences, and actions. Specifically, media messages and advertising channels influence consumers’ beliefs and attitudes toward various products. As a result, consumers make purchasing choices based on their perceptions, which are partly derived from their experiences and exposure to various products or product advertisements, either consciously or unconsciously (Drichoutis et al., 2006). Individual food preferences depend upon a complex system of different influences, including personal upbringing, cultural factors, media exposure, lifestyle, convenience, cost, etc (Michela & Contento, 1986). Advertising has been shown to play a significant role in one’s food choices and purchasing behaviors (Andrews, Burton, & Netemeyer,

2000). Food advertisements specifically have evolved greatly over the past few decades to adapt to cultural paradigms and increasing scientific knowledge regarding health and nutrition.

Advertisers and health experts have engaged in an ongoing debate about the value of health claims and health-related messages. There is a continuing struggle between messages that are meant to inform the public about important nutritional information and those that are used to entice consumers as an advertising strategy (Andrews et al., 2000). The burden falls on the Federal Trade Commission (FTC) to take responsibility for food advertising. Section 5 of the FTC Act prohibits "unfair or deceptive acts or practices," and in the case of food products, Sections 12 and 15 of the FTC Act prohibit "any false advertisement" that is "misleading in a material respect" (US Code of Federal Regulations, 1980).

Nutritional and Health Claims in Advertising

In 1998, the Federal Trade Commission (FTC) conducted a large-scale advertising copy test to "determine which of the various types of disclosures and warnings that appeared in the qualified ads would communicate most effectively information concerning the nutrient profile and health attitudes of the advertised product" (Murphy, Hoppock, & Rusk, 1998). The FTC study investigated the effects of three types of nutritional messages, messages that cast a "halo effect", messages portrayed as "substitution claims", and messages that take advantage of the "strength of science" (Murphy et al., 1998). The test results showed a significant "halo effect" concerning food products with both beneficial nutrients and risk-increasing nutrients; when there is no explicit information about the risk-increasing ingredient, health claims about the beneficial ingredient were shown to "cast a halo" over the product as a whole, conveying to consumers that there are no negative elements in the food's overall nutrient profile (Sims, 1999). In addition, "substitution claims" were used to promote food items with relatively low risk-increasing nutrients, but not low in enough to meet FDA approved definitions. Thus claims are made to

compare nutrient levels in product to others to create a skewed perception of health benefits (Sims, 1999). Researchers concluded that while consumers' perceptions about the health benefits of various products are often based on specific information indicated in health claims, prior beliefs also has a significant effect on consumers' decisions. When health claims included "new" information, consumers took more notice and demonstrated various effects (Sims, 1999).

Consumer Response to Nutritional and Health Claims

Furthermore, studies have shown that consumers prefer exposure to simplified information (Brucks, Mitchell, & Staelin, 1984) in order to avoid information overload. Using the conceptual framework of Information Processing Theory, researchers have found that nutrition knowledge plays a role in forming accurate product judgments (Brucks et al., 1984, Charny & Lewis, 1987). Charny and Lewis (1987) surveyed participants in the UK to examine the relationship between health knowledge and eating habits. Study results revealed that the amount of health knowledge was correlated with healthy changes in food consumptions. However, the survey also revealed inadequacies of health messages, emphasizing that more knowledge of nutrition information is needed to better understand nutrition labels and evaluate health claims (Charny & Lewis, 1987, Mazis & Raymond, 1997). After the implementation of the Nutrition Labeling Education Act in 1990, studies showed that college students in the U.S. reported to have greater knowledge of food labels, along with more favorable attitudes and increase use of labels when making food choices (Marietta, Welshimer, & Anderson, 1999). Whereas 70% of the greater population in the U.S. preferred to have more simple labels to ensure better understanding (Kristal, Levy, Patterson, Li & White, 1998), college students reported using some information on the labels more than others (Marietta et al., 1999). Although studies showed that use of nutrition labels was significantly associated with lower fat intake (Neuhouser, Kristal & Patterson, 1999), other researchers have found that consumers react with skepticism

and distrust in some nutrition claims (Marietta et al., 1999, Wansink, 2003). In an investigation of brief and full length health claims found on the front and the back of food product packaging, Wansink (2003) found that a combination of brief health claims on the front of packaging with the full length health claims on the back of packaging allowed consumers to more easily process the information with more trust. Adams and Geuen (2007) also studied the correlation between healthy or unhealthy slogans and their actual food product counterpart. Results demonstrated that consumers preferred advertisements with depictions of the health appeal congruent with the health perceptions of the product; healthy slogans promoted more positive attitudes and purchase intentions when used to advertise a health food item, just as when unhealthy slogans were used in relation to an unhealthy food item (Adams & Geuens, 2007). The results imply consumer distrust in unhealthy products that are advertised with a healthy slogan, or vice versa.

Misperceptions and Misuse of Nutritional and Health Claims

In the recent decades, more information about health and nutrition has circulated in light of current global health issues. The overwhelming quantities of and consumer bombardment with health claims and advertising campaigns have pushed consumers to find simpler alternatives (Rozin et al., 1996). Rozin et al. concluded that consumers have adopted simplifying strategies, heuristics, to make food choices easier, either by creating good/bad, healthy/unhealthy dichotomies or by developing “dose insensitivity”, a belief that if a food is harmful/unhealthy in high amounts that it is also harmful in small or trace amounts. This development of unhealthy attitudes towards nutrition is also evident in Schwartz and Borra’s (1997) work, a result of consumers’ obsessions with and confusions about various essential nutrients, which are evidence of misinformation from the food industry. Schwartz and Borra (1997) attributed the misconception held by consumers about dietary fat to the changing nutrition advice and confusions people absorb from the media. This sense of confusion and misperception about

various nutritional contents in food was evident when undergraduate college students rated the healthiness/unhealthiness of different foods (Carels, Konrad, & Harper, 1997). Calories were systematically underestimated in foods that were perceived to be healthy or promoting weight loss, whereas calories in foods perceived as unhealthy or promoting weight gain were significantly overestimated (Carels et al., 1997).

Conclusions and generalizations drawn by consumers beyond specific information provided by advertisements appear to be common. Andrews, Netemeyer and Burton (1998) attributed the tendency to generalize based on nutrient claims to Activation Theory (Collins & Loftus, 1975) and information availability and accessibility (Lynch & Srull, 1982), concluding that when consumers are exposed to beneficial health content claims, they are more likely to access other related nutrient claims first, rather than less accessible, non-beneficial health concepts. Andrew et al. (2000) further explained that when a concept in the consumer's memory or health knowledge repertoire is primed with a health claims, such as "1/3 less salt", activation occurs by setting off other related components of the concept, thus allowing the consumer to associate the existing health claim with related others, such as "low in sodium", "healthy", "reduce chances of heart diseases". Furthermore, a study of nutritional claims also identified possible biased inferences when consumers are exposed to nutritional claims (Roe, Levy, & Derby, 1999). Researchers found existence of a halo effect, a "positivity bias", when consumers provide better product ratings based simply on the presence of a health claim, and a "magic bullet" effect, in which consumers attribute false health benefits to the product (Andrews, et al., 2000). Disclosures of risk-increasing health contents in products and increased nutrition knowledge have been shown to reduce misinterpretations of health content claims (Andrew et al., 2000).

In addition to health content claims that may lead consumers to overestimate or underestimate its perceived nutrition value, consumers have also been found to categorize food with stereotypical beliefs about the weight gain potential and satiation of various food items (Oakes, 2006). Oakes found that various food items have acquired various reputations that are not representative of their actual nutrient profiles. Findings indicated that food names with meats, dairy product, fats, and sweets were believed to be more filling compared to similar energy content food names consisting of fruits, vegetables, and grains (Oakes, 2006). Similar to the ideas proposed by Rozin et al. (1997), Oakes (2006) indicated that when consumers receive a possible message about a certain food or food group (fruits), the consumer tends to exaggerate the intended (health) messages. Chandon and Wansink (2007) further examined consumers' tendency to misinterpret the actual nutritional contents of various foods due to stereotypical preconceptions or perceived health claims. Chandon and Wansink (2007) referred to the "halo effect" of health claims when examining the consumption trends of main and side dishes at fast food restaurants, such as Subway, that claimed to provide "healthy" choices. Studies found that restaurants that claim to serve "health" foods lead consumers to underestimate the caloric density of the menu selection, and thus increase the chances of overeating due to undetected increase in energy uptake (Chandon & Wansink, 2007). The same trend was discovered regarding "low-fat" nutrition labels; foods labeled "low-fat" not only lead to increased consumption of foods perceived as relatively healthy but also reduced guilt associated with eating such snacks (Wansink & Chandon, 2007). As predicted by Provencher, Polivy and Herman (2009), perceptions about the healthiness of foods directly affected consumptions such that participants increased intake when given cookies that were believed to be healthy. This phenomenon of eating more foods that are perceived to be healthy may explain the ongoing crisis of obesity. Although advertisers may be adapting to the growing health-conscious needs of consumers,

changes in advertising claims may generate more confusion than effectiveness. A content analysis performed by Kim, Cheong, and Zheng (2009) found that taste and specific nutrition claims are the two dominating types of advertising claims in recent food advertisements. Data collected from selected women's magazines from 2006 revealed that a greater proportion of advertisements for functional foods used nutrition/health claims whereas a greater proportion of advertisements for hedonic foods used taste claims (Kim et al, 2009). However, when a quasi experiment was performed to examine the effectiveness of such claims in promoting functional versus hedonic foods, results were opposite of the advertising trends- nutrition/health claims were more effective when promoting hedonic foods whereas taste claims were more effective in promoting functional foods (Kim et al, 2009). Not only are advertising claims ineffective in helping consumers interpret accurate information about the nutritional contents of food, but specific advertising claims may have detrimental effects on the consumers' perceptions of foods, purchase intentions, and associated eating behaviors.

Gender Differences

While the need to sustain oneself is a universal requirement of all living organisms, food consumption attitudes and behaviors have been found to vary greatly by gender (Charles & Kerr, 1986, Chaiken & Pliner, 1987, Rolls, Fedoroff, & Guthrie, 1991, Rapport, Peters, Downey, McCann, & Huff-Corzine, 1993, Alexander & Tepper, 1995, Grogan, Bell, & Corner, 1997, Wardle et al, 2004, Oakes & Slotterback, 2001a-b). Findings revealed women to be more knowledgeable and to have a broader understanding of food health values than men (Rappoport et al., 1993). Rappoport et al. (1993) also found female college students to be more concerned about eating healthy foods and considering nutritional values when making food choices. Alexander and Tepper (1995) added that, although males and females were equally likely to change eating habits for body image maintenance purposes, women's restraint in food

consumption was more focused on weight reduction whereas men used restraint for weight control and other goals. A cross-national study conducted by Wardle et al. (2004) found that women are more likely to diet and attach greater importance to healthy eating as compared to men. Affected by their greater interest in weight control, women were more likely than men to report avoidance of high-fat foods, eating more fruit and vegetables and less salt, thus resulting in more attention to for healthy eating (Wardle et al, 2004).

Although studies report women to have more knowledge regarding health content and nutrition information, contradictory findings suggest that women make biased food decisions based on some nutrients and not other (Oakes & Slotterback, 2001a, Oakes & Slotterback, 2001c). Studies found females and males to consider different nutrient factors when determining the healthiness of various foods (Oakes & Slotterback, 2001a). Females as compared to males emphasized fat content and disregarded nutrition levels in their evaluation, rating lower fat foods with low levels of nutrients to be healthier than high-nutrient foods (Oakes and Slotterback, 2001a). Oakes and Slotterback (2001a) reported that women reasoned that foods low in fat, such as rice cakes, unbuttered popcorn, and pretzels, were more filling and either promoted or maintained thinness. In a related study, Oakes and Slotterback (2001c) discovered that females and males, when rating healthiness of food by their names, based judgments on foods' reputations rather than nutrient contents, rating dry Cheerios and Saltine crackers to be healthier and fried chicken and baked potato as less healthy. These findings suggested that women tend to demonstrate stronger biases about food names (Oakes & Slotterback, 2001c).

Female Consumers

Researchers have attributed the differences in eating behaviors and perceptions of foods partly to fundamental differences in gender roles and self presentation of femininity for women (Chaiken & Pliner, 1987, Mori, Chaiken, & Pliner, 1987). Chaiken and Pliner (1987) explained

“eating lightly” as a sex-role-behavior appropriate and often expected for women, thus women who eat smaller amounts of food are considered to portray more stereotypically feminine ideals. Not only are women who eat smaller amounts of food judged by their male counterparts as better looking and more feminine, women themselves restrict and control eating behaviors in order to preserve their socially accepted feminine identity (Mori et al., 1987). According to a review by Rolls, Fedoroff and Guthrie (1991), men and women have developed differing eating styles due to the process of socialization. Women are reported to suffer more food-related conflicts because of their constant battle between desired high-caloric sweets and the social pressures to eat in a feminine matter and maintain an attractive (thin) womanly figure (Charles & Kerr, 1986, Rolls, et al., 1991) Grogan, Bell and Corner (1997) introduced the Theory of Reasoned Action to explain gender differences in relation to eating sweet snacks. Women were found to be more ambivalent towards eating sweets as compared to men as a result of conflicting cultural messages, especially those communicated via advertising media (Grogan et al., 1997). Because women perceived eating sweets to be significantly less healthy (naughty) and more pleasant (nice), women exhibited consumption intentions that correlated with their attitudes and perceived social pressures, whereas men’s consumption intentions were not influenced by social pressures, but by their perception of health and pleasantness (Grogan et al., 1997).

Another factor that might contribute to gender differences in food choices and attitudes towards various foods is women’s greater concern about body image and weight control. Women report more concerns about weight and more attempts at weight control or dieting than men (Serdula et al, 1993, Wardle et al., 2004). Selecting lower fat and lower sugar foods are well known aspects of many weight-controlling diets (Kristal et al, 1999), and therefore food choices made by females may be influenced by weight control goals. Furthermore, studies have linked frequent exposure to media images to increased dissatisfaction with body image, which leads to

weight loss behaviors and eating disorders (Stice & Shaw, 2002). Field et al. (1999) reported that almost 70% of the 550 young females in the sample stated that pictures in magazines influence their conception of the “perfect” body shape, and over 45% indicated a motivation to lose weight inspired by magazine images. Field et al. (1999) concluded that adolescent girls who were frequent readers of women’s magazines were more likely to be influenced by the “perfect body”, to be dissatisfied with their own body image, to want to lose weight, and to diet.

Contributing to the apprehension towards sweets and fats demonstrated by women, advertisements targeted at women tend to illustrate exactly those “forbidden” foods (Lohmann & Kant, 2000). In a content analysis of advertising in six popular magazines conducted by Lohmann and Kant (2000), it was concluded that fats, oils, and sweet, along with breads, are the most frequently advertised food groups. Furthermore, fruits and vegetables were found to be the most underrepresented food groups in advertisements found in selected magazines (Lohmann & Kant, 2000). Since the proportions of food groups seen in advertisements did not appear to reflect recommended servings that support a healthy diet, it is important to further investigate the advertisements seen by consumers today in relation to the global health issue.

Women are one of the main demographics vulnerable to the strategic advertising campaigns of large food cooperation. Although women are credited with having more knowledge about health and nutrition in comparison to their male counterparts (Rappoport et al., 1993), it has also been revealed that consumers may be confused due information overload and conflicting messages in the media (Carels et al., 1997). Advertising strategies have been adapted to the new appreciation of health claims and consumers may be easily persuaded by inaccurate or misleading claims (Chandon & Wansink, 2007). Since food can serve as the source of both great pleasure and stress in the lives of female consumers (Grogan et al., 1997), health information and advertising claims may be reviewed and considered extensively by female consumers. Not only

are women more conscious of body images and dieting schemes (Wardle et al., 2004), social pressure may also influence food choices made by female consumers (Rolls, et al., 1991). With the recent appearance of obesity as one of the leading causes of death in the America, it has become increasing essential for female consumers to have knowledge and understanding of both nutrition and advertising claims used in promoting various aspects of health and nutrition.

Predictions

The present results aims to survey popular women's magazines for food advertisement in order to determine the nature and extent of the types of food and advertising claims used to target female consumers. Previous studies conducted by Lohmann and Kant (2000) determined that foods categorized as "fats, oils, and sweets" and "breads" were the most frequently advertised in magazines. Based on findings regarding women's intrinsic desires for sweet foods (Grogan et al., 1997), and on social stereotypes that women experience more cravings and urges for carbohydrates and sweets, it is hypothesized that:

H1) Of the 11 food groups, products belonging to the food groups of "grain" or "fats, oils, and sweets" will be advertised most frequently in women's magazines.

Since women are more conscious about the fat and sugar contents of various foods , due to concerns about weight control (Wardle et al., 2004), it is hypothesized that:

H2) In order to appeal to weight-conscious female consumers, food ads targeted at women will use claims that promote the reduced or eliminated quantities of fat, sugar, and calories more than other claim types.

Prior research by Grogan et al. (1997) have categorized various foods as "naughty", referring to high-density, low nutrition contents, and "nice" referring to feeling of comfort and pleasantness associated with the product. Thus it can be inferred that food advertisements will

use reduced “naughtiness” and increased “nice” associations with food in order to appeal to female consumers. It is hypothesized that:

H3) Advertising targeted at women will use claims that highlight emotional associations to the product, such as reduced guilt and increased pleasure, more than other claim types.

Because weight control and weight loss is a prevalent issue in the lives of female consumers (Wardle et al., 2004), it is hypothesized that:

H4) Ads targeted at women will use claims that emphasize the loss of weight/size as a body appearance benefit more than other claim types.

In addition to findings about trends in food types and claims types, another area of investigation is the context of the food advertisements. Of the numerous magazines popular among women, there are significant differences in the topics and interests of each magazine. Assuming that female consumers choose magazines based on different interests, it is probable that different food types and claim types will be used to pertain specifically to audiences with different interests. Thus two research questions are formed to examine the proposed phenomenon:

RQ1) Are certain food groups advertized in disproportional frequencies based on magazine genre?

RQ2) Do advertisements use difference types of claims to promote foods in order to pertain to various readers’ interests- food, lifestyle, or health & fitness?

Methodology

Sample

The data for this study was collected from magazines published in 2009 with female target audiences. A total of 12 of the most popular and representative magazines from three magazine genres- food, lifestyle, and health & fitness, were selected based on circulation data

from 2008 published by the Magazine Publishers of America. Four food magazines (*Cooking Light*, *Everyday with Rachel Ray*, *Bon Appétit*, *Food & Wine*), four women's lifestyle magazines (*Cosmopolitan*, *Ladies Home Journal*, *Good Housekeeping*, and *O, The Oprah Magazine*), and four women's health & fitness magazines (*Self*, *Shape*, *Fitness*, and *Women's Health*) were examined.

Design

All issues published in 2009 were examined for each magazine. Content analysis was used to examine advertising frequencies of various foods classified by food groups and specific advertising claims used to target and appeal to female audiences.

Coding of Advertisements

A specific data collection and analysis process was used to ensure the reliability of coding. A pilot study was initially performed to determine coding criteria for the advertisements. After examining food advertisements in the November issues of *Cooking Light*, *Ladies Home Journal*, and *Shape*, the following coding sheet was developed along with specific classification criteria:

Source: magazine title, magazine genre, issue date, and page number

Product name: commercial name of specific product

Product brand: specific brand or company that provides the products; includes parent company if applicable; (ex. The brand Chex Mix is owned by General Mills)

Product food group: advertised products were categorized by food groups based on the six groups of the Food Guide Pyramid established by the United States Department of Agriculture: grains; vegetables; fruits; dairy; proteins; fats, oils, and sweets. Five additional groups were added to include all other commercially sold products: non-alcoholic beverages; packaged meals,

sauces and condiments; soups; and snack foods. (Refer to Appendix A for full list of food groups)

Type of claims in advertisement: advertised claims were classified into twelve claim types: provides general health benefits; provides specific health benefits; provides general nutrition benefits; contains specific nutrients; minimizes or eliminates specific substances; mentions taste or ingredients; distinguishes product quality; distinguishes value of product; mentions weight loss and body appearance; mentions increase in muscle size and body appearance benefits; mentions emotions associated with food; mentions physical performance benefits. (Refer to Appendix B for full list of claim types)

Specific claims used: each individual advertised claim was extracted and recorded, example of specific claim are noted in Appendix B.

Transcription of main advertised claims: main message or slogan of advertisement was recorded, including the description but excluding the fine print information written in miniature font at the bottom or side of the page. Images of food, people, or other objects were not classified.

Other miscellaneous information: any other information or special notes relevant to study The decision to place each advertised food product and associated advertising claims into specified categories was made prior to data collection. Any advertising claims unaccounted for in the coding scheme were noted and coded as “Other”. A total of 137 issues of magazines from the 12 selected titles were examined.

Results

The frequencies of food advertisements classified into specific food groups and type of advertising claims were obtained for each issue of the 12 magazines. Data from each issue were combined for each magazine title and data from each magazine were further combined by

magazine genre for analysis. Differences among magazines or magazine genres in advertising frequency of food groups and/or claim types were tested using the Chi-Square test of independence at $p < 0.05$.

Frequency of Food Groups in Advertising

The study yielded a total of 2356 food advertisements. The hypothesis predicted that out of all the food groups advertised, products categorized as “grains” and “fats, oils, and sweets” are expected to be advertised the most. Figure 1 illustrates that “fats, oils and sweets” is the single most frequently advertised food group to a large degree, 17.8% of the total 2356 advertised products. On the other hand, “grains” does not stand out as a disproportionately advertised food group. In fact, “grains” along with “dairy”, “proteins”, “beverages”, “meals”, “condiments”, and “snacks” are advertised in proportion to each other, with no more than 1% of difference in their advertised frequencies (Table 1). It’s also notable that “vegetables” was the single most under-advertised food group, making up only 2.1% of all advertised food products across all magazines.

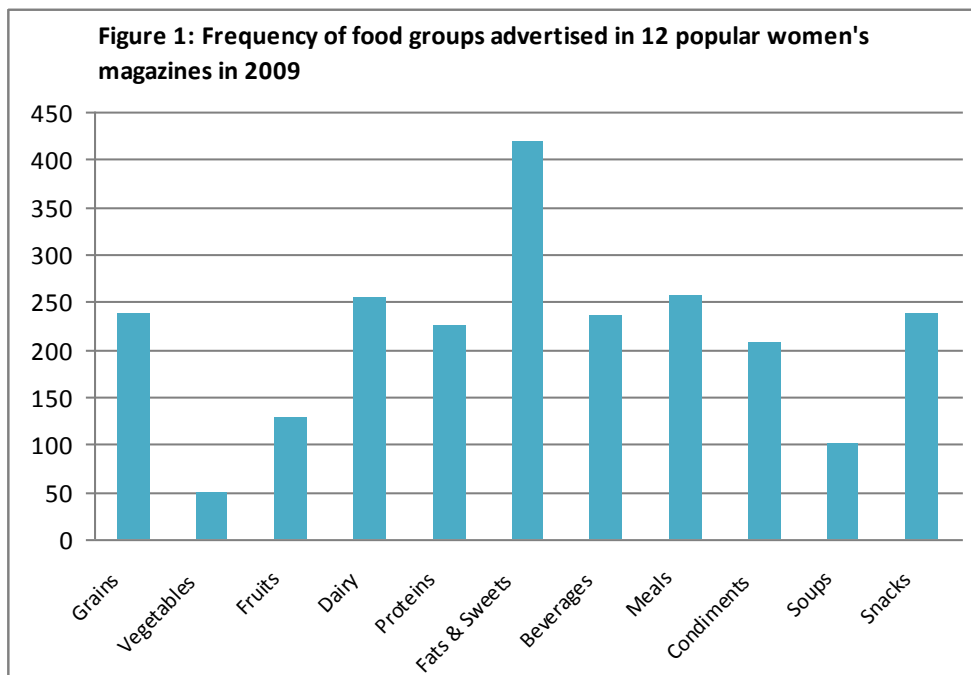


Table 1: Frequency and percentage of food groups advertised in 12 popular women's magazines in 2009		
	Frequency	Percent
Grains	237	10.1
Vegetables	50	2.1
Fruits	129	5.5
Dairy	254	10.8
Proteins	226	9.6
Fats, Oils, & Sweets	420	17.8
Beverages	236	10.0
Meals	258	11.0
Condiments	208	8.8
Soups	100	4.2
Snacks	238	10.1

Note: The total number of advertisements was 2356. The specific food products included in each food group is indicated in Appendix A.

Furthermore, the first research question (RQ1) was concerned with the influence of the magazine genre- food, lifestyle, and health & fitness, on the frequencies of advertised food groups. Are certain food groups advertised disproportionately due to the genre of its magazine source? Of the total number of advertisements, food, lifestyle, and health & fitness magazines accounted for 973, 793, and 590 advertisements, respectively. Table 2 indicates the number and percentage of advertisements for each food group by the three genres of magazine. The Chi-Square analysis revealed a significant difference in the advertising frequency of various food groups among the 3 magazine genres ($X^2= 112.4, p = 0.001$). While the most advertised food group in all three magazine genres was “fats and sweets”, the second most advertised food group differed between all three genres. The second most advertised food groups were “dairy” (13.2%) among food magazines, “meals” (13.4%) in the lifestyle genre, and “beverages” (13.4%) in the health & fitness genre. “Snacks” was the third more advertised food group among lifestyle and health & fitness magazines. Ironically, while the percentage of “fruits” advertised in health &

fitness magazines was greater than the percentage of “fruits” in food and lifestyle magazines added together, the percentage of “snacks” advertising in health & fitness magazines was also the greatest. The differences in the proportion of food groups advertised in each magazine genre suggest a possible difference in the target audience of those food groups or food products.

Food Group	Cooking		Lifestyle		Health & Fitness	
	No. of ads	%	No. of ads	%	No. of ads	%
Grains	103	10.6	63	10.7	71	9.0
Vegetables	30	3.1	3	0.5	17	2.1
Fruits	35	3.6	53	9.0	41	5.2
Dairy	128	13.2	68	11.5	58	7.3
Proteins	102	10.5	51	8.6	73	9.2
Fats, oils & sweets	159	16.3	104	17.6	157	19.8
Beverages	83	8.5	79	13.4	74	9.3
Meals	98	10.1	54	9.2	106	13.4
Condiments	118	12.1	20	3.4	70	8.8
Soups	36	3.7	19	3.2	45	5.7
Snacks	81	8.3	76	12.9	81	10.2
χ^2	112.4					
Df	20					
p	0.001					
Note: Total number of advertisements is 2356; Food magazines= 973, Lifestyle magazines= 793, Health & Fitness magazines= 590.						
No. of ads= frequency; %= percentage of total ads in the same magazine genre.						
Specific description of food products included in each food group is indicated in Appendix A.						

Frequency of Advertising Claims

A total of 5788 advertising claims were collected from the 2356 food advertisements. Hypotheses 2, 3, and 4 predict that the most frequently used advertising claims are reduction/elimination of a specific substance, emotional associations, and weight loss to benefit physical appearance, respectively. Contrary to expected results, Figure 2 illustrates that advertising claims mentioning taste, flavor, or ingredients are the most frequently used, making up more than a quarter of all advertising claims (Table 3). Not far from the prediction, reduction

or elimination of a specific substance is the second most frequently used claims (18.7%), followed by claims regarding product quality (16.1%) and claims mentions a specific nutrient (14.6%). These four advertising claims make up more than 75% of the total 5788 claims collected in from all the advertisements. Claims mentioning weight loss and emotional associations add up to less than 6% of all claims.

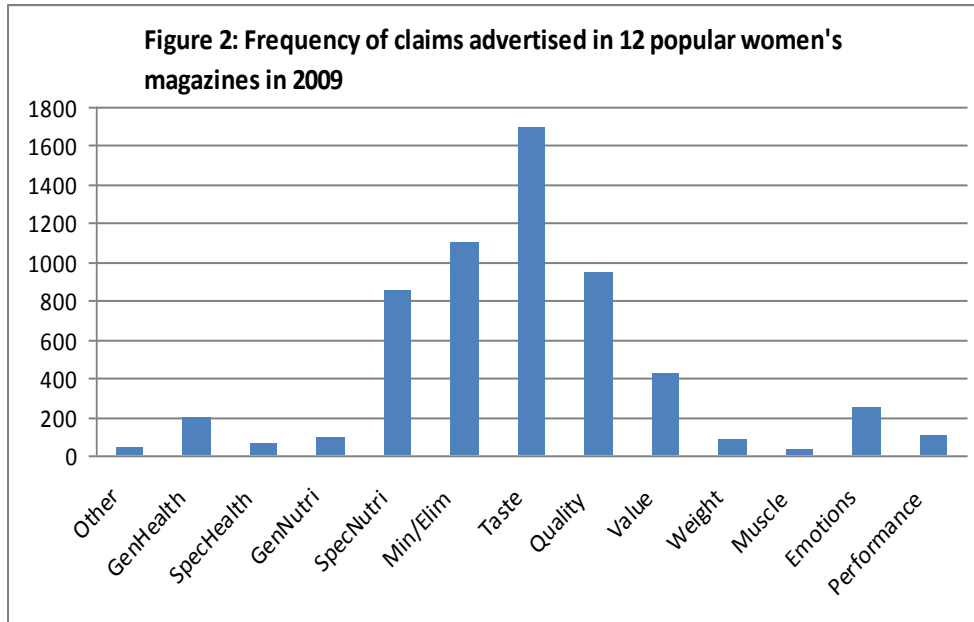


Table 3: Frequency and percentage of claims advertised in 12 popular women's magazines in 2009

Claim Type	Frequency	Percent
Other	39	.7
General health	200	3.4
Specific health	62	1.1
General nutrition	91	1.5
Specific nutrition	858	14.6
Reduction or elimination of substance	1097	18.7
Taste, flavor, or ingredient	1700	28.9
Quality	945	16.1
Value	425	7.2
Weight loss	82	1.4
Muscle growth	30	.5
Emotional association	250	4.3
Physical performance	98	1.7

Note: The total number of total claims was 5877. The specific description of each claim type is indicated in Appendix B.

RQ2 is concerned with the differences in claim types used to pertain to readers with different interests, as indicated by the magazine genre. Do the frequencies of advertising claims vary depending on the genre of the magazine in which the product is advertised? Table 4 lists the frequency and percentage of each claim type by the three genres of magazine. There was a significant difference in the frequency of various claim types among the three magazine genre ($\chi^2 = 290.4$, $p = 0.001$). Despite the differences in total frequencies of each claim type, general trends are consistent; the top four most frequently used claim types were the same across all three magazine genres- 1) mention of taste, flavor, or ingredients; 2) reduction/elimination of a specific substance; 3) product quality; 4) specific nutrient. However, the frequency of claims regarding general nutrition found in Health & Fitness magazines outnumbers those found in the other genres. Furthermore, the frequencies of claims mentioning weight loss, muscle growth, and physical performance advertised in Health & Fitness magazines are greater than the sum of frequencies of the same claims found in Food and Lifestyle magazines.

Claim Type	Cooking		Lifestyle		Health & Fitness	
	No. of claims	%	No. of claims	%	No. of claims	%
Other	23	1.0	12	.6	4	.2
General health	63	2.7	72	3.7	65	3.9
Specific health	22	1.0	20	1	20	1.2
General nutrition	24	1.0	25	1.3	42	2.5
Specific nutrition	284	12.4	249	12.9	325	19.6
Reduction or elimination of substance	358	15.6	367	19.1	372	22.5
Taste, flavor, or ingredient	759	33.0	559	29.0	382	23.1
Quality	437	19.0	313	16.3	195	11.8
Value	203	8.8	162	8.4	60	3.6
Weight loss	14	.6	16	.8	52	3.1
Muscle growth	6	.3	7	.4	17	1.0
Emotional association	83	3.6	94	4.9	73	4.4
Physical performance	21	.9	29	1.5	48	2.9
χ^2	290.4					
Df	24					
p	0.001					
Note: Total number of advertisements is 5877; Food magazines= 2297, Lifestyle magazines= 1925, Health & Fitness magazines= 1655. No. of ads= frequency; %= percentage of total ads in the same magazine genre. Specific description of each claim type is indicated in Appendix B.						

The data also showed a correlation between claim type and food group, where a particular claim type is most often used to advertise one specific food group. Claims that mention weight loss is most often used to advertise “grains”, whereas muscle growth and physical performance claims are most frequently used to advertised “dairy” (53.3% and 58.3%, respectively). These claims generally reflect the known benefits of the advertised food group, thus highlighting the advantages of consuming “grains” and “dairy” in an informative fashion. However, “fat, oils, and sweets” are advertised with not only one type of claim, but various types of claims from general health to emotional association.

Discussion

A predicted, the content analysis revealed “fats, oils, and sweets” to be the most frequently advertised food group. Foods included in this group include chocolates, candy, desserts, ice cream, and cooking oils. A persistent weak spot for the female consumer, advertisers continue to present tempting treats to entice the magazine reader. Unlike Lohmann and Kant (2000), who found “bread” to be the most advertised food group, the present study, after surveying 2356 advertisements, found the frequency of “grains” (equivalent to “bread”) advertised across 12 magazines is in proportion to 6 other major food groups, including “dairy”, “protein”, “beverages”, “meals”, “condiments”, and “snacks”. The decrease in the number of “grain” products may be due to the increase in variety of food products. Whereas “grains” refer to staple foods such as cereal, bread, rice, and pasta, new products that are made up of staple ingredients have been reinvented into “bagel bites” or “frozen pasta entrees”, which are now categorized as “snacks” or “complete meals”. Due to the addition of more specifically defined food groups, products that may have belonged to “grains” previously have now been spread out and dispersed into new food categories. Consistent with content analysis conducted by Lohmann and Kant (2000), “vegetables” and “fruits” are among the least advertised food group. This

perennial phenomenon must be explained by considering the sources of various food products. The majority of products advertised are processed or packaged foods that are promoted by giant corporations, the same ones that own numerous food brands and products found in the grocery stores. On the other hand, vegetables and fruits, dried or packaged goods, are naturally grown produce void of a giant corporate sponsor that will pay for advertising. Ultimately, the findings revealed that products advertised in popular magazines are not proportional to the food groups in the food pyramid as determined by the USDA; while fats, oils, and sweets is the smallest sector of the food pyramid, it is the one group that is advertised the most in selected magazines for women. Consumers must be aware of the distorted representation of food products in the mass media and have the ability to decode the advertising claims in order to better comply with the recommended dietary guidelines. In order to promote the recommended dietary guidelines, regulation is required for the amount of products from various food groups that are advertised in the mass media. Restricting a proportional frequency of products from each food group as set by the food pyramid may better inform and prompt the consumers to make healthy choices.

While “fats, oils, and sweets” is the most frequently advertised food group among all three genres of magazines, the results show differences in the frequencies of other food groups among the three genres. Due to the special interest that each magazine genre tailors towards, foods advertised are may be determined by the potential magazine viewers, also known as the product consumers. “Dairy” is the second most frequently advertised food group among Food magazines, which emphasizes cooking and feeding hungry stomachs. Not only are dairy products frequently found in cooking recipes, products such as yogurt and milk, high in calcium, are highly promoted to the household member primarily in charge of shopping for groceries and feeding the children. Thus cooking magazines and associate advertisements are designed with the grocery shopper in mind. In the Lifestyle genre, “meals” is the second most frequently

advertised. Since complete meals were invented to facilitate an on-the-go, fast-paced lifestyle, it is not surprising that readers of *Cosmopolitan* or *Ladies' Home Journal* are busy women in need to fast and convenient meals for the demanding lives. Similarly, "beverages" are advertised in a large proportion compared to other food groups in *Health & Fitness* magazines due to the needs of the magazines' readers, mostly probably gym goers or health conscious individuals knowledgeable about hydrating in order to fuel an active lifestyle. While targeting a specific audience with different food products in order to further promote a special interest, individuals involved in advertising sales should be knowledgeable of the current nutrition and health issues today in order to better help advocate a balanced diet through food advertising. Future studies may widen the range of data sources to include men's magazines. By studying the various types of magazines available to women and men, researchers may examine the possible correlation between food groups and gender of magazine audience, whether different food groups are advertised to women and men in different proportions.

Examination of the various claim types used to advertise food products revealed unexpected findings. Contrary to predictions, claims emphasizing weight loss and emotional associations were not among the most frequently used claims to appeal to female consumers. Claims mentioning taste, flavor, and/or ingredients of the product were the most frequently used compared to all other types of claims. This finding reflect food industry awareness that taste and flavor is an important determination of food selections (CITE). The second most frequently used claim type is reduction or elimination of a specific substance. As hypothesized, advertising reflect the awareness of health and nutrition among consumers. Similar to the consumption trend found by Chandon and Wansink (2007), where foods labeled "low-fat" lead to greater consumption and reduced guilt, advertisers exploit health conscious consumers by luring them with appealing claims of low fat, low calories, no cholesterol, low sodium and no trans fat. Just

as consumers and advertisers are informed about unhealthy substances, they are equally aware of the healthy and beneficial food substances. Thus claims highlighting a specific nutrient are also among the most frequently used to appeal to consumers. Another trend existing in the food industry is the emphasis on the quality of the food produce, whether it is organic, fresh, natural, and etc. Advertising that inform consumers of the product quality is also frequently observed, matching the current paradigm spread through the food industry. Even though weight loss and emotional associations are claims that may attract a female consumer more than a male consumer (Grogan et al, 1997; Wardle et al, 2004), claims of good taste is still employed most often to appeal to the average consumer. In addition, the food industry and advertisers alike must adapt to the consumer's health and nutrition needs, thus employing claims that inform the consumer of reduced or eliminated substances, included good substances and guaranteed product quality. Overall, purely female targeted claims- weight loss and emotional associations, such as reduced guilt, are used far less than expected.

The genres of magazine in which the food advertisements are found affect the types of claims that are used. While the top four claim types are the same across all three magazine genres, the frequency of other claims, including general nutrition, weight loss, muscle growth, and physical performance are significantly different between genres. Advertisements found in Health & Fitness magazines employ such claims types more often than those found in Lifestyle and Food magazines. The significant difference in the frequency of noted claim types advertised in Health & Fitness magazines as compared to Food magazines and Lifestyle magazines suggests that different claims are used to pertain to readers of a specific magazine genre. The claim types used reflect the specific interests of potential consumers, such that general nutrition is more emphasized in Health & Fitness magazines as compared to other magazines. Similarly, readers of Health & Fitness magazines may be more interested and attracted to products related to

weight loss, muscle growth, and physical performance due to the nature and context of the magazine. Similarly, taste, quality, and value are product traits important to readers of Food magazines, thus frequencies of the corresponding claim types are greater in comparison to other magazine genres. Lastly, while certain food groups are most often promoted using one specific claim type, “fats, oils, and sweet” are advertised with all types of claims; making it difficult for consumers to determine the truthful claims from the purely persuasive claims. Future studies may be conducted to determine whether the type of claims used in different magazine genres impact the consumer’s purchasing decisions. It is important to examine the consumer’s interests and lifestyle in relation to their magazine choices and associated consumption of advertised foods. Furthermore, it is relevant to study advertising claims found in men’s magazine in order to compare advertising strategies and communicative trends targeted as female and male consumers.

The present study was limited to predetermined food categories and types of advertising claims which were modeled after previous studies (Lohmann & Kant, 2000). Due to the frequent changes in advertising campaigns to target resistant audiences, certain claim types and advertising strategies were not accounted for in this present study. While a small number of claims did not fit into any predetermined categories, many ads employed clever advertising techniques that could not be included in the data due to the specificity of predetermined claim types. Some ads used images to appeal to the visual senses or comedic messages that advertised the product in an implicit manner. Products advertised in food magazines often included recipes as part of the advertising to appeal to the specific audience. Since the present study is focused on specific claims, communicated in an explicit manner, messages that were more ambiguous or those that required audience interpretation were not included in the results. The unaccounted

information may be worth investigating in further studies regarding advertising trends, but they are less relevant in the current study of specific ad claims.

The current study is also limited to specific magazines, which may not be representative of all magazines. While the selected magazines are the most widely circulated in each category, magazines focusing on other consumer interests may yield different results. Furthermore, the study was limited to the year 2009, during which US economy was recovering from an economic recession. Since there have been no major regulatory changes during the year of gradual economic recovery, and food products of good value is always a promotional standpoint regardless of the state of the economy, results from the present study is relevant and applicable to current and future food advertising claims. Lastly, since the magazines included in this study were published in the US market, the findings should be applied to other international markets. Future research should attempt to replicate the study in other international market, grouping foods and using advertising claims common to each local sector.

As more research is conducted in various markets across the world, it is necessary that immediate action takes place to alter the current practices of food advertising. Consumers must be accurately informed of the products that they buy and advertisers must be persuaded to promote products for the good of society. At the same time, health and nutrition education must be continuously disseminated along with information regarding media literacy. While it may take time for law makers to make new legislation in affect to counterstrike the adverse effects of harmful advertising, consumers should make an effort to evaluate and reconsider the attractive advertisements before making purchasing decisions. Understanding of the food industry and its practices is critical in order to maintain a well informed, nutrition balance, healthy lifestyle.

Appendix A: Categorization of Food Groups

	Group Name	Group Descriptions
Group 1	Grains	Cereals and cereal products (bread, pasta, rice, breakfast cereals)
Group 2	Vegetables	Vegetables and vegetable juices
Group 3	Fruits	Fruits, fruit juices, dried fruits
Group 4	Dairy	Dairy products and dairy substitutes; whipped cream, cream cheese
Group 5	Proteins	Meat and poultry Fish and seafood Eggs, egg substitutes Legumes, nuts and seeds Peanut butter, almond butter/paste
Group 6	Fats, oils, sweets	Fats and oils (margarines, lard, shortening) Sugar products (jams, honey, sweetener), chocolate, candy
Group 7	Non-alcoholic beverages	Non-alcoholic beverages and beverage flavoring, excluding milk and milk substitutes
Group 8	Packaged Meals	Frozen dinners, frozen pizzas, pre-made meals
Group 9	Sauces and Condiments	Sauces and condiments including salad dressings, gravies, spices, seasoning
Group 10	Soup	Packaged soups, cooking stock
Group 11	Snack foods	Products generally perceived or advertised as snack foods (pretzels, popcorn, potato chips)

Appendix B: Categorization of Claim Types

	Claim Type: definition	Examples of specific claims
Category 1	Provides general health benefits: health benefit suggested as a possible result from use of product	<ol style="list-style-type: none"> 1. healthy 2. good for you/ feel good 3. professional recommended 4. prevent illness (no specific illness/disease mentioned) 5. other
Category 2	Provides specific health benefits: mention specific disease or condition in advertisement	<ol style="list-style-type: none"> 1. specific condition mentioned (immunity, low blood pressure) 2. other
Category 3	Provides general nutrition benefits: refer to nutrient content of product without being specific	<ol style="list-style-type: none"> 1. nutritious 2. other
Category 4	Contains specific nutrients: mentions specific nutrients or food groups	<ol style="list-style-type: none"> 1. vegetables 2. fruits 3. protein 4. fiber 5. minerals 6. vitamins 7. complex carbohydrates (whole wheat, whole grain) 8. specific type of fat 9. other
Category 5	Minimizes or eliminates specific substances	<ol style="list-style-type: none"> 1. low/less/no calories 2. low/less fat 3. fat free 4. low/less/no saturated and/or trans fat 5. low/less/no cholesterol 6. low /less sodium 7. low/less sugar 8. light/lite 9. no preservatives 10. no artificial additives 11. other
Category 6	Mentions taste, flavor, or ingredients in product	<ol style="list-style-type: none"> 1. taste 2. specific ingredients 3. other
Category 7	Distinguishes product quality: how the product is made	<ol style="list-style-type: none"> 1. organic 2. fresh 3. natural 4. free-range 5. wholesome

		<ol style="list-style-type: none"> 6. homemade 7. real 8. other 9. pure
Category 8	Distinguishes value of product: benefits of product other than nutritional or health	<ol style="list-style-type: none"> 1. economical/cost less 2. convenient/quick/simple/easy 3. other
Category 9	Mentions weight loss and body appearance	<ol style="list-style-type: none"> 1. slim/slender/thin/skinny 2. lose/minimize unwanted body qualities 3. other
Category 10	Mentions increase in muscle size and body appearance benefits	<ol style="list-style-type: none"> 1. gain size/increase muscle mass 2. get bigger/leaner muscles 3. other
Category 11	Mentions emotions associated with consumption of advertised product	<ol style="list-style-type: none"> 1. guilt-free/carefree 2. pleasure 3. happiness 4. comfort 5. love 6. other
Category 12	Mentions physical performance benefits	<ol style="list-style-type: none"> 1. power/energy 2. speed 3. strength 4. faster 5. other

References

- Adams, L., & Geuens, M. (2007). Healthy or unhealthy slogans: That's the question.... *Journal of Health Communication, 12*(2),173-185.
- Alexander, J. M., & Tepper, B. J. (1995). Use of reduced-calorie/reduced-fat foods by young adults: Influence of gender and restraint. *Appetite, 25*, 217–230.
- Alfieri, L., & Byrd-Bredbenner, C. (2000). Assessing the performance of women on nutrition labeling tasks. *American Journal of Health Studies, 16*(3), 113–123.
- Andrews, J. C., Burton, S., & Netemeyer, R. G. (2000). Are some comparative nutrition claims misleading? The role of nutrition knowledge, ad claim type and disclosure conditions. *Journal of Advertising, 29*(3), 29-42.
- Andrews, J. C., Netemeyer, R. G., & Burton, S. (1998). Consumer generalization of nutrient content claims in advertising. *The Journal of Marketing, 62*(4), 62-75.
- Brecher, S. J., Bender, M. M., Wilkening, V. L., McCabe, N. M., & Anderson, E. M. (2000). Status of nutrition labeling, health claims and nutrient content claims for processed foods: 1997 Food label and package survey. *Journal of American Dietetic Association, 100*(9), 1057–1062.
- Brucks, B., Mitchell, A. A., & Staelin, R. (1984). The effect of nutritional information disclosure in advertising: An information processing approach. *Journal of Public Policy & Marketing, 3*, 1-25.
- Burton, S., Andrews, J. C., & Netemeyer, R. G. (2000). Nutrition ad claims and disclosures: Interaction and mediation effects for consumer evaluations of the brand and the Ad. *Marketing Letters, 11*(3), 235–247.

- Carels, R. A., Konrad, K., & Harper, J. (2007). Individual differences in food perceptions and calorie estimation: An examination of dieting status, weight, and gender. *Appetite, 49*, 450-458.
- Chaiken, S., & Pliner, P. (1987). Women, but not men, are what they eat: The effect of meal size and gender on perceived femininity and masculinity. *Personality and Social Psychology Bulletin Online, 13*, 166-176.
- Chandon, P., & Wansink, B. (2007). The biasing health halos of fast-food restaurant health claims: Lower calorie estimates and higher side-dish consumption intentions. *Journal of Consumer Research, 34*, 301-314.
- Charny, M., & Lewis, P. A. (1987). Does health knowledge affect eating habits? *Health Education Journal, 46*, 172-176.
- Collins, A. M., & Loftus, E. F. (1975). A spreading activation theory of semantic processing. *Psychological Review, 82*(6), 407-428.
- Corney, M. J., Shepherd, R., Hedderley, D., & Nanayakkara, C. (1994). Consumer acquisition of commercial and nutrition information in food choice. *Journal of Economic Psychology, 15*(2), 285-300.
- Di Monaco, R., Ollila, S., & Tuorila, H. (2005). Effect of price on pleasantness ratings and use intentions for a chocolate bar in the presence and absence of a health claim. *Journal of Sensory Studies, 20*(1), 1-16.
- Drichoutis, A. C., Lazaridis, P., & Nayga, R. M. (2006). Consumers' use of nutritional labels: A review of research studies and issues. *Academy of Marketing Science Review, 9*, 1-22.
- Field, A. E., Camargo, C. A., Taylor, C. B., Berkey, C. S., Frazier, A. L., Gillman, M. W., & Colditz, G. A. (1999). Overweight, weight concerns, and bulimic behaviors among girls and boys. *American Academy of Child and Adolescent Psychiatry, 38*(6), 754-760.

- Ford, G. T., Hastak, M., Mitra, A., & Jones Ringold, D. (1996). Can consumers interpret nutrition information in the presence of a health claim? A laboratory investigation. *Journal of Public Policy and Marketing, 15*(1), 16–27.
- French, S. A., & Jeffrey, R. W. (1994). Consequences of dieting to lose weight: Effects on physical and mental health. *Health Psychology, 13*, 195–212.
- Garretson, J. A., & Burton, S. (2000). Effects of nutrition facts panel values, nutrition claims and health claims on consumer attitudes, perceptions of disease-related risks and trust. *Journal of Public Policy and Marketing, 19*(2), 213–227.
- Geiger, C. J. (1998). Health claims: History, current regulatory status, and consumer research. *Journal of American Dietetic Association, 98*, 1312-1322.
- Grogan, S. C., Bell, S., & Conner, M. (1997). Eating sweet snacks: Gender differences in attitudes and behavior. *Appetite, 28*, 19–31.
- Johar, G. V. (1995) Consumer involvement and deception from implied advertising claims. *Journal of Marketing Research, 32*, 267-279.
- Jones, S. C., Andrews, K. L., Tapsell, L., Williams, P., & McVie, D. (2008). The extent and nature of “health messages” in magazine food advertising in Australia. *Asia Pacific Journal of Clinical Nutrition, 17*(2), 317-324.
- Kahkonen, P., & Tuorila, H. (1999). Consumer responses to reduced and regular fat content in different products: Effects of gender, involvement and health concern. *Food Quality and Preference, 10*, 83-91
- Kim, K., Cheong, Y., & Zheng, L. (2009). The current practices in food advertising. *International Journal of Advertising, 28*(3), 527-553.

- Kozup, J. C., Creyer, E. H., & Burton, S. (2003). Making healthful food choices: The influence of health claims and nutrition information on consumers' evaluations of packaged food products and restaurant menu items. *Journal of Marketing*, 67, 19-34.
- Kristal, A. K., Bowen, D. J., Curry, S. J., Shattuck, A. L., & Henry, H. J. (1990). Nutrition knowledge, attitudes and perceived norms as correlates of selecting low-fat diets. *Health Education Research*, 5(4), 467-477.
- Kristal, A. R., Levy, L., Patterson, R. E., Li, S. S., & White, E. (1998). Trends in food label use associated with new nutrition labeling regulations. *American Journal of Public Health*, 88, 1212-1215.
- Lohmann, J., & Kant, A.K. (2000) Comparison of food groups and health claims appearing in food advertisements in 3 popular magazine categories. *Journal of the American Dietetic Association* 100(11), 1396-1399.
- Lynch, J., & Srull, T. K. (1982). Memory and attentional factors in consumer choice: Concepts and research methods. *Journal of Consumer Research*, 9(1), 18-37.
- Marietta, A. B., Welshimer, K. L., & Anderson, S. L. (1999). Knowledge, attitudes, and behaviors of college students regarding the 1990 Nutrition Labeling Education Act food labels. *Journal of the American Dietetic Association*, 99, 445-449.
- Mazis, M. B., & Raymond, M. A. (1997). Consumer perceptions of health claims in advertisements and on food labels. *The Journal of Consumer Affairs*, 31(1), 10-26.
- Michela, J. L., & Contento, I. R. (1986). Cognitive, motivational, social, and environmental influences on children's food choices. *Health Psychology*, 5(3), 209-230.
- Mori, D., Chaiken, S., & Pliner, P. (1987). "Eating lightly" and the self-presentation of femininity. *Journal of Personality and Social Psychology*, 53(4), 693-702.

- Murphy, D., Hoppock, T. H., & Rusk, M. K. (1998). Generic copy test of food health claims in advertising: A joint staff report of the Bureaus of Economics and Consumer Protection. *Washington, DC: Federal Trade Commission.*
- Neuhouser, M. L., Kristal, A. R., & Patterson, R. E. (1999). Use of food nutrition labels is associated with lower fat intake. *Journal of American Dietetic Association, 99*, 45-53.
- Oakes, M. E. (2006). Filling yet fattening: Stereotypical beliefs about the weight gain potential and satiation of foods. *Appetite, 46*, 224–233.
- Oakes, M. E., & Slotterback, C. S. (2001) Gender differences in perceptions of the healthiness of foods. *Psychology & Health, 16*(1), 57-65.
- Oakes, M. E., & Slotterback, C. S. (2001) Judgements of food healthfulness: Food name stereotypes in adults over age 25. *Appetite, 37*, 1-8.
- Oakes, M. E., & Slotterback, C. S. (2001) What's in a name? A comparison of men's and women's judgments about food names and their nutrient contents. *Appetite, 36*, 29-40.
- Pothoulaki, M., & Chryssochoidis, G. (2009). Health claims: Consumers' matters. *Journal of Functional Foods, 1*, 222-228.
- Provencher, V., Polivy, J., & Herman, C. P. (2009). Perceived healthiness of food. If it's healthy, you can eat more! *Appetite, 52*, 340–344.
- Rapport, L., Peters, G. R., Downey, R., McCann, T., & Huff-Corzine, L. (1993). Gender and age differences in food cognition. *Appetite, 20*, 33-52.
- Roe, B., Levy, A. S., & Derby, B. M. (1999). The impact of health claims on consumer search and product evaluation outcomes: Results from FDA experimental data. *Journal of Public Policy & Marketing, 18*, 89-105.
- Rolls, B. J., Fedoroff, I. C., & Guthrie, J. F. (1991). Gender differences in eating behavior and body weight regulation. *Health Psychology, 70*(2), 133-142.

- Rozin, P., Ashmore, M., & Markwith, M. (1996). Lay American conceptions of nutrition: Dose insensitivity, categorical thinking, contagion, and the monotonic mind. *Health Psychology, 15*(6), 438-447.
- Schwartz, N. E., & Borra, S. T. (1997). What do consumers really think about dietary fat? *Journal of American Dietetic Association, 97*(suppl), S73-S75.
- Serdula, M. K., Collins, M. E., Williamson, D.F., Anda, R. F., Pamuk, E., Byers, T. E. (1993). Weight control practices of U.S. adolescents and adults. *Annals of Internal Medicine, 119*, 6667–6671.
- Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research, 53*(5), 985-993.
- U.S. Code of Federal Regulations, 15 U.S. C. §§ 45, 52, 55, 1980.
- US House of Representatives. (2009). Affordable health care for America act (H.R. 3962). *Washington, DC: U.S. Government Printing Office.*
- Wansink, B. (2003). How do front and back package labels influence beliefs about health claims? *The Journal of Consumer Affairs, 37*(2), 304-316.
- Wansink, B., & Chandon, P. (2006). Can “low-fat” nutrition labels lead to obesity? *Journal of Marketing Research, 43*, 605–617.
- Wardle, J., & Solomons, W. (1994). Naughty but nice: A laboratory study of health information and food preferences. *Health Psychology, 13*, 180–183.
- Wardle, J., Haase, A. M., Steptoe, A., Nillapun, M., Jonwutiwes, K., & Bellisle, F. (2004). Gender differences in food choice: The contribution of health beliefs and dieting. *Annals of Behavioral Medicine, 27*(2), 107-116.
- WHO. (2006) Obesity and overweight. *WHO Fact Sheet N311.*