

**A Spoonful of Salt Helps the Vegetables Go Down: Exploring the Processing of  
Health and Nutrition-related Claims in Advertising**

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## ABSTRACT

In light of recent persuasive appeals which promote a food product's health or nutritional benefits in advertisements, this exploratory study investigates the ways in which individuals read and understand health and nutrition-related claims in advertising and make subsequent judgments about the product, brand, and purchase intentions. Using the Elaboration-Likelihood model of persuasion, this study looks at how motivational (e.g., health consciousness, need for cognition) and ability (nutrition knowledge) factors influence attitudes toward three food products following exposure to manipulated advertisements containing a nutrition-related claim. Although the results do not demonstrate much support for the predicted relationships, the findings nonetheless provide researchers useful information that may benefit future studies.

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## CHAPTER ONE: INTRODUCTION

In recent years consumers became more concerned with eating healthy, living healthy lifestyles, and overall well-being. This is exemplified by the appearance of health and nutrition-related claims on food packages and in advertisements as well as a growing interest in organic and all natural products. In recognition of the healthy lifestyles trend, the Food Marketing Institute's *State of Food Retailing 2007* report revealed that 73% of retailers wished to “emphasize consumer wellness and family health” (Thompson, 2007, para. 3) in media messages and in product promotion as a way to appeal to consumers' interest in health and healthy foods. For example, food chains such as Subway® promote a menu of sandwiches with only six grams of fat. Food advertisers often take advantage of consumers' desires for healthier products by employing health and nutrition-related claims such as “reduces the risk of heart disease,” “low fat,” “loaded with antioxidants,” “boosts your immune system,” and “contains a full serving of vegetables” in advertising messages. However, many health and nutrition-related claims displayed in food advertisements or placed on packaging are found to be misleading and often result in faulty assumptions regarding a product's healthfulness or nutritional benefit. Although the U.S. Food and Drug Administration (FDA) has implemented guidelines for the qualification and use of such claims, food advertisers also utilize more ambiguous claims that are not as strictly regulated by the FDA as health and nutrient content claims.

Research exists on health and nutrition-related claims in advertising, but it is limited (previous research deals primarily with product packaging and labels). Many researchers have explored the ways in which consumers interpret potentially misleading claims supplied on food packages and in advertisements (Andrews, Netemeyer, & Burton, 1998; Parker, 2003; Roe, Levy, & Derby, 1999). Ambiguity in many health and nutrition-related claims allows for various

interpretations—depending on prior knowledge and experiences of consumers—possibly leading to false or inaccurate perceptions of the healthfulness of particular food products. Some food advertisers do not make direct statements about health or nutrition but opt for more general or vague statements such as “a delicious way to eat healthy” (Parker, 2003, p. 51). Such ambiguous statements frequently necessitate further research and information—either from the Nutrition Facts panel required on food packaging, the list of ingredients, or other external sources—in order for consumers to accurately evaluate them. Unfortunately, these information resources are rarely made available through advertisements. As the studies performed by Andrews et al. (1998) and Roe et al. (1999) reveal, many consumers tend to misinterpret health and nutrition-related claims in advertising or on the front panels of food packages, often requiring additional information in order to make the best personal choices.

In contemporary society, where ideals of healthy eating and living are culturally dominant, it is obvious why food manufacturers want to advertise their products as healthy and possessing health benefits. Several food companies are currently employing new persuasive appeals that advertise foods not typically associated with health and wellness (e.g., Manwich® Sloppy Joes, Chef Boyardee® ravioli, Ragú® pasta sauce, Prego® pasta sauce, Knorr® Sides) as being nutritious and more beneficial to health than previously considered. Specifically, the advertisements advance claims that present the products as acceptable substitutes for vegetables (i.e., “contains a full serving of vegetables in each portion”).

The present study is exploratory in nature and will reinvigorate the work of Andrews et al. (1998) as well as Roe et al. (1999) by examining health and nutrition-related claims from a communication and persuasion perspective. The study uses an experimental design which allows for the specific claim (i.e., “contains a full serving of vegetables”) to be isolated within

advertisements. With the claim isolated, the effects of the specific claim on individuals attitudes about claim believability, attitude toward the product, attitude toward the brand, purchase intentions, and nutrition attitude (i.e., perceived healthfulness and nutritional value) in relation to individual *need for cognition* (Cacioppo & Petty, 1982), nutrition knowledge, and health consciousness should be determinable. These various factors may produce insight into whether the claim is processed centrally or peripherally according to the Elaboration-Likelihood Model and under what circumstances each is likely to occur.

## CHAPTER TWO: LITERATURE REVIEW

### *Health and Nutrition-related Claims*

Health and nutrition-related claims have been used in food advertising for more than twenty years and can be traced back to the initial case of Kellogg's® All Bran cereal. Beginning in 1984 on its packaging for All Bran, Kellogg's® began using a claim, which was advanced by the National Cancer Institute, drawing a link between dietary fiber and cancer prevention. The FDA subsequently drafted regulations for the use of health claims in advertising and on food labels, ultimately leading to the Nutrition Labeling and Education Act (NLEA), which was passed by the US Congress and signed into law by President George H.W. Bush in 1990 (Williams, 2005). The NLEA gave the FDA the authority to regulate the use of health and nutrition-related claims as well as nutrition labels on food products.

Most previous research focuses on the three main types of claims used by food advertisers and marketers: nutrient content claims, health claims, and structure/function claims. Nutrient content claims mention a specific nutrient quality, such as “fat free,” “contains omega-3,” or “high in fiber,” but do not attach the claim to a perceived health risk. Health claims, on the other hand, address relationships between a specific nutrient and a health condition or disease such as, “A diet low in sodium may help reduce the risk of high blood pressure” and “calcium helps prevent osteoporosis” (Kozup, Creyer, & Burton, 2003, p. 20). Structure/function claims are similar to health claims. These types of claims make a direct connection between a specific nutrient and health benefit but are less distinct than health claims. Structure/function or functional food claims link a nutrient to a particular body function by describing how a product affects a specific function of the body but, unlike health claims, do not imply a disease relationship (Bone & France, 2009; Parker, 2003). Examples of functional claims include

strategies such as “calcium builds strong bones” or “vitamin C boosts your immune system.” These examples of structure/function claims are distinguished by such claims as “calcium can help prevent osteoporosis,” which is a health claim. Structure/function claims are powerful because they appear to be very specific but they are actually quite vague. These claims inform consumers about how a nutrient functions in the body, but they do not allude to the specific importance or value for consumer health.

Roe et al. (1999) investigated health and nutrition-related claims and how such claims influenced consumers’ perceptions of a product’s overall healthiness. The researchers sought to determine how people use claims on food packaging along with the product’s FDA-required Nutrition Facts panel in order to make judgments about products. Several significant findings emerged. There was overwhelming evidence of a positivity bias—the results showed that individuals often considered the product to be healthier when a health and nutrition-related claim was included on the package compared to when such a claim was excluded. Participants also showed greater purchase intentions when a product displayed a health claim. Interestingly, the presence of health and/or nutrient content claims led to a greater chance of participants looking on the front of the package only rather than examining the Nutrition Facts panel for further information listed elsewhere on the package. That is, health and nutrition-related claims led to a reduced likelihood that individuals would seek additional nutrition information on the back of the package (Roe et al., 1999). Conversely, Garretson and Burton (2000) report that consumers tend to be skeptical of claims on food packaging and are more trusting of Nutrition Facts panels, thus using the panels to verify claims. Important to this study, however, is the fact that most advertising does not lend the opportunity for consumers to easily verify, confirm, or even refute information advanced in claims with a Nutrition Facts panel.

Overall, health and nutrition-related claims seem to increase the expectations individuals have about the healthfulness of a product and often result in positive attitudes toward a product's nutritional value (Andrews, Burton, & Netemeyer, 2000; Ford, Hastak, Mitra, & Ringold, 1996; Kozup et al., 2003; Mazis & Raymond, 1997). Building off these findings, the following hypotheses are investigated:

- H1a: Participants exposed to a nutrition-related claim will have significantly more favorable attitudes toward the product, attitudes toward the brand, and/or purchase intentions than participants exposed to a taste claim.
- H1b: Participants exposed to a nutrition-related claim will have more favorable evaluations of the product's nutritional value (i.e., nutrition attitude) than participants exposed to a taste claim.

Although the presence of health and nutrition-related claims on packaging have the tendency to lead to higher ratings of nutritional value, differences in product category and perceived healthfulness have not been considered. This study examines varying levels of the perceived healthfulness of products in conjunction with a nutrition-related claim. Therefore, the first research question is proposed:

- RQ1: Is there a significant difference in perceived product healthfulness or evaluations of the product's nutritional value (i.e., nutrition attitude) following exposure to different claim types (i.e., ingredient or taste)?

Since the use of health and nutrition-related claims is a relatively recent development in food advertising, and since the claim being explored in this thesis includes the new classification of nutrition-related claims (e.g., "contains a full serving of vegetables"), this thesis proposes mostly exploratory research questions. The subsequent hypotheses and research questions guiding this thesis aim to uncover how individuals process and comprehend health and nutrition-related claims in advertising and what factors influence overall claim believability and product evaluations.

### *New Persuasive Appeal*

This thesis introduces a health and nutrition-related claim referred to as an ingredient content claim. Ingredient content claims simply mention some ingredient found in the food product and typically do so generally. Examples of ingredient content claims include, but are not limited to, the following: “contains a full serving of vegetables in each half cup,” “whole grains,” and “made with real cheese.” The danger of many health and nutrition-related claims is that consumers may (mis)interpret the product as relatively healthy and nutritious, even if the product contains high levels of other unhealthy, and potentially dangerous, nutrients (e.g., cholesterol, sugar, sodium, saturated fat) that are not disclosed in an advertisement or prominently displayed on the product packaging (Andrews et al., 1998). Within that past few years, Chef Boyardee® launched an advertising campaign that promotes a canned ravioli product as having a full serving of vegetables in every bowl. In a statement appearing on the Chef Boyardee® website, Chef Boyardee® discloses the following:

1/2 cup of vegetables per serving. 99% Fat Free Beef Ravioli contains 880 mg of sodium per serving. The Dietary Guidelines for Americans (2005) recommend, per day based on a 2,000 calorie diet, eating 2.5 cups of vegetables (or 5 servings) and limiting sodium intake to 2,300 mg or less (*Chef Boyardee*, 2011).

It is important to note that this disclosure is found online. Many television and print advertisements utilizing this type of claim do not include a disclosure statement, therefore providing no additional nutrition information along with the claim. This research aims to explore individuals’ processing of this specific claim type and to investigate factors influencing not only the processing but also the effects of processing on attitudes toward the product and brand. Using the Elaboration-Likelihood Model (ELM) of persuasion as a general framework, this study attempts to further previous research on how individuals interpret health and nutrition-related claims in food advertisements by examining the ways in which individuals read this

particular type of claim and then evaluate the product in terms of healthfulness and nutritional value.

### *Elaboration-Likelihood Model*

The ELM may support understanding of how health and nutrition-related claims in advertisements influence consumer perceptions or evaluations of a product's nutritional value. This dual-process model involves two modes of information processing: the central route and the peripheral route. The central route to persuasion entails thoughtful contemplation of information relevant to a certain matter when making judgments. Elaboration is a key characteristic of central processing. Elaboration occurs when an individual continues to add information to an argument, message, or communication stimuli based on previous knowledge "stored in the memory" (Petty, Cacioppo, Strathman, & Preister, 2005, p. 84). A person elaborates on information or messages in an advertisement by drawing upon existing knowledge and ultimately processes (or produces) new ideas as an extension of the advertised information. For example, one may read an argument and determine whether or not the information is consistent with what he or she already knows or what the new information means for the individual (Petty et al., 2005). This effortful thought process is most likely to take place when an individual has the ability and motivation to process the information.

The peripheral route to persuasion "involves less cognitive effort and occurs when a person relies on a relatively simple and low-effort decision strategy" (Petty et al., 2005, p. 81). Common examples of peripheral cues are color, celebrity endorsements, and model attractiveness. For example, a celebrity in an advertisement may act as a simple cue and lead to an individual to make a positive judgment based on this "short cut." The peripheral route is typically activated when either an individual's motivation or ability (or both) to process

information is low. Persuasion and attitude change can occur through either central or peripheral processing; however the processing, or route, varies among individuals and among the various types of persuasive messages. Cacioppo and Petty's (1982) concept of need for cognition—a personality factor which addresses the extent to which one enjoys thinking about or evaluating things—will also be useful in ascertaining which route is enacted by participants in this study.

### *Need for Cognition*

Need for cognition (NC) is a dispositional factor that scholars use to help explain individual differences in terms of motivation to assess persuasive messages. It aims to determine the extent to which an individual enjoys engaging in issue-relevant thought (Cacioppo & Petty, 1982). Haugtvedt, Petty, Cacioppo, & Steidley (1988) explain that “individuals high in NC are more intrinsically motivated to engage in effortful cognitive analyses than are individuals low in NC” (p. 209, abbreviation in original). This does not imply that low NC individuals are unable to recognize differences between rational and fallacious arguments but instead they “prefer to avoid the effortful, cognitive work required to derive their attitudes based on the merits of arguments presented;” individuals who are high in NC are likely to engage in “more cognitive effort [when] evaluating messages” (Haugtvedt, Petty, & Cacioppo, 1992, p. 241). Therefore high NC is often associated with central processing and low NC is characteristic of the likelihood to rely on peripheral cues. However there are other factors, such as personal relevance, which can also influence motivation and the mode of processing experienced by an individual.

### *ELM and Advertising*

Traditional ELM studies often explore variables such as involvement and argument strength or quality (Andrews & Shimp, 1990; Chang, 2002; Haugtvedt et al., 1988, 1992; Petty, Cacioppo, & Schumann, 1983; Whittler & Spira, 2002). Involvement is typically defined as the

level of personal relevance or connection to a topic, while argument quality refers to whether strong or weak arguments are employed in a message (Petty et al., 2005). However, this thesis does not explore argument strength since only one claim type is being tested. When considered in relation to the strong-weak argument continuum, the claim type that is central to this study (e.g., “contains a full serving of vegetables” or “a serving of veggies in every meal”) more closely resembles a strong argument. It is speculated that this specific claim is intended to persuade individuals that a convenience product, which is not typically considered healthy, actually contains the equivalent of a full serving of vegetables and is therefore an acceptable substitute. According to Petty et al. (2005), strong arguments are developed to elicit favorable evaluations or cognitive responses. This claim advances the idea that the product is not only an adequate substitute for whole vegetables but also an easy way to fulfill a daily recommended serving.

NC, along with health consciousness, may speak to participants’ motivation to process the information in the advertisements. The following research questions are considered:

RQ2a: Does NC impact attitudes toward the product, attitudes toward the brand, and/or purchase intentions?

RQ2b: Does NC influence claim believability?

RQ2c: Does NC influence nutrition attitude (toward the product)?

Motivational factors such as NC and personal relevance are likely to affect the extent of information processing in which an individual engages. Individuals with high NC are likely to be more critical of the advertisements because of their tendency to enjoy thinking and analyzing material. Low NC individuals may be less motivated, and therefore less inclined to analyze the argument in the advertisement, thereby making judgments and decisions based on peripheral processing.

In line with ELM, Roe et al. (1999), in their study of food packaging labels, found evidence of a positivity bias, in which “consumers provide[d] a product better ratings merely because a health claim [was] present” (p. 91). Consumers often considered the food product to be healthier and were less likely to obtain further information from the reverse side of the package (e.g., ingredients, nutrients listed in the Nutrition Facts panel) when health and nutrient claims were included on the package compared to when such claims were absent. This finding suggests the use of peripheral processing in the presence of health and nutrition-related claims. On the other hand, low NC may still see an increase in information processing, a characteristic of the central route to persuasion, if “the message position is surprising” (Petty et al., 2005, p. 95). Because some of the food products utilizing the specific ingredient content claim under investigation (i.e., “contains a full serving of vegetables”) are packaged, processed, and not usually associated with health food, individuals may find the claim surprising and thus become more interested in evaluating the claim.

#### *Potential Contributing Components*

Previous studies exploring food packaging and labels concluded that prior knowledge and experience may influence the ways in which health and nutrition-related claims are processed. Andrews et al. (1998; 2000) suggest that an individual’s nutrition knowledge level should play a role in how he or she processes health and nutrition-related claims in advertisements. Other studies show that people who tend to use health claims and nutrition information when making purchasing decisions are likely to have higher levels of nutrition knowledge (Fullmer, Geigher, & Parent, 1991; Nayga, 1996). Specifically, more knowledge is generally related to higher interest in and attention to certain information. On the other hand, low nutrition knowledge has the potential to inhibit one’s ability to effectively evaluate health and nutrition-related claims,

which can have a negative impact on the perceived credibility of such claims (Svederberg, 2002, as cited in Williams, 2005) perhaps because a limited knowledge base prevents an individual from effectively analyzing a claim or restricts the cognitive resources to verify a claim. Nutrition knowledge was found to influence positively and negatively the use and comprehension of health and nutrition-related claims. In order to extend prior research into the new area of health and nutrition-related claims, the following research questions are proposed:

RQ3a: Does participant nutrition knowledge impact attitudes toward the product, attitudes toward the brand, and/or purchase intentions?

RQ3b: Does participant nutrition knowledge influence claim believability?

RQ3c: Does participant nutrition knowledge influence nutrition attitude (toward the product)?

Along with the knowledge base, the extent to which individuals are concerned with their health may play a role in how they evaluate health and nutrition-related claims. Naylor, Droms, and Haws (2009) found individuals with higher health consciousness more likely to choose functional foods (for the sake of being “healthier” and possessing nutrients that are beneficial to health) than those with lower health consciousness, leading to the following research questions:

RQ4a: Does participant health consciousness impact attitudes toward the product, attitudes toward the brand, and/or purchase intentions?

RQ4b: Does participant health consciousness influence claim believability?

RQ4c: Does participant health consciousness influence nutrition attitude (toward the product)?

Concern with health, nutrition, and diet will arguably demonstrate the personal relevance of the issue. Therefore health consciousness could be a motivational factor when processing information in advertisements.

Although researchers employing the ELM explore a wide range of concepts, this thesis aims to isolate and explore specific aspects of the model. Diagram 1 exemplifies the persuasion process through ELM. Particularly, this study addresses ability (nutrition knowledge) and motivation (NC; health consciousness) to process information in advertisements. It aims to assess a single claim and how the information is processed in light of individual factors rather than comparing different claims or arguments.

## CHAPTER THREE: METHOD

### *Participants*

This study accessed a sample of participants from the Virginia Tech Department of Communication human participant research pool, which is comprised of undergraduate students from a diverse range of majors. While many students in the research pool are Communication majors, the majority of students in the pool are not Communication majors but instead represent students enrolled in a range of general education courses offered by the Communication department. Initially, a sample size of 226 ( $N = 226$ ) was achieved. However 63 cases were dropped, ultimately resulting in a total sample size of 163 ( $N = 163$ ) participants for the data analysis. Even though brand names on the experimental stimuli were replaced with fictitious names in an attempt to limit pre-existing attitudes and biases toward familiar brands and products, many participants still recognized the manipulated brand-based ads and focused more on the brand alterations than other important elements in the advertisements, such as the product or claim (as evidenced in the open-ended thought listing measure). Cases in which the participants mentioned something about brand within the first three thoughts were eliminated from the analysis based on the rationale that the brand was a prominent lens through which evaluations were made. Participants exhibiting attention to the brands, false brand names, or alterations to the product or brand, as evidenced by a prominent listing of the brand name within the first three listed thoughts, were eliminated from the sample.

This sample is not representative of the general population but does constitute a group of undergraduates comprised largely of young adults who are living away from home for the first time. Therefore, many study participants are beginning to make their own food choices when shopping at the grocery store. Although food advertisements are typically targeted toward

parents (who are the primary food shoppers in most families) and children (who often ask or pester parents to buy certain foods), the age group in this sample is arguably making many food decisions based on advertisements, as well.

### *Stimulus Materials*

Several print advertisements for food products were created for the purpose of the study. There were six advertisements, three of which were manipulated to contain the “vegetable” ingredient content claim and the other three employed a taste claim. The experimental advertisements were for jarred pasta sauce, canned ravioli, and juice. The advertisements were modeled after actual magazine ads for the products, maintaining claim placement (at the bottom in the ravioli and pasta sauce ad; on the left in the juice ad). These particular food items were chosen because products such as Ragú® and Prego® pasta sauce, Chef Boyardee® ravioli, and V8® V-Fusion™ (among others) currently use similar persuasion strategies which advance health and nutrition-related claims—more specifically, ingredient claims—regarding the product’s vegetable content (e.g., “contains a full serving of veggies”) or fruit content in the case of the juice. Each product was labeled with a fictitious brand name in order to eliminate the influence of brand bias or loyalty on individual attitudes (“Alida’s” in the cases of the pasta sauce and ravioli; “Obi” in the case of the juice).

The other three advertisements were identical to those described above in all respects except for the printed claims. These advertised the pasta sauce and ravioli as tasting like homemade (a taste claim) and the juice as tasting freshly made (also a taste claim). Other vegetable content cues present on the packaging displayed in the ad were removed. The difference in claims will allow for comparisons between the type of claim advanced (i.e., ingredient or taste) and the perceived healthfulness of the products. All of the manipulated

advertisements are located in Appendix A. Issues regarding images and artwork in the advertisements were encountered and are addressed in detail in the discussion.

Two additional food advertisements were included in the stimuli in order to simulate a magazine reading experience: 1) packaged cheese slices and 2) shortbread and chocolate cookies. Instead of health and nutrition-related claims, the claims in these advertisements focused on taste. Similar to the experimental advertisements, these products were also given fictitious brand names.

### *Design*

The design was a 2 x 3 between subjects, post-test only experiment, with claim type (ingredient content claim or taste claim) as the first factor and product type (ravioli, juice, pasta sauce) as the second factor. A post-test only design was employed so that any priming a pre-test might have caused (e.g., cluing participants in to the health and nutrition-related aspects of the target advertisement) could be avoided.

### *Procedure*

This study was approved by the Virginia Tech Institutional Review Board on November 29, 2010 under the title “Exploring Advertising Message Effects” (IRB number: 10-866). The approval letter is in Appendix C.

After registering in the online SONA system, students received an e-mail (see “Recruiting Announcement” in Appendix C) when the study became available. They then signed up for the study (listed as “Exploring Advertising Message Effects”) during one of the set research times. When students arrived at the room where the study was set to take place (Shanks

043), they read a brief introduction as detailed on the consent form and then signed the form before the study began (see Appendix C).<sup>1</sup> Students received course credit for their participation.

Experimental conditions were randomly assigned prior to the start of the study. In order to appear realistic and mirror the magazine reading experience, the stimulus advertisements were placed between two other ads (neither of which contained a health or nutrition-related claim). The target ad was consistently placed in the middle to eliminate possible primacy or recency effects. Using laptops provided by the Department of Communication Research Lab, participants were first directed to a secure Web site for an online survey service through which they would complete the questionnaire. Once at the “Welcome” screen, they were told to look at the advertisements in the binders beside them. Participants were provided as much time as needed to look through the ads, which typically lasts for about 30 seconds and not more than one minute. Following exposure to the ads, participants were instructed to click “Next” to begin the post-test questionnaires.<sup>2</sup>

Participants were first asked to complete the thought-listing by writing their thoughts about all three ads. The questionnaire included measures for claim believability, attitude toward the product, attitude toward the brand, nutrition attitude, and purchase intentions. Participants responded to questions regarding all three advertisements in order to mask the target ad. Attitudes, health consciousness, NC, and nutrition knowledge were also measured in the online questionnaire.

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<sup>1</sup> Participants were given two copies of the consent form per IRB guidelines. Each participant kept one copy and the researcher collected the second, signed copy for departmental records.

<sup>2</sup> The researcher decided against an entirely online experiment in order to control the viewing of the advertisements. If the ads were viewed online, the participants could potentially refer back to them as they moved through the questionnaires. Therefore, participants were required to appear in person and view hard copy advertisements before completing the online questionnaires (all of which took place during the one hour session in Shanks 043).

### *Manipulation Check*

In addition to these measures, participants provided demographic information and were asked to recall the type of claim present in the target advertisement as a manipulation check. Many participants failed to correctly identify the type of claim in the advertisement they viewed. One hundred participants chose “vegetable content” for the manipulation check and 51 answered “taste,” even though only 80 participants were exposed to the ingredient content claim and 83 saw the taste claim. This was mostly due to images of vegetables that were present in both the ingredient content and taste claim conditions (for two of the three products, see Appendix A). The vegetable artwork was not removed from the taste claim advertisements since the claim read, “Say Yes! to the homemade taste of Alida’s (ravioli/pasta sauce).” Images of vegetables seemed suitable for these advertising claims as well since homemade ravioli and pasta sauce would arguably require the use of vegetables. The limitations surrounding this imagery are addressed at length in the discussion. Upon completion of the experiment, participants were given a debriefing statement and dismissed.

### *Advertisement Exposure*

*Claim.* The specific claim investigated (i.e., vegetable content claim) was either present or absent in each of the experimental advertisements. In the present condition, the product was advertised as containing a full serving of vegetables (in a specified serving amount).<sup>3</sup> The ingredient content claim for the ravioli and pasta sauce read, “Contains a full serving of veggies in each ½ cup.” The ingredient content claim in the juice advertisement read, “Vegetable haters rejoice! Obi juice gives you a full serving of vegetables hidden by the sweet taste of juice.” The absent conditions utilized a taste claim (for the ravioli and pasta sauce: “Say yes! to the

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<sup>3</sup> For the pasta sauce and ravioli advertisements, one serving was equated to ½ cup (consistent with current appeals). In the juice advertisement, one serving was equal to 8 ounces (also consistent with current serving suggestions).

homemade taste of Alida's [ravioli/pasta sauce];" for the juice: "With a taste this fresh, your juicer will be jealous").

*Product and perceived healthfulness.* Each product (i.e., pasta sauce, ravioli, and juice) was assigned a label of high, moderate, or low healthfulness as determined by a review panel of graduate students with expertise in Communication. When asked to rank order the perceived nutritional value of various food items (with "1" being low nutritional value, "2" being moderate, and "3" being high), vegetable/fruit juice received nine ratings of "3," jarred pasta sauce received 11 ratings of "2," and canned ravioli received 14 ratings of "1." Therefore the products were assessed as being healthy, moderately healthy, and not healthy, respectively. Table 1 outlines all the ratings.

#### *Dependent Measures*

*Claim believability.* In this study, claim believability was operationalized as a three-item construct adopted from Andrews et al. (2000). Each item contained bi-polar adjectives as measured by a 7-point semantic differential scale, as follows: whether the information in the ad is credible-not credible, trustworthy-untrustworthy, and believable-unbelievable (Andrews, Burton, & Netemeyer, 2000). An additional item was included (surprising-not surprising) in order to see if participants were somewhat surprised that a packaged food product contains vegetables. Similar to previous research, this scale achieved an acceptable reliability coefficient ( $\alpha = .75$ ), with Cronbach's alpha (represented by " $\alpha$ ") above the .70 threshold typically considered an acceptable reliability coefficient (Nunnally, 1978).

*Attitude toward the product.* A similar three-item measure assessed attitudes toward the product (Kozup, et al., 2003) and asked participants to rate the product itself as favorable-unfavorable, positive-negative, and good-bad. Specifically, the question asked participants to

indicate how they felt toward the product in the advertisement (i.e., ravioli, juice, or pasta sauce) on the three aforementioned bipolar adjective pairs. An adequate reliability coefficient was achieved for this scale ( $\alpha = .87$ ).

*Attitude toward the brand.* The same set of adjective pairs used to measure attitudes toward the product was utilized to evaluate attitudes toward the brand. Based on a 7-point semantic differential scale adopted from Andrews et al. (2000), participants were asked to report their attitudes toward the particular brand in the advertisement (i.e., Alida's or Obi) based on the following bipolar adjective pairs: favorable-unfavorable, positive-negative, good-bad. A Cronbach's alpha of .87 was achieved and thus this measure was reliable.

*Nutrition attitude.* The perceived nutritional or health value of the advertised product was assessed using a 7-point, four-item nutrition attitude measure (see Appendix B). Previously used by Kozup et al. (2003), this measure asked participants to evaluate the product in terms of nutrition level (good/bad), the importance of the product as part of a healthy diet (not important/important), the overall nutritiousness of the product (not nutritious/nutritious), and whether the product was good for health or bad for health ( $\alpha = .85$ ). The reliability for this scale as used in the present study was comparable ( $\alpha = .87$ ).

*Purchase intentions.* Intentions to buy were evaluated by using a four-point scale, borrowed from Petty et al. (1983, p. 139-140), which asks what the likelihood is that the participant would purchase the food product the next time he or she "needed a product of this nature" (1 = "I definitely would not buy it;" 2 = "I might or might not buy it;" 3 = "I would probably buy it;" 4 = "I would definitely buy it"). This measure was ultimately collapsed into two categories: participants who indicated they definitely would not buy the product (or those

who responded “1”) and participants who indicated that would potentially or definitely buy the product (those who answered “2”, “3”, or “4”).

### *Measured Moderators*

*Need for Cognition.* The NC of each participant was determined using Cacioppo, Petty, and Kao’s (1984) 18-item scale (see Appendix B). Possible scores range from 18 (low NC) to 90 (high NC). Using the same criteria as Haugtvedt et al. (1992), participants in the bottom 30% (scores 52 or below for this study) were labeled “low” and the top 30% was labeled “high” (64 and above in this study). The reliability of  $\alpha = .88$  is consistent with previous alphas reported for this construct.

*Health consciousness.* For this study, the construct of health consciousness was developed by adapting reliable scales from previous research which examined healthy eating (Dutta & Youn, 1999; Petrovici & Ritson, 2006). Health consciousness, particularly in regard to diet and nutrition, was measured using a 12-item Likert scale with responses ranging from “1” (strongly disagree) to “5” (strongly agree). Various lifestyle questions were included in an attempt to disguise the true nature of the questionnaire, which ultimately had a total of 30 items. The 12 items which constituted the health consciousness measure appear in Appendix B. Health consciousness was either high or low based on a mean split ( $M = 3.83$ ,  $SD = .40$ ).

*Nutrition knowledge.* The level of nutrition knowledge was assessed by combining scales used reliably in previous studies and modified to include study-specific questions. The final scale was composed of 10 items. The original 15-item nutrition knowledge questionnaire, adapted from Andrews et al. (1998), focused on saturated fat and sodium, so for the purpose of this study most of the fat-related questions were eliminated. The sodium-related questions were kept due to the considerably high levels of sodium in most packaged foods.

In order to create a nutrition knowledge score for each participant, each of the 10 items was designated a point value based on difficulty, ranging from one point (least challenging) to three points (most challenging). A total of 20 points was possible for each participant. Participants were assigned a “knowledge score” based on the questions they answered correctly. The knowledge scores were grouped into low (0 to 7) or high (8 or above) based on a mean split.

*Demographics.* Demographic information was also collected via questionnaire. Participants were asked to provide their age, gender, academic year, major, whether they live on or off campus, as well as how many days per week they prepare at least one meal for themselves in a kitchen. The living situation could be important since individuals who live off campus may be more likely to prepare meals at home and therefore arguably more likely to buy groceries.

#### *Measure Not Included in the Analysis*

*Cognitive responses.* Cognitive responses were investigated by asking participants to write down their thoughts, referred to as thought-listing, of the advertisements immediately after exposure (Andrews & Shimp, 1990; Petty et al., 1983). Thoughts were categorized by the overall number of thoughts and by the valence of thoughts (i.e., favorable, unfavorable, or neutral). The likelihood of persuasion is greater when individuals have more positive thoughts; in contrast, persuasion may still occur in the face of more negative thoughts, however in the form of a boomerang effect (Petty et al., 2005). Types of thoughts were also categorized by mentions of health/nutrition, vegetables, imagery, and the advertisement or product in general.

## CHAPTER FOUR: RESULTS

*Hypotheses*

The hypotheses of this study predicted that when an advertisement included a claim promoting a nutritional aspect of the product, participant attitudes would be affected. Specifically, H1a suggested that an ingredient claim (i.e., vegetable content) would influence attitudes toward the product, brand, and intentions to buy. Several *t*-test evaluations between the two claim groups (taste vs. ingredient content) did not reveal significant differences in attitudes toward the product, brand, or purchase intentions. Thus, this hypothesis was not supported. There is little difference between attitudes toward the product when the ingredient content claim was present ( $M = 5.07$ ,  $SD = 1.20$ ) and when the advertisement featured a taste claim ( $M = 4.88$ ,  $SD = 1.30$ ),  $t(161) = .96$ ,  $p = .34$ . There were no significant differences between the ingredient content claim ( $M = 4.46$ ,  $SD = 1.20$ ) or the taste claim ( $M = 4.32$ ,  $SD = 1.32$ ) groups,  $t(161) = .65$ ,  $p = .52$ , in terms of brand attitude.

A Chi square analysis comparing the likelihood of purchase versus unlikelihood of purchase with claim groups revealed no considerable differences in the likelihood to purchase any of the three products when the ingredient content claim was present,  $\chi^2(1) = .62$ ,  $p = .43$ . Although not included in the hypothesis, an additional analysis examined the influence of exposure to the claim on claim believability. Participants perceived the advertisements with the ingredient content claim as more believable ( $M = 4.71$ ,  $SD = .97$ ) than the ads presenting a taste claim ( $M = 4.35$ ,  $SD = 1.15$ ),  $t(161) = 2.19$ ,  $p = .03$ . To explore this finding further, another *t*-test revealed that participants found the ingredient content claim significantly more surprising ( $M = 3.46$ ,  $SD = 1.89$ ) than the taste claim ( $M = 2.78$ ,  $SD = 1.53$ ),  $t(161) = 2.53$ ,  $p = .01$ . These results are shown in Table 2.

H1b predicted that the presence of the ingredient content claim would result in more favorable nutrition attitudes toward the product. Participants who were exposed to the ingredient content claim evaluated the health/nutritional value of the product significantly higher than those in the taste claim group,  $t(161) = 3.92, p = <.001$  (for ingredient content claim:  $M = 5.05, SD = 1.18$ ; for taste claim:  $M = 4.28, SD = 1.31$ ). This finding demonstrates a relationship between claim type and nutrition attitude, as illustrated in Table 2. Thus, H1b was supported.

### *Research Questions*

To answer RQ1—which asked about relationships between product type, claim type, and nutrition attitude—a Univariate Analysis of Variance (ANOVA) revealed a few significant findings. The results demonstrate a main effect for claim type (i.e., ingredient content or taste) on nutrition attitude, as already confirmed in H1b. The product in the advertisement also appears to have a main effect on nutrition attitude,  $F(2, 163) = 18.9, p = <.001$ . There is a significant difference in the evaluations of nutritional value depending on the type of product an individual saw (i.e., ravioli, juice, pasta sauce). Furthermore, the results indicate an interaction between claim and product type on perceived nutritional value,  $F(2, 163) = 4.83, p = <.001$ . Table 3 shows that these two variables work together to influence nutrition attitudes toward the three products. There is a significant difference between nutrition attitudes toward the juice ( $M = 5.29, SD = 1.05$ ) and the ravioli ( $M = 3.81, SD = 1.40$ ),  $t(101) = -6.13, p = <.001$ . The juice was evaluated as the healthiest in comparison to the ravioli, which was rated as the unhealthiest.

The second set of research questions (RQ2a, b, and c) aimed to assess the role of NC in the evaluations of the advertisement and product. For RQ2a, a *t*-test result indicated no significant relationship between NC and the dependent variables. There is no evident difference in the product attitudes of high NC individuals ( $M = 4.43, SD = .70$ ) and low NC individuals ( $M$

= 4.27,  $SD = .77$ ),  $t(95) = -1.06$ ,  $p = .29$ . No significant variations in attitude toward the brand exist between individuals high in NC ( $M = 4.26$ ,  $SD = 1.21$ ) and individuals low in NC ( $M = 4.42$ ,  $SD = 1.41$ ),  $t(95) = .57$ ,  $p = .57$ . In addition, purchase intentions are not influenced by NC,  $\chi^2(2) = .19$ ,  $p = .91$ . NC also failed to produce significant results for claim believability, in that high NC participants ( $M = 3.81$ ,  $SD = .75$ ) do not differ from low NC participants ( $M = 4.09$ ,  $SD = .86$ ) in the extent to which they found the claim believable,  $t(95) = 1.69$ ,  $p = .10$ , in response to RQ2b. However, when only the ingredient content claim is examined, NC does affect claim believability. Low NC participants who viewed the ingredient content claim were more likely to find the claim believable ( $M = 4.21$ ,  $SD = .90$ ) than participants high in NC ( $M = 3.49$ ,  $SD = .79$ ),  $t(43) = 2.74$ ,  $p = <.01$ . Furthermore, there is an apparent difference in nutrition attitude between those high in NC and low in NC,  $t(95) = 1.95$ ,  $p = .055$ . Low NC individuals tended to demonstrate a more positive attitude toward the nutritional value of the product ( $M = 4.85$ ,  $SD = 1.32$ ) compared to those high in NC ( $M = 4.34$ ,  $SD = 1.25$ ), as Table 4 illustrates. These results are reported for only those in the low and high NC categories, similar to previous research.

RQ3a addressed the impact of nutrition knowledge on three dependent variables. There is not a significant difference in attitudes toward the product between individuals with high nutrition knowledge ( $M = 4.12$ ,  $SD = .85$ ) and those with low nutrition knowledge ( $M = 4.37$ ,  $SD = .648$ ),  $t(42) = 1.04$ ,  $p = .30$ . Brand attitude also does not differ among participants with high nutrition knowledge ( $M = 4.47$ ,  $SD = 1.02$ ) and low nutrition knowledge ( $M = 4.05$ ,  $SD = 1.42$ ),  $t(42) = -1.14$ ,  $p = .27$ . Furthermore, nutrition knowledge does not have an effect on purchase intentions,  $\chi^2(1) = .73$ ,  $p = .39$ . To answer RQ3b, a  $t$ -test comparing claim believability and nutrition knowledge was performed. Results demonstrate that claim believability is unaffected by nutrition knowledge. Participants with higher levels of nutrition knowledge did not find the

claim to be substantially more (or less) believable ( $M = 3.92$ ,  $SD = .74$ ) than those with low nutrition knowledge ( $M = 4.13$ ,  $SD = .712$ ),  $t(42) = .98$ ,  $p = .33$ . Thus, there is no statistically significant finding for RQ3b. RQ3c concerned nutrition knowledge's impact on overall nutrition attitude. A  $t$ -test comparing the mean scores of nutrition attitude was not significant. Individuals with greater nutrition knowledge do not considerably differ in nutrition attitude ( $M = 3.77$ ,  $SD = 1.57$ ) from individuals with less nutrition knowledge ( $M = 3.86$ ,  $SD = 1.21$ ),  $t(42) = .21$ ,  $p = .83$ . The analyses provided inconclusive findings for these research questions.

The last set of research questions asked how health consciousness impacts product and brand attitudes as well as purchase intentions (low health consciousness = 3.83 or less; high health consciousness = 3.84 or above). No statistical significance was found between participants with high health consciousness ( $M = 4.84$ ,  $SD = 1.37$ ) and those with low health consciousness ( $M = 5.02$ ,  $SD = 1.16$ ) in regard to product attitude,  $t(147) = .89$ ,  $p = .38$ . Attitudes toward the brand do not differ significantly between high health consciousness ( $M = 4.46$ ,  $SD = 1.33$ ) and low health consciousness ( $M = 4.23$ ,  $SD = 1.18$ ),  $t(147) = -.95$ ,  $p = .34$ . Purchase intentions also do not seem to be influenced by health consciousness,  $\chi^2(1) = .68$ ,  $p = .41$ . To answer RQ4b and RQ4c,  $t$ -tests were performed comparing levels of health consciousness and claim believability as well as nutrition attitude. The results show no significance. Health consciousness does not influence claim believability for those with high health consciousness ( $M = 4.55$ ,  $SD = 1.16$ ) nor low health consciousness ( $M = 4.47$ ,  $SD = .98$ ),  $t(147) = -.44$ ,  $p = .66$ . There is no significant difference in nutrition attitudes between individuals with higher health consciousness ( $M = 4.49$ ,  $SD = 1.33$ ) and lower health consciousness ( $M = 4.80$ ,  $SD = 1.28$ ),  $t(147) = 1.47$ ,  $p = .14$ . Gender, however, is related to health consciousness. Specifically, females are significantly more concerned with health and

diet ( $M = 3.87, SD = .38$ ) than males ( $M = 3.71, SD = .42$ ),  $t(159) = -2.34, p = .02$ . This is perhaps a result of social values and attitudes regarding female body type, beauty, and dieting.

In order to determine other influences of gender, additional  $t$ -tests were performed with the dependent variables (i.e., product attitude, brand attitude, claim believability, purchase intentions, nutrition attitude) as well as the main measured moderators (i.e., nutrition knowledge, health consciousness, NC). The findings show that females are slightly more knowledgeable about nutrition ( $M = 7.54, SD = 3.17$ ) than males ( $M = 6.44, SD = 3.65$ ),  $t(159) = -1.89, p = .06$ . Interestingly, there is a noteworthy relationship between gender and need for cognition in terms of nutrition attitude. Females low in NC demonstrated significantly more favorable assessments of nutritional value ( $M = 4.97, SD = 1.39$ ) than females high in NC ( $M = 4.09, SD = 1.24$ ),  $t(63) = 2.67, p = .01$ . Potential explanations for the lack of significant results for the research questions are addressed in the discussion.

## CHAPTER FIVE: DISCUSSION

*Summary*

The purpose of this study was to explore consumer attitudes toward food products based on them claims provided in print advertisements. In support of previous research (e.g., Andrews et al., 2000; Ford et al., 1996; Kozup et al., 2003; Roe et al., 1999), the presence of an ingredient content claim in a food advertisement led to more favorable nutrition attitudes compared to when participants viewed a taste claim. This finding validates Roe et al.'s (1999) notion of a positivity bias in that individuals considered the product to be healthier when a specific ingredient (in this case, vegetables) was advertised. Interestingly, participants also considered the ingredient content claim to be more believable or credible than the taste claim, as well as more surprising.

The claim did not, however, influence other attitudes pertaining to the product, brand, or purchase intentions. The lack of significance in terms of purchase intentions is contrary to Roe et al. (1999), who found that participants were more likely to state they would purchase a product when a health or nutrient content claim was present on the packaging. The results of this study do not echo the previous findings. The discrepancy is most likely due to differences in samples—not only was Roe et al.'s sample much larger ( $N = 1403$ ), but it also consisted of household primary food shoppers rather than undergraduate students. Furthermore, one exposure was perhaps not enough to change attitudes toward the product and brand. Exposure over time, while increasing familiarity, may lead to more noticeable effects on product and brand attitudes, as well as purchase intentions.

Participants have very different reactions to the different products, as evidenced by the mean scores of nutrition attitudes in Table 3. Claim type and product type interact with one another to influence overall nutrition evaluations of the product. The findings further strengthen

the categorization of juice as healthy, jarred pasta sauce as moderately healthy, and canned ravioli as not healthy which was determined by the expert panel. Ingredient content claims, and health and nutrition-related claims in general, may have differing effects depending on what kind of product to which they are attached. This idea is addressed in more detail as a limitation and an opportunity for research in the future.

The results of this study demonstrate limited support for NC as a determining factor of attitudes. Product and brand attitudes, as well as purchase intentions and the extent to which participants perceived the claim to be believable, are not influenced by NC. However, when claim type is controlled for, there are differences between high and low NC individuals in terms of claim believability. For participants who were exposed to the ingredient content claim, low NC individuals were significantly more likely to find the claim believable than high NC individuals. As Haugtvedt et al. (1988) assert, low NC individuals are less likely than their high NC counterparts to thoroughly evaluate an argument's worth. This finding demonstrates that low NC participants tended to believe and accept the ingredient content claim more so than those high in NC, arguably stopping short of sufficiently weighing the value of the claim. Assessments of the product's nutritional value are also slightly related to an individual's NC. Compared to those high in NC, participants with low NC reported more positive nutrition attitudes toward the product—possibly due to the decreased likelihood or desire to analyze the claim's value. This difference is enhanced when controlling for gender.

An individual's nutrition knowledge shows no impact on attitudes toward the product, intentions to buy the product, claim believability, or attitudes regarding the nutritional value of the product. Svederberg (2002) suggests that limited nutrition knowledge may impair one's ability to efficiently evaluate claims and therefore lead to a potential decrease in claim

believability (as cited in Williams, 2005). While this research does not support or contradict this assertion, participants with lower nutrition knowledge had a higher mean score for claim believability than participants with higher levels of nutrition knowledge.

The differences between product categories, as Table 2 highlights, prompted further exploration of potential variations between each of the three types of products. Brand attitude was affected by nutrition knowledge, however only when looking at the juice in isolation. In the juice condition, participants with low nutrition knowledge held more positive attitudes toward the brand than individuals with high nutrition knowledge. There is no way to know for certain why brand attitudes were influenced only in regard to the juice advertisements, since all three products were labeled with fictitious brand names. Yet because many participants were aware of the false brands (as mentioned in a multitude of the cognitive responses) it can be speculated that participants associated the advertised brand with the brand they already knew—V8®—and any positive qualities the participants attached to V8® (e.g., it's healthy, it's good for you) could have translated into thoughts and attitudes about the fictitious brand. Another possibility is that the fictitious brands were not held constant across the three advertisements. The juice was renamed “Obi” whereas the brand for the ravioli and pasta sauce was “Alida.” It is uncertain why seemingly unimportant variations in brand names resulted in differences in brand attitudes.

Attitudes, as measured in this study, were not influenced directly by an individual's health consciousness. This motivational factor did not seem to bear significant effects on product or brand attitudes, nor claim believability or the extent to which individuals perceived the product as healthy or nutritious. Although when claim type is controlled, participants with high health consciousness demonstrated slightly more favorable attitudes toward the brand ( $M =$

4.68,  $SD = 1.14$ ) than low health conscious individuals ( $M = 4.17$ ,  $SD = 1.24$ ) in the ingredient content claim condition,  $t(71) = -1.82$ ,  $p = .08$ .

A supplemental analysis revealed that females are more health conscious than males, as well as somewhat more knowledgeable about nutrition, which is in line with the notion that males (especially young males) are typically less concerned than females about diet and nutrition when making food choices (Nayga, 1996). These results prompted further investigation of gender differences. Females with greater health consciousness exhibited less favorable nutrition attitudes ( $M = 4.39$ ,  $SD = 1.36$ ) than females with lower health consciousness ( $M = 4.85$ ,  $SD = 1.29$ ),  $t(107) = 1.79$ ,  $p = .08$ . It makes sense that health conscious females would demonstrate more negative evaluations of the nutritional values of packaged or processed food products.

The influence of nutrition attitude on purchase intentions was not a research question; however further analysis of the data yielded a noteworthy result. Participants who attached a higher nutritional value to the product stated they were more likely to buy the product than those who reported lower nutrition attitudes,  $\chi^2(1) = 3.45$ ,  $p = .06$ . In light of this finding, it is surprising that health consciousness was not found to influence any of the dependent variables.

### *Theoretical Implications*

This thesis attempted to investigate the attitudes formed by individuals in response to print advertisements and how those attitudes were influenced by various ability and motivational factors. In order to efficiently evaluate a message, an individual must be motivated and have the ability to do so (Petty et al., 2005). The goal was to measure aspects of motivation and ability relevant to the evaluation of health and nutrition-related concepts in food advertising. Thus, nutrition knowledge (or an individual's awareness of a variety of nutritional facts regarding saturated fats, protein, and the relationship between salt and high blood pressure, etc.) was

chosen as an ability factor and health consciousness and need for cognition were selected as aspects of motivation.

It is not a stretch to think that the amount of knowledge an individual possesses about nutrition would contribute to his or her capacity to thoughtfully consider the merits of a claim or other nutritional aspects of the product beyond what is mentioned in an advertisement.

Unfortunately, nutrition knowledge did not play a role in evaluations of the product or the advertisement in this study. While nutrition knowledge itself is not related to attitudes it may be related to behavior. While not necessarily a significant ability factor when interpreting advertising claims and making subsequent judgments about a product, nutrition knowledge may be more important when interpreting claims on packaging (when other nutrition information is present or at least available) or when more information is included in an advertisement in the form of a disclosure or disclaimer (Andrews et al., 1998; Andrews et al., 2000).

A better measure of nutrition knowledge may also be needed. The scale developed for this research to measure nutrition knowledge was created from several other scales in order to fit the needs of this study. Although there were a variety of questions aimed to evaluate differences in nutrition knowledge the scale might not have provided a sufficient measure of “nutrition knowledge.” Or perhaps this sample of undergraduates merely has limited nutrition knowledge. Particularly, only 17% of participants correctly identified “five” as the number of recommended fruit and vegetable servings per day, which the researcher perceived as one of the easiest questions in the scale, despite the popularized “5 A Day” campaign promoted by the Center for Disease Control and Prevention (CDC) to encourage five daily servings of fruits and vegetables.<sup>4</sup>

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<sup>4</sup> The CDC and U.S. government have recently launched a new campaign known as “Fruits & Veggies Matter,” which has a website that allows individuals to calculate the right amount of daily fruit and vegetable servings depending on one’s age, gender, and level of physical activity (<http://www.fruitsandveggiesmatter.gov/>).

Two concepts were utilized to explore the motivation of individuals to interpret information in advertisements: health consciousness and NC. Health consciousness, particularly the extent to which an individual is concerned about his or her health and/or diet, is thought to be a potential influence on the judgments made about advertising claims and food products. For example, Naylor et al. (2009) found that individuals with high health consciousness were more likely to choose “functional” food just for the sake of being “healthier.” The present research addressed health consciousness more generally due to the nature of the ingredient content claim and the products to which it is attached. That is, high health conscious individuals might have responded favorably to the ads promoting vegetable content since they are arguably motivated to choose a “healthier” product, in which case peripheral processing would be demonstrated (i.e., positively assessing the ad and product based solely on the ingredient content claim). On the other hand, individuals with high health consciousness could have formed less favorable attitudes toward the products and advertisements utilizing the content claim since they have more motivation to fully consider other aspects of the product (e.g., processed, calories, sodium) than low health conscious individuals, which could be judged as central processing.

In spite of the lack of relationships between health consciousness and the dependent variables there are still visible differences in the mean scores, as shown in Table 5. Although not significantly different, participants with low health consciousness did hold more favorable nutrition attitudes than individuals with high health consciousness. Low health conscious individuals are not as concerned with health and diet as much as their higher counterparts; therefore this group may not have wholly considered other health or nutritional aspects of the product when evaluating it on its nutritional value since those issues are debatably not of great

importance. It is possible that the ad was processed peripherally when the motivational factor of health consciousness was low. Perhaps a larger sample size would clarify these results.

The second motivational element examined was NC. As mentioned, there was a small effect of NC on nutrition attitude—participants high in NC had slightly less favorable attitudes toward the product’s nutritional value than low NC participants, alluding to the central processing of the claim. That is, high NC participants might have assessed the ingredient content claim in regard to the product to which it was attached, acknowledging sodium levels or the processed nature of packaged foods. Results may become clearer with a larger sample.

This individual difference variable may not have been as strong of an influence on attitudes due to the singular claim strength utilized in this study. Much research on ELM involves argument strength (e.g., Andrews & Shimp, 1990; Petty et al., 1983; Whittler & Spira, 2002). Motivational factors, particularly NC (Haugtvedt et al., 1992) and involvement (Petty et al., 1983) are shown to influence attitudes in relation to argument quality. High NC individuals tend to express more positive attitudes when exposed to strong arguments compared to weak arguments while the attitudes of low NC individuals tend to remain relatively static across argument qualities (Haugtvedt et al., 1992). Similarly, when involvement is high, attitudes are most noticeably affected in response to strong arguments compared to weak arguments (Andrews & Shimp, 1990; Petty et al., 1983). Utilizing advertisements for a single product type with various argument strengths might prove to be a better use of the NC measure and may further emphasize differences in motivation and thought processing.

The foundation of ELM as a dual-process model is grounded in the notion that there are two routes to persuasion and attitude change: the central route and the peripheral route. However some researchers suggest that the lines between the two routes are not as definitive as originally

conceptualized (Petty et al., 2005; Scholten, 1996). As previously discussed, individuals high in NC have a greater propensity to engage in effortful thought processing when faced with a persuasive message in relation to those low in NC. Yet Petty et al. (2005) suggest that low NC individuals can still experience heightened information processing, a characteristic generally observed in high NC individuals and a feature of central processing, when exposed to a persuasive message perceived as surprising, shocking, or unexpected. The results of this study show that participants low in NC found the claim more surprising than high NC participants, and also that participants in general found the ingredient content claim more surprising than the taste claim (as shown in Table 2). If low NC individuals considered the claim to be more surprising it may have lead to enhanced scrutiny or central processing of the information. This finding offers a potential explanation for limited differences between high and low NC. Future research should further explore the possibility that a surprising advertising claim causes high and low NC individuals to process the claim similarly.

The research results reveal some support for the hypotheses, but also demonstrate some inconclusive results. The measures for nutrition knowledge and health consciousness in this study may not have been good representations for these concepts and perhaps need to be refined in order to sufficiently tap into individual motivations for analyzing and capabilities to understand health and nutrition-related claims in food advertisements. More research is required to fully understand how consumers interpret ingredient content claims in advertisements and form attitudes or make decisions based on such claims.

### *Practical Implications*

Amidst many insignificant results, this thesis does provide one essential finding which attests to the potential dangers of health and nutrition-related claims. When food marketers

make use of health and nutrition-related persuasive appeals on packaging and in advertisements, consumers tend to demonstrate heightened nutrition attitudes toward those products (e.g., Ford et al., 1996; Roe et al., 1999) and overgeneralizations of healthfulness (Andrews et al., 1998). This study further confirms that people have a tendency to judge food products as being healthier and “good for you” when there is an ingredient content claim present in the advertisement without considering other nutritional aspects of the product that may be bad for your health, such as high levels of sodium.

Currently, several food companies utilize claims on labels and in advertisements for packaged foods which promote the food as being an acceptable substitute for actual vegetables (e.g., Ragú®, Manwich®, and Prego®). In particular, Chef Boyardee’s® current advertising strategy targets moms by encouraging them to feed their children canned ravioli in place of vegetables since most kids detest vegetables (“Obviously delicious. Secretly nutritious,” *Chef Boyardee*, 2011). Even though one portion of Chef Boyardee® ravioli may contain a full serving of vegetables, it also contains 880 mg of sodium according to the Nutrition Facts panel on the can and the company’s website. This is almost twice the amount of sodium per serving considered to be high by the FDA. As noted in the nutrition knowledge questionnaire (see Appendix B), per serving sodium levels are considered high when they exceed 480 mg (based on a 2000 calorie diet). Furthermore, Americans typically eat more than a single serving size in one meal. An entire can of Chef Boyardee® ravioli contains almost 1800 mg of sodium, which is just 500 mg shy of the maximum amount recommended daily (Health.gov, *Dietary Guidelines for Americans 2010*).

This persuasive strategy of Chef Boyardee®, as well as other companies, is problematic in that vegetable consumption is encouraged in the face of high sodium intake, which can present

health issues (particularly high blood pressure). In addition to health, nutrition content, and structure/function claims, the present research inserts an ingredient content claim into the list of claims currently employed on food packaging and in advertisements that are related to health and/or nutrition. The support for H1b further demonstrates the power of such claims and the influence an ingredient content claim can have on the nutrition attitudes that individuals form about products.

### *Limitations and Future Research*

Although this study was able to confirm one of the main hypotheses, most of the research questions remain ambiguous. There are several limitations to appraise and future research directions to offer.

In an attempt to explore individual motivation and ability as influencing factors of the persuasion route through which an advertising message is evaluated, several measures were hand-picked and adjusted to fit the purpose of this study. Nutrition knowledge was intended to correspond to an individual's ability to thoroughly assess the ingredient content claim. However, as previously mentioned, one's knowledge base may not be useful or important when reading a claim without other nutrition information present. Additionally, a sample of undergraduate students might not be as knowledgeable as other adults who spend more time food shopping and preparing meals at home (the majority of the sample, 63%, prepared at least one meal for themselves three days or fewer per week). Nutrition knowledge levels were determined by a mean split of the scores (low = 0 to 7 and high = 8 and above). However the scores were considerably low, making it difficult to distinguish clearly the knowledgeable from the less knowledgeable. While an 8 was considered knowledgeable, there were 20 possible points to be achieved on the nutrition knowledge questionnaire. Therefore a score of 8 is not very

knowledgeable and a more sensitive knowledge scale may have helped distinguish the groups more clearly.

NC was used as a measure of motivation to process incoming information but did not yield significant results in terms of the research questions. There were several instances of elaboration in the cognitive responses, however not enough to make any generalizations. One possibility for limited support is that many previous studies concerning ELM and NC included differing argument strengths which helped separate the individuals who truly assessed claims and information in advertisements from those who did not exhibit as much thought (e.g., Haugtvedt et al., 1992; Petty et al., 1983). Argument strength was omitted from the present research given that only one specific claim type was under investigation. Though the claim in the manipulation did show evidence of a “strong” argument in that it tended to elicit a higher frequency of favorable thoughts than unfavorable thoughts. Future studies should incorporate argument strength as a variable in order to maximize differences.

Other individual differences could affect the ways in which advertisements are received and evaluated. Specifically, general skepticism toward advertising (Obermiller & Spangenberg, 1998) is likely to influence claim believability or attitudes related to the product or brand. However advertising skepticism is contradictory. Singer, Williams, Ridges, Murray, and McMahon (2006) reported that even when participants believed the health claim on a food label, many were still skeptical and questioned the intentions of marketers. People may have a general distrust of claims and view them as advertising tools, yet people rely on advertisements for information. Even though the results show a considerable difference in claim believability among low and high NC individuals when exposed to the ingredient content claim, the difference could be an effect of advertising skepticism. That is, high NC individuals might be inclined to

be more skeptical toward advertising and therefore be compelled to scrutinize claims made in advertisements. Inclusion of general skepticism toward advertising as a covariate would be valuable to further understand attitude formations in response to food advertisements.

Beyond variables and measurements, there were flaws in the design of the study itself. There was no pre-test to measure attitudes before exposure and therefore any changes in attitudes as a result of exposure to the advertisements is undeterminable. It may be interesting to see if motivation, specifically health consciousness or the desire to be health conscious, increases after exposure to an advertisement utilizing an ingredient content claim such as that featured in this study.

Most importantly is the wording of the manipulation check. At the end of the questionnaires, participants were asked to recall the claim in the target advertisement. Rather than using the common typology found in the literature (i.e., ingredient or nutrient content claim), “vegetable content claim” was chosen due to the concern that participants would be confused since they are not familiar with the terminology of “nutrient claims.” Almost 60% of the sample did not answer the manipulation check correctly. Although 90% did answer either “vegetable content” or “taste,” so the two types of claims actually present (as opposed to the other options of cost or convenience) were the most frequent responses. Even if the response did not match the claim in that particular condition the majority of responses were relevant to the study (only taste or vegetable content was mentioned in the ads, never cost or convenience). The discrepancy in the manipulation check was likely enhanced by the images and artwork in the advertisements for ravioli and pasta sauce (see Appendix A).<sup>5</sup> This is a potential weakness in the stimulus materials, but it appears as though the visual may have been interpreted as an advertisement claim by participants in the study.

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<sup>5</sup> The juice advertisements did not contain the same imagery and artwork as the ads for the ravioli and pasta sauce.

It is evident that the imagery in the ads is what stuck out the most and led many of the participants to perceive the claim as promoting vegetable content, regardless of what the textual claim said. One hundred participants chose “vegetable content” for the manipulation check and 51 answered “taste,” even though only 80 participants were exposed to the ingredient content claim and 83 saw the taste claim. This detail, along with the discovery that even participants who correctly answered “taste” for the manipulation check still recorded thoughts about vegetables, is evidence that many individuals perceived a vegetable content claim even when they were in a taste claim condition. Because the advertisements with the taste claim alluded to the product tasting homemade, the images of the vegetables seemed to make sense in the context of making homemade ravioli or pasta sauce. However the visual elements resonated more than the textual claim. This visual effect was not anticipated.

In light of the possibility that the visual cue dominated the processing, the answers to the claim check question could be revealing of the perceptions participants had in regard to the advertisement. The visual effect was not intended to influence the reading of the claim, yet participants evidently focused more on the visual cue and still understood the product to provide vegetables to diets. Images are easier to recall and participants may have processed the advertisements peripherally based on the imagery.

When examining attitudes in relation to the manipulation check responses, participants who perceived the claim and advertisement to be promoting vegetable content exhibited more favorable attitudes toward the product ( $M = 5.15$ ,  $SD = 1.14$ ) than those who recalled a taste claim ( $M = 4.80$ ,  $SD = 1.34$ ),  $t(149) = -1.67$ ,  $p = .10$ , which approaches statistical significance. Nutrition attitude was also approaching significance if a relationship direction had been predicted. Participants who perceived the claim to be vegetable-related evaluated the product as

slightly more nutritious ( $M = 4.82$ ,  $SD = 1.17$ ) than those who recalled a taste claim ( $M = 4.50$ ,  $SD = 1.29$ ),  $t(149) = -1.56$ ,  $p = .12$ . Although these tests are two-tailed (with no specified direction for the relationships) the results are nonetheless noteworthy and underline the importance of visual cues in advertising and suggest that further exploration may be warranted.

The sample in this study is also a limitation. Most research on health and nutrition-related claims has used samples of adults and/or primary food shoppers (e.g., Andrews et al., 1998; Mazis & Raymond, 1997; Roe et al., 1999). Perhaps this group of young college students is just beginning to understand or utilize nutrition information and aspects of food advertising on food choices (ages ranged from 18 to 23).

Lack of significant results may also be a matter of sample size. The sample size suffered from an issue related to brand recognition. Familiar food products were portrayed in the advertisements since they are products which currently use the ingredient content claim as a persuasive appeal. Despite altering the brand names to eliminate possible brand contamination, a significant portion of participants focused on the familiarity of the brands rather than other aspects of the advertisements such as the product or claim. Consequently, many cases which mentioned brand or brand alterations were eliminated, dropping the sample size from 226 to 163. Brand neutrality is important to avoid any preconceptions or existing biases toward the products. Future research would benefit from the inclusion of a brand group for comparisons.

As Table 3 illustrates, the type of claim and the type of product in the advertisement have an interaction effect on nutrition attitudes. The nutrition attitudes toward the ravioli and the pasta sauce differ among claim type much more than nutrition attitudes toward the juice, which received similar evaluations of nutritional value in both claim conditions. Thus it would be fruitful to explore the research questions further to account for differences across product

categories and claim types. As mentioned, the sample size was not large enough to allow for additional analysis across all product and claim pairs (e.g., ravioli plus ingredient content claim,  $n = 18$ ; ravioli plus taste claim,  $n = 26$ ).

There are differences within the data set, however not enough to be statistically significant. A larger sample size would perhaps produce more significant results. Moreover, study results may be enhanced if only one product type was used, or perhaps products with similar levels of perceived healthfulness as opposed to three distinct categories.

Besides examining one food product category or similar food products, additional opportunities to extend the present research include exploring other ingredient content claims and the possibility of strengthening measures relevant to ELM. There are different types of ingredient content claims aside from those promoting vegetable content. For example, some packaged cheese products proclaim to be “made with real milk” and an advertisement for a frozen pizza snack indicates that it is “made with real cheese.” More research should be done to investigate the prevalence of such claims as well as the impacts they may have on consumers.

Although an individual’s level of nutrition knowledge did not appear to influence attitudes in this study, more information in advertisements, such as disclosures or disclaimers (e.g., Andrews et al., 1998; Andrews et al., 2000), could potentially strengthen nutrition knowledge as a measure of ability. Nutrition knowledge may not be readily accessible when an advertisement does not explicitly refer to health or nutrition, but additional information in the ad might activate one’s knowledge and allow one to apply it when evaluating the message.

### *Conclusion*

This thesis is the first known study to investigate the effects of a specific ingredient content claim on consumers’ attitudes. Although an extension of previous research, the present

thesis was exploratory and attempted to combine ideas and theoretical concepts from different fields of study. One prospective contribution to the literature is a new category of health and nutrition-related claims utilized on food labels and in advertisements. A nutrient content claim refers to a particular nutrient characteristic of the food. A health claim links a specific nutrient to a health issue, condition, or disease. Similar to health claims but less specific, structure/function claims address a relationship between a nutrient and a particular body function, such as a vitamin that improves the immune system. An ingredient content claim is different from these three claim types because it does not refer to a specific nutrient, health issue, or functions of the body, but instead gives a general proclamation of an ingredient. Some may argue that an ingredient content claim is related to a nutrient content claim; however they are not the same. The difference lies in where the information is found on a food label. The items mentioned in nutrient content claims (e.g., “low fat,” “high in fiber,” “lots of protein”) are situated in the Nutrition Facts panel. On the other hand, items referred to in an ingredient content claim (e.g., “full serving of vegetables,” “made with real ginger”) are located in the ingredients list.

The results of this thesis are inconclusive and more research is required to lessen the ambiguities. Future research is recommended to include argument strength. Examining a single claim may not be strong enough to produce significant results. A potential benefit to ELM literature is further support for the importance of argument quality when determining the thought processing of persuasive messages. Although there were a few allusions to central or peripheral processing, only inferences can be made at this point in time.

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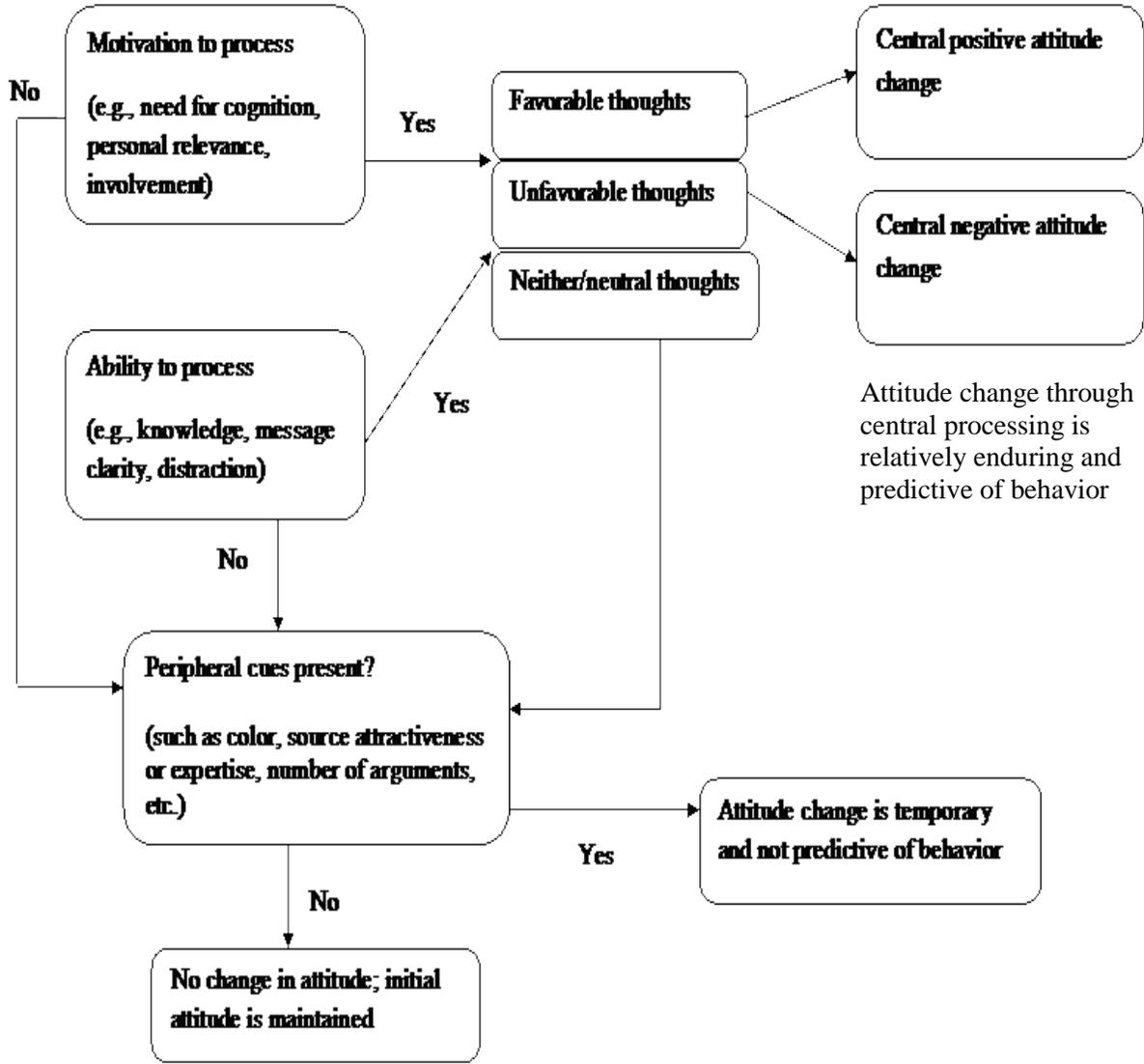
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Diagrams

Diagram 1. This diagram outlines the two routes to persuasion and shows the possible outcomes of exposure to a persuasive message (i.e., peripheral attitude change, central attitude change, or no attitude change) as conceptualized in the Elaboration-Likelihood Model (This diagram is adapted from Petty and Cacioppo, 1986).



## Tables

Table 1

*Perceived Product Healthfulness as Determined by an Expert Panel.*

Product Type	Low Nutritional Value ("1")	Moderate Nutritional Value ("2")	High Nutritional Value ("3")	<i>N</i>
Jarred pasta sauce	3	11	1	15
Vegetable/fruit juice	2	4	9	15
Canned meat ravioli	14	0	1	15

*Note:* There were additional food products in the list. Respondents were allowed to use a rating more than once (e.g., rate more than one product "2").

Table 2

*Effect of Claim Type on Attitudes toward the Product, Brand, Nutrition, Purchase Intentions, and Claim Believability.*

Measure	Claim Type	<i>M</i>	<i>t</i>	$\chi^2$	<i>p</i>
Attitude toward the product	Ingredient content	5.07	.96	--	.34
	Taste	4.88			
Attitude toward the brand	Ingredient content	4.45	.65	--	.52
	Taste	4.32			
Nutrition attitude	Ingredient content	5.05	3.92	--	<.001*
	Taste	4.28			
Likelihood of purchase	Ingredient content	--	--	.62	.43
	Taste				
Claim believability	Ingredient content	4.71	2.19	--	.03*
	Taste	4.35			
Surprising	Ingredient content	3.46	2.53	--	.01*
	Taste	2.78			

Table 3

*ANOVA for Nutrition Attitude by Product and Claim Type\**

Product Type	Claim Type	<i>M</i>
Ravioli	Ingredient content	4.61
	Taste	3.26
Juice	Ingredient content	5.30
	Taste	5.29
Pasta sauce	Ingredient content	5.05
	Taste	4.22

---

\* $F(5, 163) = 14.05, p = <.001$

Table 4

*Mean Scores of Need for Cognition by Attitudes.*

Measure	Need for Cognition	<i>M</i>	<i>p</i>
Attitude toward the product	Low	4.27	.29
	High	4.43	
Attitude toward the brand	Low	4.42	.57
	High	4.26	
Claim believability	Low	4.09	.10
	High	3.81	
Surprising	Low	3.39	.07
	High	2.77	
Nutrition attitude	Low	4.85	.055
	High	4.34	

Table 5

*Mean Scores of Dependent Variables by Responses to the Manipulation Check* <sup>±</sup>

Claim Check Response	Attitude toward the Product ( $p = .10$ )	Attitude toward the Brand	Nutrition Attitude ( $p = .12$ )
Vegetable content	5.15	4.52	4.82
Taste	4.80	4.24	4.50

<sup>±</sup> Regardless of whether or not the response was correct to the condition

Table 6

*Mean Scores of Attitudes toward the Product and Brand, Purchase Intentions, Claim Believability, and Nutrition Attitude by Health Consciousness.*

Measure	Health Consciousness	<i>M</i>	<i>t</i>	$\chi^2$	<i>p</i>
Attitude toward the product	High	4.88	.89	--	.38
	Low	5.02			
Attitude toward the brand	High	4.23	-.95	--	.34
	Low	4.46			
Likelihood of purchase	High	--	--	.68	.41
	Low				
Claim believability	High	4.55	-.44	--	.66
	Low	4.47			
Nutrition attitude	High	4.49	1.47	--	.14
	Low	4.80			

## Appendix A.



The advertisement features a central image of a red can of Alida's Overstuffed Beef Ravioli. The can's label is green and white, with the brand name 'Alida's' in a stylized font. Below it, 'OVERSTUFFED' is written in large, bold, yellow letters, followed by 'BEEF RAVIOLI' in black. A smaller line of text reads 'In Hearty Tomato & Meat Sauce'. An image of a ravioli is shown at the bottom of the label. Surrounding the can are several hand-drawn illustrations of vegetables: a carrot with orange leaves, a yellow onion, three red tomatoes, and a green bell pepper. The drawings are simple line art with some color fills.

Say YES! to a full serving of veggies in every  $\frac{1}{2}$  cup of yummy ravioli

**Alida's** YES! food.



Say YES! to the homemade taste of Alida's ravioli.

**Alida's** YES! food.

# VEGETABLE HATERS REJOICE!

OBI Juice gives you a serving of vegetables  
hidden by the sweet taste of fruit.



© 2010 OBI Brands LP

8oz. = 1/2 cup of vegetables + 1/2 cup of fruit.

**With a juice  
this fresh,  
your juicer  
will be jealous.**



©2010 CSC Brands, LLC



100% Natural 100% Natural

MORE Than a Full Serving of VEGGIES  
In Every 1/2 Cup of Pasta Sauce

Old World Style

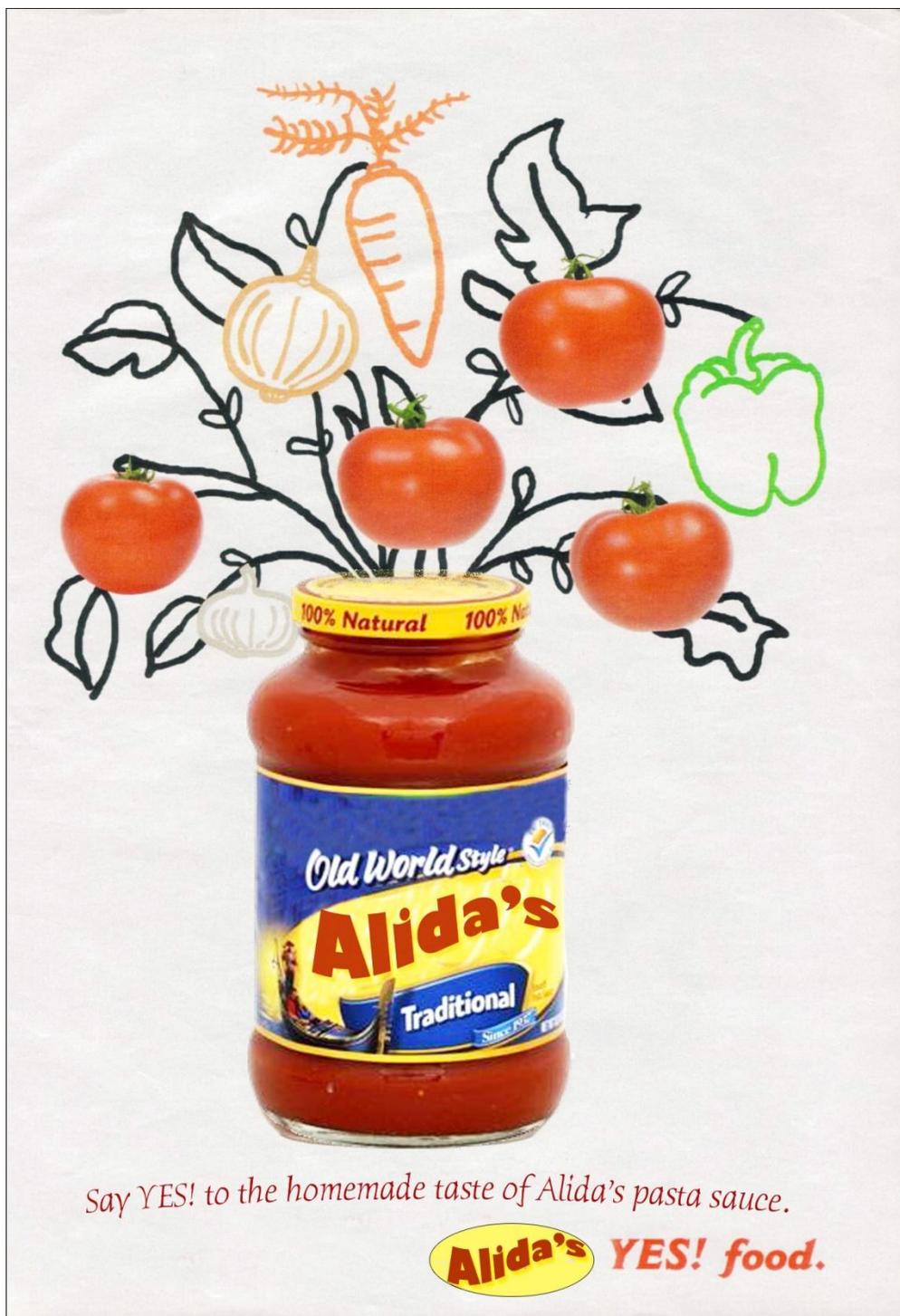
**Alida's**

Traditional

Since 1912

Say YES! to a full serving of veggies in every 1/2 cup of yummy sauce

**Alida's** YES! food.



*Say YES! to the homemade taste of Alida's pasta sauce.*

**Alida's** *YES! food.*

## Appendix B.

**Nutrition Attitude ( $\alpha = .87$ )<sup>6</sup>**

1. I think the nutrition level of this product is (poor/good).
2. Based on the information provided, how important would this product be as a part of a healthy diet? (not important/important)
3. Overall, how would you rate the level of nutritiousness suggested by the information provided? (not nutritious/very nutritious)
4. This product is (bad for your health/good for your health).

**Health Consciousness Scale ( $\alpha = .72$ )<sup>7</sup>**

1. I try to avoid foods that are high in fat.
2. I try to avoid foods that are high in cholesterol.
3. I try to avoid foods with a high salt content.
4. I am concerned about how much sugar I eat.
5. I make a special effort to get enough fiber in my diet.
6. I try to consume a lot of vegetables.
7. I use a lot of low calorie or reduced calorie products.
8. I am careful about what I eat in order to keep my weight under control.
9. I try to avoid foods that have additives in them.
10. I try to consume a lot of fruit.
11. I am concerned about getting enough calcium in my diet.
12. I try to have a balanced diet.

---

<sup>6</sup> The original scale used by Kozup et al. (2003, p. 33,  $\alpha = .85$ ) included a fourth item (“This product is [bad for your heart/good for your heart]”). This item was modified for the purpose of the present study due to the fact this study does not utilize any claims related to heart health/disease (which are health claims) and thus does not concern heart health. This particular item on the scale would not be valid for the research questions or variables proposed in the present study.

<sup>7</sup> Adapted from Dutta & Youn (1999) and Petrovici & Ritson (2006) for the purposes of this study.

### Need for Cognition ( $\alpha = .88$ )<sup>8</sup>

	Strongly Disagree			Strongly Agree	
	1	2	3	4	5
1. I would prefer complex to simple problems.	1	2	3	4	5
2. I like to have the responsibility of handling a situation that requires a lot of thinking.	1	2	3	4	5
3. Thinking is not my idea of fun. *	1	2	3	4	5
4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities. *	1	2	3	4	5
5. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something. *	1	2	3	4	5
6. I find satisfaction in deliberating hard and for long hours.	1	2	3	4	5
7. I only think as hard as I have to. *	1	2	3	4	5
8. I prefer to think about small, daily projects to long-term ones. *	1	2	3	4	5
9. I like tasks that require little thought once I've learned them. *	1	2	3	4	5
10. The idea of relying on thought to make my way to the top appeals to me.	1	2	3	4	5
11. I really enjoy a task that involves coming up with new solutions to problems.	1	2	3	4	5
12. Learning new ways to think doesn't excite me very much. *	1	2	3	4	5
13. I prefer my life to be filled with puzzles that I must solve.	1	2	3	4	5
14. The notion of thinking abstractly is appealing to me.	1	2	3	4	5
15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	1	2	3	4	5
16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort. *	1	2	3	4	5
17. It's enough for me that something gets the job done; I don't care how or why it works. *	1	2	3	4	5
18. I usually end up deliberating about issues even when they do not affect me personally.	1	2	3	4	5

### Nutrition Knowledge Questionnaire<sup>9</sup>

<sup>8</sup> Cacioppo, Petty, and Kao (1984). Items marked with an asterisk are reverse coded. Cronbach's alpha originally reported as .90.

1. Saturated fats are usually found in:

1 Vegetables and vegetable oils

**2 Animal products like meat and dairy** **40%**

3 Grain products such as bread and cereal

4 None of the above

5 Don't know

\*2 points

2. Which kind of fat is more likely to raise people's blood cholesterol level?

**1 Saturated fats** **55%**

2 Polyunsaturated fats

3 Both of them

4 None of the above

5 Don't know

\*2 points

3. Nutrition guidelines suggest that no more than percent of the calories consumed in a day should come from *fat*.

1 10%

2 20%

**3 30%** **6%**

4 40%

5 Don't know

\*3 points

4. Risk of high blood pressure is most likely to be reduced by eating a diet with:

1 Less sugar

2 More iron

3 More fiber

**4 Less salt** **58%**

5 Don't know

\*1 point

5. Vegetables, fruits, and grain products provide:

1 Complex carbohydrates

2 Dietary fiber

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<sup>9</sup> The preceding Nutrition Information Questionnaire was taken and modified from Andrews et al. (1998) and Suter and Burton (1996). The correct response for each item is indicated in bold (pp. 72-73). Items 8-10 were added for the purpose of this study and correct answers were obtained from <http://www.mypyramid.gov>. The point value for each item was arbitrarily assigned according to the perceived difficulty of the question (i.e., 1 point = easy, 3 points = difficult). Percentages of participants who answered correctly are included for each question.

**3 Both complex carbohydrates and dietary fiber** **69%**

4 Neither complex carbohydrates nor dietary fiber

5 Don't know

\*2 points

6. Which food group provides protein, B vitamins, iron, and zinc?

**1 Meat, poultry and fish** **77%**

2 Milk and dairy products

3 Fruits

4 Grain products such as bread, cereal, and rice

5 Don't know

\*1 point

7. Based on a 2000 calorie diet, per serving sodium levels are considered *high* when they exceed

1 140 mg

**2 480 mg** **20%**

3 620 mg

4 2400 mg

5 Don't know

\*3 points

8. Which of the following vegetables is the best source of protein?

1 Spinach

**2 Soy beans** **56%**

3 Corn

4 Brussels sprouts

5 Don't know

\*2 points

9. How many servings of fruits and vegetables, *per day*, are recommended by the FDA?

1 Three

2 Four

**3 Five** **17%**

4 Six

5 Don't know

\*1 point

10. Based on a ½ cup serving, which fruit contains the highest amount of sugar?

**1 Banana** **17%**

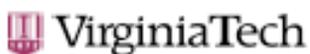
2 Orange

3 Apple

4 Cantaloupe  
5 Don't know  
*\*3 points*

## Institutional Review Board Information

### *IRB Approval Letter*



Office of Research Compliance  
Institutional Review Board  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, Virginia 24060  
540/231-4808 Fax 540/231-0959  
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Website: www.irb.vt.edu

#### MEMORANDUM

**DATE:** November 29, 2010

**TO:** John C. Tedesco, Meghan Tice

**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires June 13, 2011)

**PROTOCOL TITLE:** Exploring Advertising Message Effects

**IRB NUMBER:** 10-866

Effective November 29, 2010, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the new protocol for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at <http://www.irb.vt.edu/pages/responsibilities.htm> (please review before the commencement of your research).

#### PROTOCOL INFORMATION:

Approved as: **Expedited, under 45 CFR 46.110 category(ies) 7**

Protocol Approval Date: **11/29/2010**

Protocol Expiration Date: **11/28/2011**

Continuing Review Due Date\*: **11/14/2011**

\*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

#### FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

*Invent the Future*

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY  
*An equal opportunity, affirmative action institution*

### *Recruiting Announcement*

## Online Recruiting Announcement for “Exploring Advertising Message Effects”

The purpose of this study is to investigate your evaluations of print advertisements. Participants will view several advertisements and complete a variety of questionnaires.

Participation will take approximately one hour, but not more. After completing the study, one hour of research credit will be allotted to each participant. Information on how to obtain study results will be given to each participant after completion of the study. Sessions will be scheduled frequently for about the next two weeks until the number of needed participants has been obtained, which is about 200.

Be sure to arrive at the scheduled room on time as the door will be locked after the study has begun. Once the study has begun you will not be allowed admittance. All participants' privacy will be protected. No individuals will be identified in reports of the research and all information used in the study will be anonymous. Emotional discomfort, if any, is minor and would not be greater than that experienced in everyday life. Students under the age of 18 are allowed to participate in this study.

**VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY**  
**Informed Consent for Participants in Research Projects Involving Human Subjects**  
**Exploring Advertising Message Effects**  
**Meghan A. Tice and Dr. John C. Tedesco, Department of Communication**

**I. Purpose of this Research/Project**

The purpose of this study is to investigate your evaluation of print advertisement strategies. We expect to invite about 250 people to participate in this study.

**II. Procedures**

The following is what will happen during this study (which will take place while you are here in the session):

1. You will read three print advertisements;
2. You will complete a series of questionnaires at your own pace;
3. After completing the final questionnaire, you will be debriefed on the study purpose.
4. You will receive the arranged course credit allotment for participation in the one-hour study.

**III. Risks**

Any personal risk or discomfort you may experience from participation in this study is minimal and is not beyond that you would encounter in everyday life.

**IV. Benefits**

At the end of this study you may be more knowledgeable of communication strategies in advertising. However, these benefits are not a guarantee. If you like, we will make the results of our study available to you through e-mail contact information and share our thoughts on the findings of the study. If you have any questions about this study or would like to learn about the findings (which will be finalized by April 2011), please feel free to contact the investigators (contact information provided below).

**V. Extent of Anonymity and Confidentiality**

We will make every effort to protect your privacy. We will not ask you to disclose your name on any questionnaires and we will not use your name in any of the information we get from this study or in any of the research reports. Please do not put your name anywhere on the questionnaires. All data obtained from this study will be reported as group summaries; individuals will not be identified at any time.

**VI. Compensation**

You will be credited via the Department of Communication's Research Participation system and will receive course credit arranged by your instructor. You will receive prorated credit based on the amount of time you spent participating in the one-hour study.

**VII. Freedom to Withdraw**

You decide on your own whether or not you want to be in this study. You will not be treated any differently if you decide to withdraw from the study. If you decide to be in the study, you have the right to stop being in the study at any time. While completing the questionnaire you may also skip any particular question you choose for any reason. If you stop participating in the study, you will receive a percentage of the full credit allotment proportional to how long you participated in the study.

**VIII. Subject's Responsibilities**

I voluntarily agree to participate in this study. I have the following responsibilities: answer the questions truthfully and to the best of my ability; to refrain from sharing information about this study with others who may potentially participate.

**IX. Subject's Permission**

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

\_\_\_\_\_ Date \_\_\_\_\_  
 Subject signature

Should I have any pertinent questions about this research or its conduct, and research subjects' rights, and whom to contact in the event of a research-related injury to the subject, I may contact:

Meghan Tice - 540-231-3610/[mtice@vt.edu](mailto:mtice@vt.edu); John C. Tedesco - 540-231-3224/[tedesco@vt.edu](mailto:tedesco@vt.edu);  
 James D. Ivory 540-231-6507/[jivory@vt.edu](mailto:jivory@vt.edu)

David M. Moore - 540-231-4991/[mooored@vt.edu](mailto:mooored@vt.edu)  
 Chair, Virginia Tech Institutional Review, Board for the Protection of Human Subjects, Office of Research Compliance  
 2000 Kraft Drive, Suite 2000 (0497), Blacksburg, VA 24060

Virginia Tech Institutional Review Board: Project No. 10-888  
 Approved from November 29, 2010 to November 28, 2011

*Debriefing Statement*

Thank you for participating in this study. In this study we are evaluating the perceptions of and attitudes toward food advertising, specifically advertisements that use health and nutrient-related claims. It is a common practice among food marketers to advance claims relating to health and/or nutrition benefits – even if the product contains high levels of other ingredients such as sugar or sodium, which may have negative health effects. We are interested in how these persuasion appeals are interpreted and evaluated by individuals such as you, especially since you are likely living away from home and may be making your own food decisions.

We asked you to provide your e-mail address if you would like to receive additional information about the advertised product. This question is a part of the study design and aims to assess your interest in learning more information – we will not actually record your e-mail address or send you anything. If you would like to know more about the use of health and nutrient-related claims in advertising you can visit this web site:

<http://www.ftc.gov/opa/2002/10/foodads.shtm>

We are asking about 200 students like you to take part in this study. All participants are taking part in much the same way you are, though the print advertisements they evaluate may vary.

We expect that the findings of this study will help us understand more about how people interpret health and nutrient-related claims in advertising. This understanding may also inform the way individuals develop attitudes toward products and make purchasing decisions. Finally, we ask you to kindly help us maintain experimental validity by not talking about this study with your friends or classmates until everyone has had a chance to participate in the study.

Once again, thank you for your participation. If you have any further questions, or would like to find out about results of this study, please feel free to contact Meghan Tice (e-mail:

mtice@vt.edu). Please allow sufficient time for data to be compiled and analyzed. Results will be finalized by April 2011.

### *Curriculum Vitae*

**MEGHAN A. TICE**  
 80 Red Oak Lane  
 Rensselaer, NY 12144  
 (Cell): 518-929-0377  
 E-mail: [mtice42@yahoo.com](mailto:mtice42@yahoo.com)

### EDUCATION

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***M.A. (Candidate, projected graduation date: May, 2011)***

***Virginia Polytechnic Institute and State University***

Emphasis: Media Studies  
 Advisor: John C. Tedesco  
 Thesis focus: Individual interpretation of health and nutrition-related claims in food advertising  
 Overall GPA: 3.8

***B.A. (2008) State University of New York College at Plattsburgh, Plattsburgh, New York***

Double Major: Communication Studies  
 Sociology  
*Dean's List, five semesters*  
*Cum Laude, GPA of 3.4 on a 4.0 scale*

**Relevant Coursework:**

Communication Theory  
 Mass Media and Society  
 Political Communication  
 Social Movements  
 Persuasion  
 Intro to Human Communication  
 Mass Media and Propaganda  
 Communication and Culture  
 PR Theory and Practice  
 Mass Media Theory

Research Methods  
 Interpersonal Communication  
 Argumentation and Reasoning  
 Sociological Theory  
 Modern U.S. Popular Culture  
 Media and Popular Culture  
 Small Group Communication  
 Mass Media and U.S. Politics  
 New Communication Technology  
 Media Literacy  
 Rhetorical Theory and Criticism

## *TEACHING EXPERIENCE*

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- Virginia Tech – Department of Communication***
- 8/09-present Graduate Teaching Assistant, COMM 2004 – Public Speaking (seven sections)
- Sole instructor for each section (approximately 40 students per section)
  - Course organization was half in-class and half online
  - Utilizing and maintaining a course management system (including online quizzes, e-mail, grade book, discussion forums)
- 1/11-present Graduate Teaching Assistant, COMM 1014 – Intro to Communication Studies
- Large lecture, approximately 300 students
  - Responsible for holding test review sessions as well as debriefing sessions after each test

## *CONFERENCE PRESENTATIONS*

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Tice, M., & Kuypers, J. (November, 2010). Michael Moore tries to heal health care: A Burkeian approach to political entertainment. Paper presented at the *National Communication Association* convention, San Francisco.

Gellert, A., O’Kane, C., Olson, E., & Tice, M. (November, 2010). Capitolizing on social media: A content analysis of United States’ governor’s web portrayals. Presented at the *National Communication Association* convention, San Francisco.

## *EXTRACURRICULAR ACTIVITY*

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- Virginia Tech – Department of Communication***
- 8/09-present Communication Graduate Student Association (CGSA)
- 8/10-present *Executive Board, Secretary*  
*Community Service Coordinator*

## *HONORS*

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- 2008 Faculty-nominated member of the National Communication Association

2007	Alpha Kappa Delta <i>International Sociology Honor Society</i>
2006	Lambda Pi Eta <i>Official Communication Studies honor society of the National Communication Association</i>
2007-08	<i>Vice President/acting President</i>