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Consumers' Uses of Nutrient Content Claims and their Relationship with Health
Orientation and Online Media Exposure and Attention

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ABSTRACT

Consumers' Uses of Nutrient Content Claims and their Relationship with Health
Orientation and Online Media Exposure and Attention

Kelly A. Williams

The purpose of this research is to explore consumers' general uses of nutrient content
claims on food packaging. In addition, the research looks at an individual's self-reported
health orientation, as well as their personal online media usage. This study used
quantitative research to explore these factors. An online survey of the individuals who
make personal health and food choices was conducted to better understand their reported
uses of nutritional claims, as well as their lifestyle habits. Findings suggest that
individuals do use nutrient content claims while looking at food packaging, and that this
significantly relates to their health orientation and online media exposure and attention.
More specifically, the more that individuals use claims, the more health oriented they will
be. The information gathered in this research will help to improve understanding
consumers' methods while looking at nutrient content claims on food packaging, which
have implications for understanding different elements of their personal health. This
information will also provide food companies and marketers insight as to where
consumers are online, and the ways that usage impacts consumers' use nutrient content
claims.

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CHAPTER 1: INTRODUCTION

America is in a health crisis. Two in every three adults is overweight or obese, a 13% rise in the last five years (National Institutes of Health, 2012). The Centers for Disease Control and Prevention (CDC) identifies obesity as "common, serious, and costly," as well as one of the most preventable causes of disease and death (Centers for Disease Control and Prevention, 2015). In the United States, medical costs were estimated at $147 billion in 2008 alone. According to the CDC, a healthy weight is the result of a lifestyle dedicated to healthy eating and physical activity. Conversely, most Americans' health problems are diet-related (Greger, 2013), which may suggest that one of the most influential industries in the health crisis is the food industry.

The American food industry boasts low-calorie, sugar-free, and low-fat nutrient content claims (NCC); however, many of its consumers are still considered obese. In fact, the 69% of overweight and obese Americans causes the U.S. to rank among one of the heaviest countries in the world (National Institutes of Health, 2013). There are numerous weight-loss and diet solutions provided through foods and beverages, supplements, and meal plans to combat the epidemic. Grocery items compete among brands on supermarket shelves to include ingredients that contain fewer calories, sugar, or fat. Because it is a monetary-focused industry inside of a trendy health boom, the food industry recreates unhealthy foods into supposedly healthy alternatives, which typically boast nutrient content claims.

To be at the forefront of consumers' minds, the industry has continuously adapted to the current trend of healthy eating over time. A committee was formed in the Senate in 1968 to better inform the public about nutrition. In 1977, the Committee on Nutrition and

Human Needs released the McGovern Report, which set recommendations for nutritional guidelines; suggesting Americans eat fewer fats, cholesterol, and processed sugars (Greger, 2013). Public health officials agreed with the suggestions, but the dairy, meat, and egg industries were in an uproar. Although the report was factual, the industries lobbied against the report because its products were in danger (Greger, 2013). The dairy, meat, and egg industries won the fight, and the report was retracted.

One way the food industry did respond to the report was through its processed foods. Many foods, such as dressings and cookies, which contained high calories and fat content, were left less flavorful when the fat was removed. To combat the taste, foods are chemically tailored, and starches and gelatin added to over half of these engineered foods. The replacements are called hydrocolloids, a market worth $5.8 billion in 2010 (Bomgardner, 2011). In addition to the additives, different types of sugars are also added. There are 56 aliases used for sugar on ingredient lists, including sucrose, honey, and any type of syrup (Hilmantel, 2014). Sugar is often supplemented for the absence of full-fat foods, such as in tortilla chips or yogurt.

The McGovern Report is one of many lobbying attempts to improve Americans' eating habits. The Center for Science in the Public Interest (CSPI) proposed a case to reform food labels and nutrition facts. Improvements include better defining all food claims, updating the nutrition label with color and font size, and properly educating consumers with what they are eating. Since submitting the case in 2010, some reforms have been achieved, such as stricter punishments to violators (e.g., companies that did not follow proper labeling standards) (Silverglade & Heller, 2010).

The documentary "Fed Up" is another call-to-action effort. The emphasis of the film is the amount of sugar in consumers' diets. Some of the most notable facts are that 80% of America's 600,000 food items contain added sugar, and the percentage of daily value for sugar is left off nutrition labels. The documentary suggests that consumers are not aware of the extent of the claims on packaging (Soechtig, 2014). For example, sugar companies have used lobbying funds to shield its added sugar.

Health terms and NCC entice, appeal, and obsess consumers, while the health-food industry has taken flight in the recent decade (Beck & Schatz, 2014). The term "healthy" allows for a broad interpretation over cultures, food products, diets, and schools of thought. Healthified foods have seemed to become the new health food, above earth-grown items, such as fruits or vegetables. Due to the health trend, the industry has welcomed new types of foods and has perpetuated many misconceptions and a wealth of food claims. There are many factors that affect understanding of NCC, including demographics, health and diet-related attitudes, and perceived importance of product attributes (Nayga, 1999).

The purpose of this study was to determine how individuals use NCC on food packaging and if the individual's personal media consumption affects their use. More specifically, using an online survey of the general public, the goal was to measure use of NCC related to individual's online media exposure and attention, and to determine whether the respondents' nutrition knowledge and self-reports of health orientation are related to their use of NCC. Ultimately, the food industry is at least partially responsible for the obesity epidemic. Therefore, this research could help food companies and marketers understand how consumers are interpreting its NCC.

CHAPTER 2: LITERATURE REVIEW

Because the majority of Americans are struggling with weight and diet-related issues, it makes sense that the food industry should have an obligation to provide healthy foods with honesty of what the products contains. Researchers have examined food claims over a broad spectrum, ranging from overgeneralization of nutrition claims (Roe, Levy & Derby, 1999; Andrews, Burton, & Netemeyer, 2000; Andrews, Netemeyer, & Burton, 2009; Paek, Yoon, & Hove, 2011; Raghunathan, Naylor, & Hoyer, 2006; Wansink & Chandon, 2006) to motivations to be healthy (Dutta-Bergman, 2004; Dutta, 2007). The current study of use of NCC related to online media usage can be guided by information-processing theory, which is discussed in the subsequent sections. The following sections will also explain the government's definition of the different types food claims, the perceptions of food claims, and motivations required to be a health-oriented consumer.

Government Definitions

The government-funded regulator, the Food and Drug Administration (FDA), provides a loose definition of healthy and has some restrictions on packaging and marketing of companies' products. The Federal Trade Commission (FTC) is responsible for monitoring the claims; highly regulating what is and is not permitted on packaging. The government has a major responsibility because consumers are instantly drawn to products with claims on the front of packaging (Singer, 2011).

In the United States, approximately 25% of the population is on a diet, and the country collectively spends about $60 billion on weight-loss products each year (Williams, 2013). American health-conscious consumers are willing to pay a premium

for foods that offer shortcuts to healthier living (Singer, 2011). American food and beverage packaging frequently uses phrases such as "all-natural," "sugar-free," and "low-fat." To the companies' advantage, there are not tight restrictions on the claims. To the consumers' disadvantage, companies are, in part, to blame for contributing to America's obesity problem (Wansink & Chandon, 2006). Food companies, however, argue that consumers are responsible for their personal choices and that they are provided the list of ingredients prior to consumption. The consumer must understand the weight and health consequences of overconsumption. Raghunathan, Naylor, and Hoyer (2006) contend that while the hunger problem in the country has been generally eliminated, with it has come an endless availability of food and the ability to over consume.

The process for companies is simple. Food companies appeal to the common trend in order to sell more products and entice consumers. Because it is made in a factory, processed foods' nutrition labels can be dialed up or down according to what will draw consumers. If the trend is reduced calories, the ingredients can be reformulated to contain only 10 less calories and bear the claim "reduced-calories" when corners are cut to have appealing claims. Consumers may be drawn to think that there are healthy alternatives to full-fat or sugar-containing versions. However, Ford, Hastak, Mitra, and Jones (1996) argue that consumers view products more positively if a health claim is present, but the product is in its natural, rather than a processed, state.

In 1990, the FDA passed the Nutritional Labeling and Education Act (NLEA), which serves as a guide to nutrition labeling as well as identifies the requirements of what must be present on each food label. The act outlines specific guidelines and restrictions, identifying what is and is not permitted on food labels. There are four types of claims

outlined in the act: (1) nutrient content claims; (2) health claims; (3) qualified health claims; and (4) structure/function claims ("U.S. Food and Drug Administration," 2013).

Nutrient content claims (NCC) provide the level of a nutrient in a food or dietary supplement product. The terms range from *free*, *high*, *low*, when describing the amount of a specific nutrient, to *more*, *reduced*, *lite,* when comparing nutrients in different products ("U.S. Food and Drug Administration," 2013). These claims also are used to describe the percentage of a nutrient in a single serving based on a 2,000-calorie daily-value scale. For example, if a product is defined as a "good" source of calcium, it must have at least a 10 percent daily value. For a product to be an "excellent" source, there must be 20 percent of the recommended daily value. Other nutrient content claims are available on the FDA's website. Nutrient content claims do not need preapproval from the FDA. Following the passage of the NLEA, the FDA limited the number of nutrient content claims that could be placed on food and dietary supplement packaging ("U.S. Food and Drug Administration," 2013). An appraisal of claims on food advertisements in magazines showed that nutrient content claims are the most frequently used, likely because the claims do not need preapproval from the FDA (Nan, Briones, Shen, Jiang, & Zhang, 2013). Furthermore, the current study will focus exclusively on consumer's usage of NCC; however, the three other types of claims are described below.

Health claims specify the relationship between a food and reduced risk of a health-related condition. Both components must exist for the claim to be in this category, and the FDA must approve the claim. Companies can refer to the FDA's *Food Labeling Guide* to obtain previously approved health claims to advertise or promote their product on its food labels ("U.S. Food and Drug Administration," 2013). The content of a health

claim suggests that eating a certain type of food could reduce the chances of developing a negative health condition, such as heart disease or diabetes (e.g., Cheerios' claim that it reduces cholesterol).

A qualified health claim is more specific. The Consumer Health Information for Better Nutrition Initiative group noted that consumers might benefit more from food labels with information about diet and health ("U.S. Food and Drug Administration," 2013). The difference between a health claim and a qualified health claim is the science supporting the claim. A qualified health claim does not require the Significant Scientific Agreement (SSA), but it does require FDA approval. An example of a qualified health claim is, "Whole grains may reduce the risk of type 2 diabetes, although the FDA has concluded that there is very limited scientific evidence for this claim" (Nestle, 2013, para. 5).

The final health claim is a structure/function claim. These claims describe the effect of a supplement on the structure or function of the body. The role of the nutrient or dietary ingredient is highlighted to describe health benefits to the body, such as "calcium builds strong bones" or "antioxidants maintain cell integrity." Similar to nutrient content claims, structure or function claims do not require premarket review by the FDA, but a disclaimer must follow the claims stating that the product is "not intended to diagnose, treat, cure, or prevent any disease" ("U.S. Food and Drug Administration," 2013).

Overgeneralizations

A common way that consumers obtain information about food products is from the labels that companies design and market. Many times, this information is overgeneralized and wrongly interpreted. Roe, Levy and Derby (1999) determined that

the halo effect is present in food labeling when a claim is present. The halo effect, a phenomenon coined by psychologist Edward Thorndike in 1920, occurs when an observer's first impression of a person, product, or brand influences all characteristics of it ("The halo effect," 2009). In the context of food labels, a claim such as "low-fat" or "reduced sugar" may lead consumers to view the product as healthier due to attributes not mentioned. The consumer may use the claim to overgeneralize the healthfulness on the entire product and purchase products that are not necessarily healthy (Roe, Levy & Derby 1999). In contrast, Ford, Hastak, Mitra, and Jones (1996) refute this finding. Their experiment found no evidence of the halo effect; however, products with claims were received better than products with no claims. Consumers were more likely to choose foods with specified claims, although findings showed that health claims and nutrition information have independent effects on consumers.

Andrews, Burton, and Netemeyer (2000) researched specifically whether consumers form misleading generalizations from claims, based on comparing NCC on soup labels in an experiment. The findings indicated that consumers' preconceived nutrition knowledge reduces misconceptions; however, shoppers often overgeneralized the claims by assuming one claim makes the entire product healthy. The different product categories (e.g., soup, yogurt, chips) also play a significant role in understanding perceptions and claims. Some products, such as soup or yogurt, are commonly viewed as healthier choices. This finding may suggest that consumers who purchase certain "health" foods have preconceived nutrition knowledge and tend to be healthier.

To continue nutritional advertising research, Andrews, Burton, and Netemeyer (2009) conducted another experiment, which focused on consumer information

processing of claims through internal nutrition knowledge and motivation. The findings suggest that exposure to nutritional foods claims can lead to the halo effect and cause misperceptions among consumers. The halo effect can reduce the perception of weight gain and cause consumers to view products as healthy, thus overgeneralizing the healthfulness of the product. Further, the study identifies the internal motivations of consumers through the external characteristics of claims, which consumers obtain through (1) Nutrition Facts panel and nutrient content and health claims on packages and (2) nutrition claims and related information from advertising. Consumers in the study believed that there would be a reduced likelihood of a perceived weight gain from external information and also viewed reduced-fat and reduced-calories claims as vague. In turn, this perception led to an increase in intention to buy food that is not particularly healthy.

Anchoring claims, a claim with a comparison to other brands in the same product category, is another bias that can cause overgeneralization. Consumers create an anchor of what they initially believed about a product. Paek, Yoon, and Hove's (2011) online experiment of college students, tested competing NCC that use the terms "more than" or "less than" to lure in consumers. Participants perceived food products to have lower fat or calorie content than the product actually had at the presence of an anchor. This suggests that individuals who read comparative NCC automatically believe the product at hand is healthier than it is.

Similarly, Wansink and Chandon (2006) used an experiment to test the low-fat claim and its effect on overgeneralizing claims. The findings indicated that snacks with "low-fat" on the label increased consumption up to 50%. The study also analyzed

separated normal-weight and overweight habits among respondents. The low-fat label increased the consumption when foods were believed to be relatively healthy among normal-weight people, and overweight people's habits were increased with the claim on any food, comparable to effect of an anchor. This suggests that a low-fat claim distorts beliefs of all people, regardless of weight, on at least some types of foods.

Taste was another factor in identifying overgeneralization. Raghunathan, Naylor, and Hoyer's (2006) experiment found that consumers chose to indulge in foods that are higher in fat because they are misguided to believe that eating healthy is not tasty.

Restaurants

Dining outside of the home is not exempt to overgeneralizations, trendy health words, and NCC. Many meals are consumed outside of the home, where people do not have control of what goes into the food or have access to a full ingredient list. Because people are often not aware of the nutrition information of the food they are consuming when they do not prepare it, they may consume more calories than anticipated. A low-calorie, low-fat, or low-sodium assumption may lead to unintended overconsumption from the trust of the claim and a formation of a halo of the entire meal (Howlett, Burton, Bates, & Huggins, 2009).

Restaurant dining does not always provide nutrition labels and information that are as accessible as foods consumed inside the home. When nutrition information is presented to the consumer, research suggests there is a strong influence on consumption totals. For example, Howlett Burton, Bates, and Huggins' (2009) experiment found that perceptions are more negative when nutrition information is provided (e.g., less healthy). Perhaps this is due to consumers being uncomfortable with the truth of the unhealthiness

of the meal. Consumers tend to underestimate calories and nutrient information when they do not have control of the ingredients entering their food (Howlett, Burton, Bates, & Huggins, 2009). In fact, when a restaurant claim makes an entrée appear to be healthy, side dish consumption increases 131% (Chandon & Wansink, 2007).

Perceptions and Understanding

Because the media has the ability to influence public opinion, understanding, and perceptions, it holds a responsibility for what it presents to its audience (Mutz, 1989). This obligation began with traditional media and also holds strong for new media. Health news is complex, scientific, and should not be assumed. Therefore, there is frustration among consumers due to the lack of knowledge and training in health reporting, which has provided false hopes, unnecessary fears, and a misled public (Hampl, 2004). The ability that media outlets have to provide unwarranted information was not as significant as an issue before the internet, a forum where anyone can post anything, whether it is truthful or not.

The Pew Research Center conducted a study on patients who use the internet for health advice, those also known as e-patients. Of internet users, 80% use the web to research health information. The majority also reported that the information found affected personal health decisions ("Pew Research Center," 2008).

New forms of media, such as virtual communities, are rapidly increasing in popularity, which are defined as social networks formed or facilitated through electronic media (Camerini & Diviani, 2012). Often, informal leaders rise in these virtual communities through heavy involvement and dominating belief, but they may not have qualifications to provide advice or opinions. In an Italian study, it was found that health

topics in virtual communities could shape a perception of uncertainty (Camerini & Diviani, 2012). In addition, Cline and Haynes (2001) explored health information consumer processing and recognized the challenge of the constantly transforming internet.

Fleming, Thorson, and Zhang (2006) conducted a telephone survey of Missouri residents to examine the relationship between local news media and the public's perception of food safety. Their findings indicate that people acquire and process information from the media, thus forming specific perceptions about the information provided to them. Therefore, the current study asked:

> **RQ1**: Is there a correlation between perceptions of claims on food packaging and how an individual uses that information?

Information-processing theory requires attention to grasp consumers' understanding of healthy eating and their behaviors. Through the process, it is posited that the motive of the relationship between news media and forming perceptions will become more apparent. More precisely, it will explore how readers (e.g., newspapers and magazines) and viewers (e.g., TV and video-streaming social media sites) cognitively process and act upon the news provided. Based on Fleming, Thorson, and Zhang's (2006) study, the theory will assist the current research to understand how people decode and comprehend news regarding NCC received from the media.

Information-Processing Theory

First applied by Allen Newell, J.C. Shaw, and Herbert Simon in their 1958 experiment of digital computers, information processing is a cognitive approach to understanding the way that the human mind processes sensory information (Newell, Shaw, & Simon, 1958). A psychology-based theory, information processing helps to

explain how people take in, process, and store various forms of information provided by the media. Once received, the mind uses analogies of what is already known to describe and interpret how the information is taken in and made sense of (Baran & Davis, 1995). In short, the theory implies that individuals process media and interpret it to make sense out of a situation or information the individual received.

Dutta-Bergman (2004) recognized the motivations necessary behind information processing required to be healthy and added to the body of knowledge with health information consumer processing. He suggested that the media channel that consumers select dictates his or her level of motivation, and information processing mediates the relationship between motivation and learning (Dutta, 2007).

Information-processing theory guided Fleming, Thorson, and Zhang's (2006) survey of food-safety perceptions from local newspaper and television news media. The findings suggest that the public perception of food safety is not influenced by local news media and the relationship is indirect. Because the flow of information is constant and overwhelming, people develop different strategies to consume information. Roe, Levy, and Derby (1999) also used information processing in their study, which was gathered through face-to-face interviews of mall recruits. The researchers closely watched how interviewees reacted when presented a food label, both with and without food claims. They found that the presence of the claim limited the number of consumers who also read the Nutrition Facts of the back of a label. When a claim was located on the front label, consumers were more likely to truncate the remainder of the search due to information processing. Findings suggested that the processed claims ultimately led participants to determine that the product was healthy.

One of the benefits to the theory is its predictability. The results from each study are consistent and specific. Although there are different ways to process the information, the strategies are stable across consumers. The two strategies are elaborative processing and active reflection. *Elaborative processing* occurs when individuals consume media and can remember and understand it later on. *Active reflection* occurs when individuals read between the lines and can understand what is not directly stated after consuming media (Fleming, Thorson, & Zhang, 2006). Fleming et al's (2006) study used these strategies as mediating variables in their research, which explain how the information is processed. Because the topics perceptions of food safety and usage of NCC are similar, the current study is guided by Fleming et al's (2006) research and proposed the following hypotheses:

H1(a): Exposure and attention to health news on the internet and social media will be positively related to use of NCC.
H1(b): Elaborative processing is positively related to the use of NCC.
H1(c): Active reflection is positively related to the use of NCC.

Motivations

Burnkrant (1976) proposed that a motivation is required to cause a person to use information-processing theory in his or her motivational model of processing information. The level of the motivation that an individual puts forth in a situation helps determine attitude and behavior of the outcome. The theory posits that motivation is required for information processing to occur.

Dutta-Bergman (2004) defined *motivation* as an individual's interest in a particular issue or topic, subsequently leading to active engagement in cognitions and behaviors related to a specific issue or topic. In a later study, Dutta (2007) defined a

motivation to be healthy as the extent to which an individual is willing to take care of his or her health. An illustration of this motivation is Andrews, Burton, and Netemeyer's (2000) survey of primary food shoppers. They argued that a level of understanding NCC is dependent upon nutrition knowledge. This idea suggests that consumers must have some type of motivation to lead a healthy lifestyle through his or her diet.

Dutta-Bergman (2004) credited the interest in health information to both the health-care movement and the limitless access of health information via the internet. He created four indicators of health orientation, which guided his 2004 and 2007 studies. The first tested both health orientation and where individuals receive their media. The second was a follow-up, which focused solely on health orientation and different types of television shows. The indicators are:

    (a) *Health consciousness*: health concerns are integrated daily activities; eating healthy and exercising
    (b) *Health information orientation*: the willingness to look for health information
    (c) *Health-oriented beliefs*: specific perceptions held by an individual about health behaviors
    (d) *Healthy activities*: the act of engaging in behaviors that are healthy (Dutta-Bergman, 2004, p. 275)

Based on Dutta-Bergman's previous work, the current study proposed the following hypothesis:

    H2: Individuals with **higher** health orientation have **higher** reported use of NCC information than those who have **lower** health orientation.

Dutta-Bergman (2004) concluded that audience motivation in health content is the main subject of health communication research. He found that consumers of active media (interpersonal networks, print media) for primary media consumption are more health oriented than peers who are consumers of passive media (broadcast and radio.) Because

an individual must seek out written media to read or put forth effort to have a conversation, these types of consumption are classified as active. Media that are passive are broadcast mediums that can be overheard. More important for the current study, consumers who gathered information on the internet are classified as active users, a more health-oriented, motivated individual (Dutta-Bergman, 2004). To use the internet, individuals must actively seek the information he or she is looking for. It is unlike a TV or radio that could be listened to. In Dutta's (2007) study, the variables were learners or non-learners of different types of television. Because TV and online media are similar, the current study adopted this variable, but use different types of online media. Based upon these findings, this current study proposed the following hypotheses and research question:

> **H3(a)**: Individuals who learn something about NCC from *social media* are **more likely** to be health oriented than individuals who do not learn something about NCC from social media.
> **H3(b)**: Individuals who learn something about NCC from *online news sources* are **more likely** to be health oriented than individuals who do not learn something about NCC from online news sources.
> **H3(c)**: Individuals who learn something about NCC from *government websites* are **more likely** to be health oriented than individuals who do not learn something about NCC from government websites.
>
> **RQ2**: How are respondents' self-assessment of their health and nutrition knowledge related to their use of NCC?

The control variable in the current study is in place to make the relationship of the independent and dependent variable clearer. Individuals' health orientation, online media usgae, information-processing theory, and reported use of nutrient content claims were controlled by nutrition knowledge.

In summary, the nutrient content claims on food labels and in marketing are complex. Claims are regulated by the U.S. government, but are found to be deceptive to consumers, especially those who are less health oriented. There are numerous ways that these labels may deceive, whether intentional or not, and could contribute to the nation's obesity epidemic. Using information-processing theory as a guide, this study examined how both health oriented and non-health oriented consumers are exposed and pay attention to online media and whether this influences his or her use of NCC.

CHAPTER 3: METHOD

The study used an online survey to gain quantitative information from the general public, including both health-oriented and non-health-oriented individuals and active and non-active online media users. The following section will provide an explanation of the process and procedures of gathering survey data.

Survey Data-gathering Process

To gather insight of common perceptions and use of NCC, exposure and attention to online media platforms, and indicators of health orientation, an online survey was conducted using Qualtrics web-based survey software. An online survey best fit the parameters of the current study because of its large geographical reach, low cost, and ease of exporting and analyzing data (Wright, 2006). In addition, numerous companies, organizations, and groups have a website, social media accounts, and general online presence, which assists in recruitment for participants through search engines and virtual communities (Wright, 2006). Other types of surveys, such as telephone or face-to-face, did not fit the time and cost restraints of this study. The study also asked respondents directly about personal online media usage, so the internet was likely a medium with which they were familiar.

Because everyone must make personal decisions for foods they consume, the general public 18 years or older was selected as the audience. This was chosen to gather a high number of responses, although a probability-based sampling was not available due to time and cost restraints. Thus, a non-probability-based sample was used to recruit participants. A total of 1,511 people at least began the survey, but only 924 were kept for

complete analysis. A full explanation of the sample size is described later in this chapter under the missing data section.

It was assumed that it would be helpful to gain insights from online media users to understand motivations that cause individuals to be health oriented or non-health oriented, so the general population was asked to complete the survey, without limiting certain characteristics of people. In addition, socioeconomic status and internet usage have a high correlation, so the current study's participants were expected to have a higher socioeconomic status.

Survey participants were found through a convenience sampling. A $25 cash card incentive for every 100 survey participants also was offered. To ensure that the participants' privacy was kept confidential, personal information was not connected to their responses. After respondents completed the survey, they had the option to follow a link to a separate page to provide their name and email for a chance to win a cash card.

Survey Implementation Procedures

Qualtrics survey software was provided at West Virginia University to implement the online survey. Once closed, the program directly downloaded the response sets to an SPSS data file to be analyzed. To ensure each participant only took the survey one time, a ballot-stuffing feature was selected to avoid repeat responses. Participants were greeted with a cover letter, and a thank-you message was included at the end. The survey was easy to access because were no required passwords or access codes, and a monetary incentive was provided to yield a larger number of responses. The goal was to obtain as many responses as possible within a one-month time frame, but after much success, the survey was closed after one week. A high number was desired because of the broad type

of respondents allowed to take the survey. At the start of the survey, participants were assured they could skip any questions that they did not want to answer.

The survey's missing data were removed using listwise deletion. Based on Ender and Bandalos (2001) analysis of missing data techniques, listwise deletion provides an unbiased approach to data missing completely at random. For the current study, only cases that contained 100% of the independent and dependent variables were retained for analysis.

The primary investigator, co-investigator, and other individuals sent the survey to different people in their social networks via Facebook, Twitter, and Instagram. The posts requested social media users to follow the link provided and take the survey. The Facebook post briefly explained the research and asked participants to pass the survey along to others in their networks. Although more were planned, only one Facebook post was necessary for the time frame because of a high number of responses during a short collection period. Because of Twitter's 140-character limit, the tweets condensed the same information into a shorter phrase. There were two tweets posted during the week. Instagram does not allow links to live inside posts, so the link to the survey was posted in the primary investigator's profile, with a post that stated where to find it. Although the link must be sought after, Instagram was still a viable medium to recruit participants. Often, food bloggers post a picture of their dish on Instagram and advise users to follow the link in their profile to access the recipe. The current study followed the same pattern because Instagram users are already accustomed to follow these instructions. Again, because of the quick response rate, there was only one Instagram post during the week. The survey link also was emailed to a list of popular food bloggers. Many replied,

indicating that they took the survey, and one share it with her large following on Facebook and Twitter. Finally, the survey link was shared on the online community, Reddit, which is an online source for entertainment, social networking, and news. Originally, an invitation message with the survey link was intended for the food and fitness subreddits. Because these subreddits did not permit surveys or personal promotion, the message with the link was posted on 23 different subreddits, primarily different university subreddits, across the country. The most successful subreddits were the WVU, Ohio State University, University of Michigan, and University of Illinois Urbana-Champaign pages. Sample posts for all social media, emails, and Reddit forums, as well as the complete list of bloggers' emails and subreddit pages, can be found in Appendix C.

Survey Instrument

The survey contained 42 questions. See Appendix A for the survey consent form and Appendix B for the survey instrument. Most of the questions regarding use of NCC, health orientation, and online media exposure and attention used 5 or 7-point Likert-type scales, which allowed participants to give more thoughtful responses by measuring subjective concepts (Fowler, 2006). The questions were ordered by topic (e.g., perceptions and reported use of NCC, information processing, health orientation) to maintain flow and ease of interpretation (Fowler, 2006). An introduction explained importance of the research, that the questionnaire would take no longer than 10-15 minutes (after a pretest), all responses would be kept confidential, and participants could terminate the survey at any time.

Operationalization of Variables

This study measured health, attitudes, and beliefs of people who seek online media to obtain news. The survey began with general food interest questions, then contained specific questions about each of the variables being measured: perceptions of NCC, reported use of NCC, information processing, health orientation, online media usage, a self-assessment, and nutrition knowledge. The research questions and hypotheses with corresponding survey questions can be found in Table 1.

Table 1. Research Questions and Hypotheses with Corresponding Survey Questions.

RQ/H	Survey Questions	Source(s)
RQ1: Is there a correlation between perceptions of claims on food packaging and how an individual uses that information?	5-8	Andrews, Netemeyer & Burton (1998)
H1(a): Exposure and attention to health news on the internet and social media will be positively related to use of NCC. H1(b): Elaborative processing is positively related to the use of NCC. H1(c): Active reflection is positively related to the use of NCC.	9-10; 11; 20-21	Fleming, Thorson, & Zhang (2006) Garretson & Burton (2000) Camaj & Weaver (2013)
H2: Individuals with higher health orientation have higher reported use of NCC information than those who have lower health orientation.	6; 9-10; 12-15	Dutta-Bergman (2004); Dutta (2007)
H3(a): Individuals who learn something about NCC from *social media* are more likely to be health oriented than individuals who do not learn something about NCC from social media. H3(b): Individuals who learn something about NCC from *online news sources* are more likely to be health oriented than individuals who do not learn something about NCC from online news sources. H3(c): Individuals who learn something about NCC from *government websites* are more likely to be health oriented than individuals who do not learn something about NCC from government websites.	12-15; 22	Dutta-Bergman (2004); Dutta (2007)
RQ2: How is respondents' self-assessment of their health and nutrition knowledge related to their use of NCC?	9-10; 12-15; 23-24	Dutta-Bergman (2004); Dutta (2007)
Demographics	35-42	General

Participants were asked demographic questions at the end of the survey. The first question screened participants, asking if they were 18 years or older. If a participant answered no, they were sent to the end of the survey. The next couple questions were basic, and were in place to warm up the participant to the survey. Two of the questions asked participants about their favorite foods and their most recent meal. The next question asked participants how much they believed they knew about nutrition compared to other people. The following is the operationalization variables that were measured in the study.

Perceptions of nutrient content claims. First, respondents were asked to rate the level of healthiness of 10 claims ($\alpha = .79$, $M = 45.37$, $SD = 6.831$). The questions were asked using a 7-point Likert-type scale that ranged from "extremely unhealthy" to "extremely healthy." The 10 claims were: (1) all natural; (2) organic; (3) non-GMO; (4) no preservatives; (5) fat free; and (6) sugar free; (7) low calorie; (8) low carb; (9) low fat; and (10) low sodium. To create one perception variable, the researcher computed a new variable consisting of the sum of the responses for the 10 perception measures. This new composite variable was computed after data were screened for simple descriptives and the reliability was checked of each individual measure.

Use of nutrient content claims. The next variable measured individuals' use of NCC, more specifically respondents' reported use and interpretation of the NCC that are present on labels and packaging ($\alpha = .83$, $M = 14.28$, $SD = 5.085$). To measure use, participants were asked to indicate how often they use information that claims provide, using a 5-point Likert-type scale that ranged from "never" to "always," to do five different things: "To compare different food items with each other;" "To see if something

said in advertising or on the package is true;" "To get the general idea of the nutritional content of the food;" "To see how high or low the food is in things like calories, salt, vitamins, or fat;" and "To see if there is an ingredient that you or someone in your family should avoid." To create one use variable, the researcher computed a new variable consisting of the sum of the responses for the five use measures. This composite variable was computed after data were screened for simple descriptives and the reliability was checked of each individual measure.

Information processing. To measure information processing, the survey question was modeled after Fleming, Thorson, and Zhang's (2006) food-safety survey. The question was reworded to fit the current study's topic of online media usage regarding health news. There were seven statements respondents were asked, using a 7-point Likert scale that ranged from "strongly disagree" to "strongly agree." The first five scale measures represented elaborative processing ($\alpha = .79$, $M = 23.87$, $SD = 5.423$) and they were: "When I come across news stories about nutrient content claims, I find myself tying the stories to those I have had before.;" "Often when I have learned something about food claims from online news, I will recall it later when I think about it;" "I often interpret news stories about food claims in a way that helps me make sense of them;" "I almost always try to find out additional information about a food claim story from the news when I feel it is important;" "I often talk to my friends and family about the food claims I've learned in the news." The final two represented active reflection ($\alpha = .84$, $M = 10.74$, $SD = 2.73$): "When I come across food claims stories in my online media, I always try to figure out what is the real story that they're not telling me;" and "I find it necessary to read between the lines of a food claim story to figure out what's really going on."

Health orientation. The four indicators of health orientation are (1) health consciousness; (2) health-information orientation; (3) health-oriented beliefs; and (4) healthy activities, which were based on Dutta's (2007) study. Survey questions were drawn from his survey that measured health-orientation processing from television sources. Dutta separated different types of television programs into three categories to measure the differences between learners and nonlearners of the programs. The current study followed this model, but applied the questions in terms of three online media categories. All self-reported health-orientation was measured using a 7-point Likert scale ranging from "strongly disagree" to "strongly agree" or "not at all important" to "extremely important." Each indicator of health orientation is described in the paragraphs that follow.

Health consciousness was measured by five statements (α = .82, M = 28.53, SD = 4.479): "Living life in the best possible health is very important to me;" "Eating right, exercising, and taking preventative measures will keep me healthy for life;" "My health depends of how well I take care of myself;" "I actively try to prevent disease and illness;" and "I do everything I can to stay healthy."

Eight statements measured *health information orientation* (α = .86, M = 41.37, SD = 7.754). The statements were: "I make a point to read and watch stories about health;" "I really enjoy learning about health issues;" "To be and stay healthy it's critical to be informed about health issues;" "The amount of health information available today makes it easier for me to take good care of my health;" "When I take medicine, I try to get as much information as possible about its benefits and side effects;" "I need to know about health issues so I can keep myself and my family healthy;" "Before making a decision

about my health, I find out everything I can about the issue;" and "It is important to me to be informed about health issues."

Health-oriented beliefs was originally measured by eight statements. These were: "Eating a diet that is low in fat;" "Eating lots of fruits, vegetables, and grains;" "Drinking plenty of water every day;" "Taking vitamins and mineral supplements regularly;" "Exercising regularly;" "Not smoking cigarettes;" "Not drinking alcohol or drinking in moderation;" and "Maintaining a healthy body weight." However, after running a scale reliability analysis, Crohnbach's alpha was exceptionally low. After closer inspection, it revealed that two of the measures were different than the others: "Eating a diet that is low in fat" and "Taking vitamins and mineral supplements regularly." Eating a low-fat diet is not necessarily a requirement to maintain a healthy diet (Cha, 2016), so it is not surprising that respondents answered across a vast range when determining if it was important to them. The same situation occurred for vitamins and supplements ("American Heart Association," 2015). In addition, some respondents left comments of the survey for the researcher on Reddit. One mentioned, "[Food] being 'fat free' is really completely irrelevant to the healthiness of the food." Another wrote that they wondered why "low fat" was seen frequently throughout the survey and expressed concerns that the research was promoting a low-fat diet. Although it was not promoting a low-fat diet, this confusion indicated reason to delete this measure. After these measures were removed, the Cronbach's alpha increased to a still low, but accepted value ($\alpha = .67$, $M = 36.75$, $SD = 3.443$).

To measure healthy activities, respondents were originally provided the same eight measures as health-oriented beliefs and were asked to choose all that apply to them.

Because of health-oriented belief's low reliability with two of the measures, they also were removed from the healthy activities analysis. An index was built to analyze this variable; 0 represented that the respondent did not select an activity and 1 denoted that they did. Therefore, the range in SPSS was 0-6 to measure healthy activities.

Online media usage for health news. The use of health online media was another topic considered in this study. It is defined as the active process of using the internet to gain information or for entertainment purposes. This variable is measured by media exposure and attention to online media health news, which are discussed in a section that follows. Dutta's (2007) survey measured health-orientation differences from three categories television sources. The current study's survey was modeled off of Dutta's and divided media into three categories: (1) social media (e.g., Facebook, Twitter, Snapchat, Instagram); (2) online news sources (e.g., CNN, health magazines, Washington Post); (3) government organization websites (e.g., CDC, NIH, FDA).

The first online media question asked how often the respondent uses online media, on a scale with the choices: "never;" "once a month;" "two to three times per month;" "once a week;" "every few days;" "only one time per day;" and "multiple times per day." If the respondent answered "never," they were sent to the self-assessment section of the survey. Respondents were next asked to select the online media outlets that they use to read about health food or health information. The three media categories were provided as answer choices, as well as an option to select that respondents do not use online media to read about health. If the latter choice was selected, respondents were sent to the self-assessment part of the survey.

Media exposure and media attention were the two variables used from Camaj and

Weaver's (2013) survey about the need for orientation, which measures an individual's

motivation to pay attention to news. To measure *media exposure*, participants were asked

how many days they watch, read, or listen to health news on the (1) internet; (2) TV; (3)

printed newspapers; (4) radio; and (5) social media. The answers ranged from 0 days per

week to 7 days per week ($\alpha = .75$, $M = 5.32$, $SD = 3.91$). To measure *media attention*,

participants were asked how much attention they pay to new about health on the same

mediums as above ($\alpha = .66$, $M = 5.64$, $SD = 1.84$). This question was measured on a scale

with the choices: "none at all;" "a little;" "a moderate amount;" "a lot;" and "a great

deal." The current study used only the internet and social media measures for media

exposure and attention to fit within the theme of online media usage.

Learners vs. nonlearners. The final online media question asked respondents to

choose all of the online sources they learned something about nutrient content claims

from the list of the three categories of online sources: (1) social media; (2) online news

sources; and (3) government organization websites. To measure learners and nonlearners,

an index was created in SPSS. The number 0 represented nonlearners and 1 represented

learners.

Self-assessment of health habits and beliefs. Self-assessment was originally

measured by the importance of six health statements, using a 7-point Likert-scale that

ranged from "not at all important" to "extremely important." These included: "How

important is it to you to eat healthy?;" "How important is it to you to eat 2,000 calories

per day?;" "How important is it to you to eat organic?;" "How important is it to you to eat

low sugar?;" "How important is it to you to eat low fat?;" and "How important is it to you

to eat a well-balanced diet?" These questions were drawn from various online health surveys.

After running a scale reliability assessment, the six-statement scale contained a low reliability, and there was one measure that was different from the others. The measure "How important is it to you to eat 2,000 calories per day?" was removed from the analysis because various body types, lifestyles, ages, and genders require different types of nutrition, ranging from below 2,000 calories to well above 2,000 calories ("American Heart Association," 2015). Once it was removed, the reliability moved up to an accepted, reliable measure ($\alpha = .67$, $M = 23.18$, $SD = 4.70$).

Nutrition knowledge. Six questions were used to measure participants' general nutrition knowledge. These questions were obtained directly from previous literature (Andrews, Netemeyer, & Burton, 1998; Andrews, Burton, & Netemeyer, 2000; Paek, Yoon, & Hove, 2011) and asked "Which kind of fat is more likely to raise people's blood cholesterol levels;" "Vegetables, fruits, and grain products contain…;" "Which food group provides protein, B vitamins, iron, and zinc;" "Nutrition guidelines suggest that no more than ___ percent of calories consumed in a day should come from *saturated fat*;" "Is cholesterol found in…;" and "Normal blood pressure in adults is systolic less than ___ and diastolic less than ___ …." Because the questionnaire was created in 1998, the normal blood pressure has been changed to 120/80 mm Hg, according to the American Heart Association ("American Heart Association," 2015). The correct answer choice was added to the question for the current study.

An index was built in SPSS to analyze the nutrition knowledge variable. Incorrect answers were marked as 0 and correct responses were marked as 1. Therefore, the range

in SPSS was 0-6 to measure nutrition knowledge. If respondents received 0 nutrition knowledge questions correctly, they had no nutrition knowledge. A 1 or 2 indicated low knowledge, 3 or 4 represented a moderate level, and 5 or 6 was high nutrition knowledge.

Describing the respondents. Other questions in the survey were demographic-related or used to describe the respondents. Four of the questions were multiple choice, asking (1) which weight category the respondents consider themselves; (2) compared to others their age, what the status of their health is; (3) if in the past 12 months, a doctor or other health professional advised them to lose weight; and (4) if in the last six months, they have had an emotional conversation with someone about food choices. These were modeled after general online health survey questions.

The final eight questions of the survey were demographic questions. Respondents were asked about their location, age, gender they most closely identify with, income, education, where they grocery shop, if they were the main food buyer in the home, and if they had children under 18 in the home.

Other questions throughout the survey were originally intended to describe specific variables, but after inspecting the data file, it was determined that some of these questions would instead be better used to describe the respondents. These questions are described in the paragraphs that follow.

Respondents were asked about the information that they use when looking at a package to determine whether to buy it. The six options to choose from were: (1) price; (2) brand; (3) Nutrition Facts panel; (4) ingredients list; (5) serving size; and (6) nutrient content claims (e.g., low fat, sugar free). Respondents were asked to choose all that apply to their habits. The next question used the same list; however, it asked which information

is used the most. These questions were based off general online surveys of nutritional

habits. This was originally part of the reported use measure, but because it did not

measure the actual use of specific nutrient content claims, it was removed as part of the

dependent variable of the study.

A question asked whether respondents agree or disagree with five statements

about information on food packaging, using a 7-point Likert-type scale that ranged from

"strongly disagree" to "strongly agree." The five statements include "The nutrition

information on food packaging with claims is hard to interpret;" "Reading food

packaging with claims takes more time than I can spend;" "Reading food packaging with

claims makes it easier to choose foods;" "When I look at food packaging with claims, I

make better food choices;" and "Using food claims to choose foods is better than just

relying on my own knowledge about what is in them." This was originally a part of the

self-assessment measure, but was removed from the analysis of this specific variable

because it did not accurately assess a person's habits related to their personal health.

Participants' understanding of NCC was intended to be measured by two

questions. The questions provided images of Nutrition Facts labels and ingredient lists.

These questions were based off a study by Garretson and Burton (2000). Respondents

were asked to refer to an image of an actual Nutrition Facts label to answer the question

"Based on the Nutrition Facts in the image below, please rate your level of agreement

with the following claims." There were five NCC to consider on a 7-point Likert scale

that ranged from "strongly disagree" to "strongly agree." The NCC are: (1) low calorie;

(2) low fat; (3) sugar free; (4) low sodium; and (5) low cholesterol. After close

inspection, it was determined that this measure would be dropped from the study because

it did not fit into the scope of the current study, which focuses on the reported use of NCC, not understanding of Nutrition Facts panels. This information can be explored in future research, as noted in the discussion chapter. It also seemed too specific and difficult for respondents to answer.

Other online media questions included the types of online media they use to learn about health issues and the estimated percentage of time that respondents spend reading about health food or health information on the three categories of media.

Missing Data and Data Screening

It was important to assess the full data file for any missing values before data analysis. After a one-week time frame, a total of 1,511 participants at least began the survey. The missing data was evaluated through listwise deletion. According to Ender and Bandalos (2001), this technique only uses cases with all variables complete and discards any cases with missing variables. The benefits to listwise deletion are an ease of implementation and comparing univariate statistics. At first, 1,511 started the survey there were 417 cases deleted without hesitation, leaving 1,094 cases to be considered. This first set of a few hundred cases was deleted because it was clear the survey was started, and then abruptly stopped. It was then determined that cases that contained only 100% of the measured variables would be retained for analysis for the current study. These variables include perception, reported use, understanding, information processing, health orientation, and online media exposure and attention. As a result, another 170 cases were removed, leaving 924 useable cases to be analyzed.

The remaining data were screened to check for outliers, extreme values, other determinants of normality, and sufficiently linear relationships. The means and standard

deviations showed reasonable values, and all of the minimum and maximum values fell into the appropriate ranges for the variables. All descriptives for the measured variables can be found in Table 2. Not all of the variables contain n=924 because they were not considered to be the main variables of the study. In addition, the media exposure and attention variables did not have an n=924 because of skip patterns in the survey.

Upon closer inspection, it was noted that one of health orientation's measures, health-oriented beliefs, had high kurtosis values. The health-oriented beliefs variable had two measures that were leptokurtic, meaning that there was a tall, thin peak of values that were heavily clustered, so the data were examined to identify the issue. The high values were associated with two statements: "Drinking plenty of water every day" and "Not smoking cigarettes." For both of the measures, the data were overwhelmingly skewed to the right, where participants generally felt that these activities were "very important" or "extremely important." Therefore, the distribution had high peaks. Because it makes sense that respondents would answer this way, the cases were left untouched and deemed acceptable for analysis.

Data Analysis

The survey data set was analyzed using SPSS v. 23. After data cleaning and screening, simple descriptive statistics, t-tests, correlation analyses, regression, and mediation analysis were used to answer the research questions and/or test the hypotheses.

Table 2. Descriptives of Measured Variables.

Variable	Mean	Standard Deviation	Minimum [a]	Maximum
Perceptions of NCC	45.37	6.38	10.00	70.00
Use of NCC	14.28	5.09	5.00	25.00
Elaborative Processing	23.87	5.42	5.00	35.00
Active Reflection	10.74	2.73	2.00	14.00
Health Consciousness	28.53	4.48	5.00	35.00
Health Information Orientation	41.37	7.75	8.00	56.00
Health Oriented Beliefs	36.75	3.44	5.00	35.00
Healthy Activities Index	4.57	1.31	0.00	6.00
Media Exposure (internet) [b]	2.83	2.49	0.00	7.00
Media Exposure (Social Media)	2.49	2.27	0.00	7.00
Media Attention (internet)	3.13	1.01	2.00	10.00
Media Attention (Social Media)	2.51	1.12	2.00	10.00
Self-assessment [c]	23.18	4.70	5.00	35.00
Nutrition Knowledge Index [d]	3.93	1.28	0.00	6.00

n=924

[a] The minimum and maximum values do not represent the *actual* range values of the scales, but instead the *possible* values. [b] n=835 the online media usage variables. [c] n=822 for the self-assessment variable. [d] n=897 for the nutrition knowledge index.

CHAPTER 4: RESULTS

This study used an online survey to assess how individuals perceive NCC on food packaging and to determine if an individual's health orientation and personal online media consumption is related to their reported use of these types of food claims. The survey was open for one week and was distributed through social media, Reddit boards, and email. The responses (n = 924) were assessed using SPSS v. 23.

About the Respondents

Not all respondents answered the demographic-related and descriptive questions, so the raw count is included with the percentages. Thus, the total number for some of the following areas does not equal 924. In addition, because nutrition knowledge essentially "quizzed" respondents about their knowledge of nutritional information, it was not included in the criteria to have 100% of responses completed to be included.

Of the responses retained for analysis, respondents represented 39 states and 16 countries. The states that garnered the highest representation were Ohio (23.1% (213)), West Virginia (12.3% (114)), and Pennsylvania (10% (92)), which makes sense because Ohio is the home state of the researcher, West Virginia is the location of the research, and Pennsylvania is a neighboring state.

There were more females (59.4% (549)) who took the survey than males (35.7% (330)) and some chose not to answer. According to the most recent Census data, slightly more females (51%) live in the U.S. than males (U.S. Census Bureau, 2010). The females also were more represented in the current study, but the discrepancy in the survey is larger, as males were represented much less.

The majority of the respondents were between the ages of 18-24 years old (46% (424)), which is the age of a typical college student. The fact that the survey was shared on Reddit board's of multiple universities and shared within college students' social networks is likely why a large portion of the respondents were within this age range. An additional 28.9% (267) were between 25-34 years old, followed by 8% (75) between the ages of 45-54. The smallest age group represented was those who were 65 years old and older (.6% (6)). According to the 2010 Census, only 10% of the respondents were between the ages of 18-24. In fact, the majority of Americans were 45-54 year olds (14.5%) (U.S. Census Bureau, 2010). The current study is skewed toward the age makeup of the respondents, which is not reflective of Census data; however, the demographics are skewed for reasons previously described. This is also noted as a limitation in the discussion chapter.

More than half of the survey respondents (60.5% (559)) have a bachelor's degree, graduate or professional degree, or Ph.D., and 31% (285) have some college credit completed, which include those currently enrolled. Because the majority of respondents were college aged, it follows logic that 34% (313) had an income of less than $20,000. A total of 30% (274) survey respondents had an income of $20,000-$60,000, while 15% (139) had an income of more than $100,000. Only 18% of the U.S., according to Census data, had an income of less than $20,000, and 38% earned $20,000-$60,000 (U.S. Census Bureau, 2010). Again, the data in the current study do not coincide with the demographics reported by the Census data, thus it is listed as a limitation in the discussion chapter.

More than three-fourths, 78% (717), do not have children in the home under 18 years old, which follows the trend of the majority of the respondents being college aged. Most participants were the most frequent food purchaser in the home (73.4% (678)), and common places to shop for food included Kroger, Whole Foods, Trader Joe's, Walmart, Sam's Club, Aldi, and Target. Many regional grocery stores, such as HyVee, Publix, Heinen's, Meijer, Giant Eagle, and Wegmans, and farmer's markets were also mentioned.

When purchasing food products, respondents determined a product's price (35% (320)) to be the information that is used to most. The second most important item selected was a product's Nutrition Facts label (31.4% (290)), followed by ingredients list (26.5% (245)). Respondents also were asked questions that described situations using food claims. Over half of respondents, 52% (477), disagreed, to some extent, that using food claims is better than just relying on their own knowledge. In addition, 49%, agreed to some extent, that the nutrition information on food packaging with claims is hard to interpret.

As a whole, the survey respondents generally viewed themselves as fairly healthy. When asked which weight category they considered themselves to be in, over half of the respondents (65.5% (605)) selected a normal weight category, but 24.5% (226) chose overweight. Compared to others their age, the majority of the respondents viewed their health as average or somewhat above average (76.5% (707)). Lastly, in the past 12 months, doctors advised only about 10% (96) of the survey respondents to lose weight.

Based on these descriptors, the respondents for this study are likely healthier than the average U.S. population, as 69% of U.S. adults are overweight and 35% are obese ("Centers for Disease Control and Prevention," 2015). The average survey taker is a

female college-aged student with an income of less than $20,000 and views herself to be healthy.

RQ1: *Is there a correlation between perceptions of claims on food packaging and how an individual uses that information*?

The relationship between perceptions of claims on packaging and specific uses of this information was tested using a partial correlation analysis, with nutrition knowledge as a control variable. The analysis was based on two computed variables consisting of the 10 measures that made up perceptions and five that made up use. Results indicate that there is no significant or linear relationship between the variables (r_{894} = .060, p = .072). This finding suggests that individuals' perceptions of NCC is not significantly related to their reported use of this type of information. In other words, although an individual may view a particular NCC as "extremely unhealthy," it does not necessarily mean that he or she uses this information (e.g., to see if there is an ingredient that they or someone in their family should avoid).

Although the results of the correlation analysis are not significant, a closer look at the response descriptives for the two variables reveal additional information concerning perceptions and use of NCC. As shown in Table 3, participants perceived most of the claims provided as either "undecided" or "somewhat healthy." There was general agreement that the claims organic (M = 5.20, SD = .932), low sodium (M = 5.11, SD = .933), all natural (M = 5.03, SD = 1.01), and no preservatives (M = 4.91, SD = .998) were perceived as the healthiest of those on the list. Respondents were mostly unsure about the non-GMO label (44% "undecided;" M = 4.70, SD = 1.02) and seemed most skeptical about the sugar-free (M = 3.93, SD = 1.47) and fat-free (M = 3.82, SD = 1.39) claims. Of the claims listed, none were overwhelmingly viewed as "extremely unhealthy,"

"unhealthy," or "somewhat unhealthy." Conversely, no claim was prominently viewed as

"extremely healthy," but the means generally fell toward the higher end of the scale.

Table 3. Perceptions of NCC.

Nutrient Content Claim	Extremely unhealthy % (count)	Unhealthy % (count)	Somewhat unhealthy % (count)	Undecided % (count)	Somewhat healthy % (count)	Healthy % (count)	Extremely healthy % (count)	Mean (SD)
All natural	.3 (3)	1.5 (14)	3.4 (32)	27.8 (257)	40.0 (370)	22.5 (208)	4.4 (41)	4.91 (1.00)
Organic	.2 (2)	.4 (4)	1.4 (13)	23.8 (220)	39.6 (366)	28.9 (267)	5.6 (52)	5.11 (.93)
Non GMO	.3 (3)	1.9 (18)	2.7 (25)	44.4 (410)	27.5 (254)	19.3 (178)	3.9 (36)	4.70 (1.02)
No preservatives	0 (0)	1.0 (9)	2.5 (23)	15.3 (141)	44.5 (411)	30.1 (278)	6.7 (62)	5.20 (.93)
Fat free	5.1 (47)	14.4 (133)	21.0 (194)	23.2 (214)	26.8 (248)	8.3 (77)	1.2 (11)	3.82 (1.39)
Sugar free	6.3 (58)	13.4 (124)	18.1 (167)	21.1 (195)	27.4 (253)	12.3 (114)	1.4 (13)	3.93 (1.47)
Low calorie	2.2 (20)	9.8 (91)	12.9 (119)	29.1 (269)	33.9 (313)	10.7 (99)	1.4 (13)	4.20 (1.25)
Low carb	1.3 (12)	6.3 (58)	12.8 (118)	33.8 (312)	34.4 (318)	10.2 (94)	1.3 (12)	4.29 (1.13)
Low fat	2.9 (27)	9.1 (84)	17.1 (158)	24.0 (222)	34.8 (322)	11.0 (102)	1.0 (9)	4.16 (1.29)
Low sodium	.4 (4)	1.7 (16)	4.2 (39)	18.1 (167)	42.9 (396)	28.5 (263)	4.2 (39)	5.04 (1.01)

n=924

As shown in Table 4, over half of respondents "sometimes" or "never" use NCC to see if there is an ingredient that an individual or a family member should avoid ($M =$ 2.61, $SD =$ 1.45) or to see if something said in advertising or on the package is true ($M =$ 2.61, $SD =$ 1.26). When respondents were asked how often they use NCCs to see how high or low the food is in things like calories, salt, vitamins, or fat, 50% (460) reported that they do use this information either "most of the time" or "always." About half of the respondents also use NCCs either "most of the time" or "always" to get a general idea of the nutritional content of the food ($M =$ 3.13, $SD =$ 1.31). These findings indicate that respondents are more likely to use NCC to check nutritional value of food items, rather than solely trust its claim on the packaging.

Table 4. Use of NCC on food packaging.

	Never % (count)	Sometimes % (count)	About half the time % (count)	Most of the time % (count)	Always % (count)	Mean (SD)
To compare different food items with each other	17.0 (157)	33.9 (313)	16.5 (152)	24.6 (227)	8.1 (75)	2.73 (1.32)
To see if something said in advertising or on the package is true	**22.8 (211)**	**31.4 (290)**	15.2 (140)	23.6 (218)	7.0 (65)	**2.61 (1.26)**
To get a general idea of the nutritional content of the food	13.3 (123)	23.2 (214)	17.5 (162)	**28.9 (267)**	**17.9 (165)**	**3.13 (1.31)**
To see how high or low the food is in things like calories, salt, vitamins, or fat	5.1 (47)	22.2 (205)	15.0 (139)	**31.9 (295)**	**17.9 (165)**	**3.19 (1.32)**
To see if there is an ingredient that you	**30.1 (278)**	**26.8 (248)**	9.6 (89)	18.5 (171)	14.9 (138)	**2.61 (1.45)**

or someone in your family should avoid	
n=924	

H1(a): *Exposure and attention to health news on the internet and social media will be positively related to use of NCC.*

Exposure and attention to health news on the internet and social media was measured by four separate media usage variables: (1) exposure to the internet; (2) exposure to social media; (3) attention to the internet; and (4) attention to social media, and separate partial correlation analyses were run to test their relationships with respondents' reported use of NCC, controlling for nutrition knowledge. There were two skip patterns in the media usage section of the survey. Respondents were skipped past the media usage questions if they selected that they never used online media or that they never read about health news or information about health online. Therefore, there were only 835 respondents represented for these variables.

Partial correlation analyses indicate significant and positive relationships between all media usage of health news variables and use of NCC, thus supporting H1a. Media attention to health news on the internet was somewhat moderate ($r_{812} = .270$, $p < .001$), while media exposure to health news on the internet ($r_{812} = .213$, $p < .001$) and both social media measures were weak, but significant (exposure: $r_{812} = .182$, $p < .001$, attention: $r_{812} = .180$, $p < .001$). Findings to H1a suggest that the more individuals are exposed to and pay attention to health news and information on the internet and social media, the more they are likely to use NCC on food packaging to make choices based on this information.

H1(b): *Elaborative processing is positively related to the use of NCC.*
H1(c): *Active reflection is positively related to the use of NCC.*

To test information-processing theory, its two measures, elaborative processing and active reflection, were examined to determine their relationships with respondents' reported uses of NCC, controlling for nutrition knowledge. First, a partial correlation analysis indicates a significant, moderate, and positive relationship (r_{894} = .351, p < .001) between elaborative processing and the use of NCC, thus supporting H1b.

A separate partial correlation analysis between active reflection and the use of NCC on food packaging indicates a weak, but positive and significant, relationship r_{894} = .239, p < .001, thus supporting H1c. These findings support information-processing theory and contribute to the body of knowledge of its applications when applied to the use of NCC on food packaging. Implications are further covered in the discussion chapter.

H2: *Individuals with higher health orientation have higher reported use of NCC information than those who have lower health orientation.*

A regression analysis was used to determine whether the reported use of NCC had an influence on an individual's health orientation. The multiple regression examines each measure of health orientation separately, and how they predict the use of NCC. The correlation matrix representing the relationships among the variables is presented in Table 5. As indicated, all four health orientation measures are significantly related to the reported use of NCC variable, as well as each other, which is expected because they all measure the same underlying constructs. Most of the correlations possessed moderate strengths.

Table 5. Correlation Matrix (Full Regression Model) for Health Orientation and Reported Use of NCC .

	Use of NCC	Health consciousness	Health information orientation	Health oriented beliefs	Healthy activities
Use of NCC	1.00	.275***	.361***	.154***	.148***
Health consciousness		1.00	.581***	.437***	.484***
Health information orientation			1.00	.370***	.348***
Health oriented beliefs				1.00	.399***
Healthy activities					1.00

n=924; ***$p < .001$

Results of the regression suggest that the indicators of health orientation explain 14% (13% adjusted) of the variance of the dependent variable, use of NCC (F (4,919) = 36.411, $p < .001$). Although results of the full regression indicate that the model is significant, each of the individual contributions of health orientation do not boast the same finding. Because multiple regression examines the unique contribution of each health orientation measure after partialing out the contributions of the other three measures, the specific findings differ. As shown in Table 6, only the first two indicators of health orientation are significant and make individual contributions to explaining the variance of the use of NCC on food packaging. Health-oriented beliefs and healthy activities are not at all significant and do not contribute individually.

Table 6. Full Regression Model for Indicators of Health Orientation Predicting Use.

	B	SE B	β	t	p
Constant	2.875	1.720	--	1.671	.095
Health consciousness	.116	.047	.102	2.467	.014*
Health information orientation	.200	.025	.304	7.969	.000***
Health oriented beliefs	-.001	.052	-.001	-.021	.983
Healthy activities	-.027	.140	-.007	-.191	.848

n=924; B=unstandardized (raw) coefficient; SD B=standardized errors of the unstandardized (raw) coefficient; β= standardized weight; * $p < .05$; **$p < .01$; ***$p < .001$

The previous analysis's findings, coupled with the fact that health-oriented beliefs and healthy activities were non-significant measures and made no contribution for explaining the dependent variable, provided indication that the best model for explaining health orientation and use of NCC would exclude these two measures. Therefore, a revised regression model was run using only the first two indicators of health orientation (health consciousness and health-information orientation), as they were the only two significant measures. By excluding the health-oriented beliefs and healthy activities measures, the total variance explained stays at 14%, but the F statistic shows a large jump (F (2,921) = 72.957, $p < .001$). The results of the new regression model can be found in Table 7. Overall, the findings suggest that as individuals' health orientation increases, the more they use NCC on food packaging, thus supporting H2, when health-oriented beliefs and healthy activities are excluded. A more detailed account of this finding and the exclusion of the two nonsignificant measures is provided in the discussion chapter.

Table 7. Full Regression Model for Two Indicators of Health Orientation Predicting Use.

	B	SE B	β	t	p
Constant	2.837	1.052	--	2.698	.007**
Health consciousness	.112	.043	.099	2.630	.009**
Health information orientation	.119	.025	.304	8.073	.000***

n=924; B=unstandardized (raw) coefficient; SD B=standardized errors of the unstandardized (raw) coefficient; β= standardized β weight; * $p < .05$; **$p < .01$; ***$p < .001$

H3(a): *Individuals who learn something about NCC from social media are **more likely** to be health oriented than individuals who do not learn something about NCC from social media.*
   (b): *Individuals who learn something about NCC from online news sources are **more likely** to be health oriented than individuals who do not learn something about NCC from online news sources.*
   (c): *Individuals who learn something about NCC from government websites are **more likely** to be health oriented than individuals who do not learn something about NCC from government websites.*

Respondents were asked if they had learned something about NCC on three different types of online sources. A total of 57% (526) said that they learned something on social media sites, 64.5% (596) said they learned something on online media sources, and only 39% (362) learned something on government websites. All parts of H3 were measured by *t* tests. Because health orientation consisted of four measures, each were tested separately, and Bonferroni corrections were used to adjust the alpha level. Therefore, the four separate tests (*n*=4) adjusted alpha to .05/4=.0125 (Dutta, 2007). In addition, effect sizes of each measure were run to assess the difference between the two groups: learners and nonlearners. Effect size for each t-test, reported by *d,* was also calculated and used Ellis's (2009) threshold: .20 = small, .50 = medium, and .80 = large.

As shown in Table 8, respondents who reported learning something from social media were significantly more health conscious ($p < .01$, $d = .2$) and health-information oriented ($p < .001$, $d = .3$) than those that did not learn something. There was no significance for health-oriented beliefs ($p = .878$) or healthy activities ($p = .066$). Therefore, H3a was only partially supported. The relationship, although significant, had a weak effect size, suggesting that the significance of this particular relationship was likely due, in part, to a larger sample size.

H3b suggested that respondents who learn something from online news sources would be more health oriented than those who did not learn something. Respondents who reported learning something from online news sources were significantly more health conscious ($p < .01$, $d = .2$), health-information oriented ($p < .001$, $d = .5$), held health-oriented beliefs ($p < .01$, $d = .2$), and were more likely to engage in healthy activities ($p < .01$, $d = .2$) than their counterparts who did not learn something from these sources. Thus, H3b was supported. Again, the weak effect sizes indicate that the relationship, although significant, can be explained by the larger sample size.

Government websites were the final type of online media sites that were hypothesized. Each health orientation measure was significant ($p < .01$, $d = .2$), except health-information orientation ($p < .001$, $d = .5$), indicating that learners are more likely to be health oriented than those who did not learn something from these sources, thus supporting H3c. These results suggest that those who learn about NCC on government websites are more health oriented. Like the other two media sources, the smaller effect sizes suggest that significance can be due, partially, to the sample size.

Table 8. Learners vs. Nonlearners.

Variable	Learners		Nonlearners			
	M	SD	M	SD	t	p
Social Media						
Health consciousness	28.90	4.26	28.05	4.71	2.86	.004**
Health inf. orientation	42.48	7.15	39.91	8.26	5.03	.000***
Health beliefs	36.77	3.44	36.73	3.45	.153	.878
Healthy activities	4.64	1.23	4.48	1.41	1.84	.066
Online News Sources						
Health consciousness	28.83	4.29	28.00	4.76	2.17	.007**
Health inf. orientation	42.72	7.04	38.93	8.38	7.32	.000***
Health beliefs	37.04	3.15	36.23	3.87	3.46	.001**
Healthy activities	4.68	1.28	4.38	1.35	3.43	.001**
Government websites						
Health consciousness	29.16	4.30	28.13	4.55	3.43	.001**
Health inf. orientation	43.71	7.03	39.87	7.83	7.56	.000***
Health beliefs	37.20	3.24	36.46	3.54	3.21	.001**
Healthy activities	4.75	1.26	4.46	1.33	3.38	.001**

n=924; * p < .05; ** p < .01; *** p < .001

RQ2: *How are respondents' self-assessment of their health and nutrition knowledge of their health related to use of NCC?*

Two correlation tests analyzed the relationships between self-assessment and reported use of NCC and nutrition knowledge and reported use of NCC. Both tests indicated significant, positive relationships between the measures and use of NCC on food packaging. These findings indicate that when self-assessment increased (i.e., when respondents rated themselves as healthier) they have a higher reported use of NCC (r_{922} = .291, p < .001) with a moderate correlation. Similarly, as respondents' nutrition knowledge increased, based on the nutrition knowledge index, their reported use of NCC information also increased (r_{897} = .098, p < .01). Although the relationship is significant, the correlation is extremely weak, suggesting that the significance may be product of the large sample size. A more detail account of the relationships between self assessment of

respondents' health, their nutrition knowledge, and their reported use of NCC

information on food packaging is more thoroughly discussed in the discussion chapter.

CHAPTER 5: DISCUSSION

The purpose of this study was to examine the concept of an individual's use of NCC and their relation to health orientation and online media usage. Further, the inspiration that provoked this study speculated that the usage of NCC on food packaging is related to different aspects of an individual's health orientation, as well as exposure and attention paid to online sources. To further explore this subject, the research asked about individuals' health and nutrition participation, status and knowledge, and if there was a link to their online media usage, guided by information-processing theory. In order to evaluate these relationships, individuals who make personal food and health decisions were invited to take a national web survey. The survey assessed individuals' perceptions and use of NCC on food packaging, as well as their current health status and online media usage.

The results showed that individuals' use of NCC is related to different aspects of their health and media activities, and it is apparent that there are relationships between the variables outlined in the study. With nutrition knowledge as a control variable, the responses indicate that nearly every participant uses NCC, to some extent, and it can have an impact on levels of health orientation, exposure and attention to media, and a person's self-assessment. The following sections discuss the implications and conclusions from the survey results, as well as strengths, limitations, and suggestions for future research.

Perceptions of NCC

The list of claims that respondents were provided was not an exhaustive list of possible claims that they might see printed on food packaging. The "non-GMO" claim garnered the most uncertainty, as most of the respondents were undecided if it was

healthy or not. Perhaps this is due to respondents not understanding what this claim meant, or the fact that for many years, the scientific community has been wrestling with whether GMOs (genetically modified organisms) are safe to consume (Ferdman, 2015).

From the list of nutritional claims provided, individuals generally perceived most of the claims to be healthy. This finding is similar to Andrews, Burton, and Netemeyer's (2000; 2009) studies; however, the current study did not inquire about healthiness of the overall food product based off initial reaction to NCC mentioned on the package. Because the current study's findings indicated that individuals' perceptions of NCC did not have an impact on usage of NCC, the results imply that individuals view NCC and use NCC differently. Perhaps consumers acknowledge health claims on packaging and still view words such as "organic" or "no preservatives" as healthy, but do not use NCC to create a halo effect of healthiness on the entirety of the product, similar to Ford, Hastak, Mitra, and Jones' (1996) findings. Thus, individuals are able to distinguish their perceptions and usage of the claims separately when looking at food packaging.

Use of NCC

Past research has alluded to individuals heavily relying on NCC to represent the overall healthiness of a particular type of food. As explored in Wansink and Chandon's (2006) study, low-fat claims can increase consumption up to 50%. Paek, Yoon, and Hove's (2011) findings indicated that individuals who see "more than" or "less than" on packaging automatically assume the product is healthier due to the claims. In the current study, claims did not test if respondents were deceived, but the majority admitted to using them often when looking at food packaging.

Overall, individuals seem to use NCC when looking at food packaging, but not exclusively. There was a slight divide between the types of situations that individuals use NCC for the most. When looking at food packaging, individuals are more likely to use NCC for its basic use: nutritional contents. Individuals are not as likely to use these claims for other uses, such comparing different food items. This finding suggests that NCC are not the sole part of food packaging that consumers look at to determine thoughts on the product. NCC can only provide a snippet of information about the entirety of a food product, thus consumers can benefit from not depending on wholly using NCC.

Online Media Usage

Media's role in this day and age is inevitable, especially in the realm of health news and information, something so prevalent to society's well being. Due to the coupling of the 24-hour news cycle and the ability to receive news wherever and whenever, two digital forms of media, the internet and social media, could have a substantial impact on messages that individuals receive. Both are active forms of media, so they require individuals to seek them out (Dutta-Bergman, 2004), but anyone can post their own content, which can shape uncertainty (Camerini & Diviani, 2012).

Perhaps this suggests why respondents were not heavily exposed or paid substantive attention to health information on these web-based platforms. The internet is a much broader instrument with a vast number of sites, including reputable sources, such as online publications. For both exposure and attention, the internet was selected as the medium that individuals watch, read, or listen or pay attention to health information. Social media is comprised of self-made accounts where users opt for whoever or whatever types of information they wish to follow. For this reason, individuals who are

not interested in health information or news may not actively seek this topic. Therefore, social media is not the most common place to gain this information.

Findings implied that those who are exposed and pay attention to the online platforms have a positive relationship with using NCC on food packaging. Perhaps the online users are conditioned to seeing health claims online, such as "no added sugar" or "low calorie," so they are more inclined to using these NCC when looking at food packaging.

Information-processing Theory

Taking in and processing information is perhaps a subconscious, but vital step to understand messages from the media. The current study's theory suggests that individuals' step-by-step strategies to process information begin with learning something from the media. Next, an individual must self-interpret the information and make sense of it. The current study tested the theory by the drawing measures from Fleming, Thorson, and Zhang's (2011) study on perceptions of food safety.

Elaborative processing and active reflection examine how an individual processes information after receiving news. Findings for the elaborative processing construct indicate that individuals are more likely to use NCC on food packaging if they consume media and remember it later on. This could be as simple as seeing an NCC on a food package and recalling an article on low fat seen while surfing the internet or as precise as pinning a low-carb recipe on Pinterest, then shopping for packaging with a low-carb NCC. As for active reflection, individuals are likely to seek an explanation of what is not directly stated about health news in the media. This significant relationship to the use of NCC suggests that individuals may use NCC on food packaging to fill in the blanks and

read between the lines of what is missing from health information on online media. As evidenced by the significant correlation analyses, the theory is supported in terms of the use of NCC on food packaging, thus serving as an expansion of the theory.

Health Orientation

According to survey responses, most participants were health oriented, as revealed by four indicators with several measures each, created by Dutta-Bergman (2004). The status of an individual's health orientation was measured against other variables in the study. Notably, a higher health orientation explains a higher reported use of NCC, as tested in a regression analysis. This finding suggests that those who make healthier lifestyle choices, as indicated by a high health orientation, also have a high reported use of NCC. Perhaps this is because NCC serve as a guide to what is inside food packaging, and the individuals who make healthier lifestyle choices also pay close attention to the foods they eat.

As noted in the results section, two of the measures of health orientation showed no relationship to the use of NCC. Both the health-oriented beliefs and healthy activities indicators were measured on the same scale of eight statements, which was reduced to six after a low reliability. The rerun scale reliability was still a low, but accepted value, and perhaps explains why the measures were nonsignificant in the regression analysis. Because the other two variables retained for the revised regression made more significant contributions, the findings provided enough evidence for the argument to remove these measures.

Learners vs. Nonlearners

In most cases, survey results showed that learners were significantly more health oriented than nonlearners. The study hypothesized that social media would provide individuals with information about nutritional claims, and that the individuals would learn something from them, in turn making them more likely to be health oriented. Only two of the health orientation indicators were significant, health consciousness and health-information orientation. Similar to the regression results of H2, the findings of health-oriented beliefs and healthy activities suggested that there were no significant differences in whether individuals learned or not.

Perhaps this finding was not significant because of social media's makeup. The networking sites are a host of accumulated content created by anyone who chooses to make a profile and read by whoever chooses to follow along. This includes both health professionals and non-health professionals, but either are free to publicly post whatever information they please, which alludes to the uncertainty discussed in Camerini and Diviani's (2012) findings. Therefore, individuals might not choose to read about, learn, or trust health information from their social media accounts.

Because health-orientation's third and fourth indicators were again suspect, the current study suggests a revised measure to comprise these indicators. Since first tested in Dutta-Bergman's (2004) survey, much has changed in the world of health and nutrition. Because health-oriented beliefs are intended to be specific perceptions held by an individual about his or her health behaviors, perhaps the patterned nonsignificance suggests that some of the behaviors are not widely considered a health behavior. For example, the first measure asks about the importance of a low-fat diet, which vastly

differs for different body types. These measures do not take body type into account, thus making it impossible to accurately assess respondents against one another. Other measures on the scale infer the same type of incomparable measures, without taking aspects, such as height, weight, and lifestyle into account.

Next, online news sources were predicted to influence an individual's health orientation if they learned something from them. Respondents who learned something from these sources were significantly more health oriented across each indicator than those who did not. Online news sources include reputable newspapers and magazines, rather than citizen journalism and user-generated content that can be found on social media. Therefore this finding suggests that the respondents learn more from professional journalists.

Similar to online sources, government websites had the same effects on health orientation to learners. Individuals who learned something from reading government websites were significantly more health oriented than those that did not. This finding is not surprising because of the validity of the content that is published on government websites. Much of the rules and regulations about NCC are created and controlled by these sites, so it follows general logic that respondents who learned something on these sites are more health oriented than those that did not.

Self-Assessment

Survey respondents were asked a series of questions to describe their current health status and lifestyle choices. The findings indicate that when an individual's self-assessment increases, they show a higher reported use of NCC. More specifically, this means that when an individual is more likely to use NCC, then they also find it important

to eat healthy and maintain a well-balanced diet. Healthy eating seems to go hand-in-hand with using NCC on food packaging. If a health conscious person pays close attention to the food choices they make, the findings imply that they are going to also use the NCC that is on food packaging.

Nutrition Knowledge

A respondent's nutrition knowledge served as the control variable and was in place to test the impact of other variables in the current study. The assessment of a respondent's nutrition knowledge was drawn from previous studies (Andrews, Netemeyer, & Burton, 1998; Andrews, Burton, & Netemeyer, 2000; Paek, Yoon, & Hove, 2011). The index levels were no nutrition knowledge, low, moderate, and high. Respondents boasted a fairly good assessment of nutrition knowledge. The majority of respondents answered four of the six questions correctly. The two questions of which the majority was incorrect were saturated fat recommendations and where cholesterol is found. In addition, the weak correlation indicated that nutrition knowledge might not heavily influence the use of NCC. The large sample size could have attributed to the significance of this test. Thus, the findings suggest that higher nutrition knowledge does not necessarily mean that they use NCC.

Another consideration

It is important to mention further considerations while discussing the results. Demographics were not considered in the current study as a dependent variable. Gender is the most notable demographic to potentially cause different relationships between the variables studied. This is considered for a few factors. The first being that men are generally suggested to consume more calories than women. This could alter the way that

some men answered survey questions about their specific diets. Another factor is that men and women view and understand health differently (Denton, Prus, & Walters, 2004), which could also impact how men answer certain survey questions (e.g., how important it is to eat organic or a well-balanced diet). Perhaps there are underlying relationships not being exposed by not looking at the gender variable.

Strengths

The current study's findings are important to both health communication and online media research. The key strength of the study is the insight it provides on an individual's use of NCC on food packaging. Past research found that NCC are not always helpful to consumers, as they can cause deception (Andrews Burton, & Netemeyer, 2009) and an overgeneralization of what is healthy (Wansink & Chandon, 2006). Consumers seem to be confused about what is and what is not healthy when guided by NCC (Ruhlman, 2016). The current study explored NCC in a different light.

The fact is, NCC are legal as defined by the FDA ("U.S. Food and Drug Administration," 2013). Food companies and marketers will continue to use NCC to sell products because they are effective, and the current study confirms this marketing strategy. Because consumers do use NCC, as indicated in the survey findings, NCC should be used to educate and inform, not persuade and deceive. Further, NCC are widely used, so they can explain specific qualities of food products to consumers. It also should be noted that food companies and marketers should beware of any claim that can cause an unhealthy product to be assumed as healthy. Claims should be used sparingly, and only when it could contribute to the overall health content of a product. This work is far

from complete, as it is only the first step in assessing the use of NCC with this study's measure.

Another strength is that the study tested previous measures; these extend the framework of health orientation, exposure and attention to different types of online media, and information-processing theory. Each of these tested measures is significantly applied in terms of individuals' reported use of NCC. Health orientation was measured in Dutta's (2004; 2007) analyses, which aimed to broaden the scope of media effects in health communication, as well as the motivation to be healthy. While his studies primarily focused on television, the current study opens up the realm of individuals' learning from different internet sources. Findings indicated that learning about health news on social media sites does not deem learners as more health oriented than those that did not learn something. Online news sources and government websites, on the other hand, report significant learning from a more health-oriented individual. Camaj and Weaver (2013) tested an individual's need for orientation during an election campaign on different media platforms. The current study focused on internet and social media measures and tested them in terms of health news and information to see if exposure and attention would be related to the usage of NCC. The findings do confirm that when individuals are exposed to and pay more attention to health news and information on the internet and social media, they are more likely to use NCC. The study also helps to advance information-processing theory with regard to an individual's use of NCC. Understanding that the information that individuals process, store, and reflect on from media has a relationship with their use of NCC could help food companies and marketers determine useful NCC to utilize in the media.

A third strength is the large number of respondents who took the survey. Originally, the goal was to obtain 500 responses within a one-month time frame. As a result of the broad respondent-type and the unrestrained reach of the internet, the survey was able to garner more than triple the amount of responses in one week. The survey reached all four corners of the U.S., with participants representing almost 80% of the states, as well as 16 different countries. Ages of the respondents were fairly diverse and the income and education levels varied, too. Although college-aged individuals were the dominant subgroup, no demographic group was extremely underrepresented. This issue could likely be corrected with a probability-based sample.

Limitations

The study has a couple of limitations to note. First, the sample was a non-probability, convenience-based sample and cannot be generalized to the U.S. population. Additionally, when demographics of the study were compared to demographics of the most recent U.S. Census data, the current study did not share many similarities. Thus, this study is not an accurate representation of the general public that makes personal health and nutrition decisions. Because of the survey's nature, all responses were self-reported, which can bring up questions of validity. Health questions are sensitive and personal, especially some asked in the current study. Respondents might have stretched the truth or answered the way they intend to live, as opposed to answering with their actual lifestyle behaviors. In addition, the demographics, namely gender, were not considered as a dependent variable.

This survey was easily accessible and reached a large variety of respondents, however, it was also easy to drop out, which is another limitation in the study. As the

survey did garner a high number of responses, there was also a high dropout rate, as only 61% were eligible to be retained for analysis. In addition, listwise deletion was the method used to account for missing data. Because listwise deletion removes cases with any missing variables, some cases with only one or two questions unanswered had to be deleted.

Another limitation was evident in calculating the perceptions variable. It is important to note underlying factors of perhaps why research question one was not significant. The multiple measures are quite different (e.g., organic and low fat), which could indicate that the variable may lose more variance by combining all of the 10 measures into one.

Lastly, after analysis, it was determined that the variable understanding of NCC would be removed from the study. Instead of measuring strict understanding of what NCC mean on food packaging, the survey asked respondents to understand NCC on Nutrition Facts panels. Respondents were not provided full information of the food item, including what the food product was and the front of the label with a claim. Therefore, understanding of NCC was eliminated.

Future Research

The current research could be explored through other ways that individuals interact with NCC. Now that there is evidence from the current study that confirms the use of NCC, the next step could be to test whether individuals understand the NCC that they are using. Because of the dooming reality of the future health of Americans, it is crucial that consumers are able to understand the claims and ingredients of what they are buying. For example, a low-fat product typically means that sugar was added to make up

for the reduced fat (Bomgardner, 2011), so a level of understanding the low-fat claim could be tested to gauge whether individuals understand the claims they are using. Also, expanding this research to studying specific age groups can be considered in the future. Because older generations do use the internet and social media, it might be interesting to also study if they use and understand NCC differently than a younger audience.

Another area that can be explored in future research is the health-oriented beliefs and healthy activities measures of health orientation. These variables did not boast high scale reliabilities and some of its findings were nonsignificant. After these measures were removed from an analysis, the findings indicated stronger relationships. Perhaps these measures can be either removed or updated for future research.

The perceptions variable was computed into one variable, which might have caused the measures to lose variance. A future study could use this data and consider an exploratory factor analysis to uncover common factors within the 10 measures and understand what the perceptions are of the different nutrient content claims.

Because research has been conducted on how NCC can be deceptive, future studies could explore which claims cause deception and the types of food products NCC can be found on. A content analysis of NCC on food packaging could be useful in determining which NCC food companies and marketers use that seem to deceive consumers. The food packaging could include the type of claim, as well as the size and other characteristics of the claim. Future research should be done in response to combat the growing obesity epidemic, and also further the clarification and interpretation of health communication on online media.

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APPENDIX A: COVER LETTER FOR WEB SURVEY

Dear Participant,

This letter is a request for you to take part in a research project to learn consumers' understanding of nutrient content claims. This project is being conducted by Kelly Williams, a graduate student in the Reed College of Media at WVU, under the supervision of Dr. Rita Colistra, an associate professor in the Reed College of Media, for a Master's Degree in Journalism. Your participation in this project is greatly appreciated.

Your involvement in this project will be kept as confidential as possible. All data will be reported in the aggregate. The survey will take approximately 10 minutes to fill complete. You must be 18 years of age or older to participate. I will not ask any information that should lead back to your identity as a participant. Your participation is completely voluntary. You may skip any question that you do not wish to answer, and you may discontinue at any time. There are no known or expected risks from participating in this study, except for the mild frustration associated with answering the questions. You may not receive any direct benefit from this study other than the satisfaction of sharing your knowledge of nutritional claims. The knowledge gained from this study may eventually benefit others. If you are a student, your class standing will not be affected if you decide either not to participate or to withdraw. West Virginia University's Institutional Review Board has approval of this project is on file.

For information regarding your rights as a research subject, to discuss problems, concerns, or suggestions related to the research, to obtain information or offer input about the research, contact the Office of Research Integrity & Compliance at (304) 293-7073. In addition if you would like to discuss problems, concerns, have suggestions related to research, or would like to offer input about the research, contact the Office of Research Integrity and Compliance at 304-293-7073.

I hope that you will participate in this research project, as it could be beneficial for how consumers' understanding and use of nutrient content claims. Thank you very much for your time. Should you have any questions about this letter or the research project, please feel free to contact the principal investigator Dr. Rita Colistra at (304) 692-0136 or by email at rita.colistra@mail.wvu.edu.

Thank you for your time and help with this project.

Sincerely,
Kelly Williams
Graduate Student
(440) 724-8253
kwilli67@mix.wvu.edu

APPENDIX B: SURVEY INSTRUMENT

By clicking the next button, you are providing consent to take this survey.

1. Are you 18 years of age or older?
    a. Yes
    b. No
   *If no, skip to the end of the survey.

2. Please list up to three of your favorite foods.
   _____ _____ _____

3. What was the last thing that you had to eat?
   _____

4. Compared to other people, how much do you feel you know about nutrition?
    a. Almost nothing
    b. A little
    c. About the same
    d. More
    e. A great deal more

Now, the following questions will ask you about your use of nutritional claims, which are claims like sugar free and low fat.

5. Based on your opinion, and your initial reaction to seeing the following claims on food packaging, **rate the level of healthiness of each of the following claims**.

	Extremely Unhealthy	Unhealthy	Somewhat Unhealthy	Undecided	Somewhat Healthy	Healthy	Extremely healthy
All natural							
Organic							
Non-GMO							
No preservatives							
Fat free							
Sugar free							
Low calorie							
Low carb							
Low fat							
Low sodium							

6. Please indicate **how often you use information from nutritional claims** (e.g., low fat and sugar free) **to do each of the following.**

	Never	Sometimes	About half the time	Most of the time	Always
To compare different food items with each other.					
To see if something said in advertising or on the package is true.					
To get a general idea of the nutritional content of the food.					
To see how high or low the food is in things like calories, salt, vitamins or fat.					
To see if there is an ingredient that you or someone in your family should avoid.					

7. What **information** do you look at on a food package to determine whether you buy it or not? (Choose all that apply.)
   a. Price
   b. Brand
   c. Nutrition Facts panel
   d. Ingredients list
   e. Serving size
   f. Nutrient-content claims (e.g., low fat, sugar free)

8. What **information do you look at the most** on a food package to determine whether you buy it or not?
   a. Price

b. Brand
c. Nutrition Facts panel
d. Ingredients list
e. Serving size
f. Nutrient-content claims (e.g., low fat, sugar free)

The next few questions will ask you about your understanding of nutritional claims (e.g., sugar free, low fat).

Nutrition Facts

Serving Size: 1/4 cup (30g)
Serving Per Container: About 4.5

Amount Per Serving	
Calories: 130	Cal From Fat:60
	% Daily Value*
Total Fat: 6g	9%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 50mg	2%
Total Carb 18g	6%
Dietary Fiber 1g	4%
Sugars 7g	
Protein 3g	
Vitamin A 0% Vitamin C 0%	
Calcium 2% Iron 10%	

*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

Ingredients: Cocoa Cashews (cashews [cashews, canola and/or safflower and/or sunflower oil, salt], sugar, cocoa processed with alkali, rice syrup, natural flavor), Cluster (rolled oats, rice syrup, sugar, rice crisp [rice, sugar, salt, malt flavor], natural flavor).

Contains: Tree Nuts (Cashews).

Packed in a facility that also processes tree nuts, peanuts, milk, wheat, egg, soy, and fish.

9. Based on the Nutrition Facts in the image below, please rate your level of agreement with the following claims.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
Low calorie							
Low fat							
Sugar free							
Low sodium							
Low cholesterol							

Nutrition Facts
Serving Size: 1 pouch (20g)
Serving Per Container: 5

Amount Per Serving	
Calories: 70	Cal From Fat:0
	% Daily Value*
Total Fat: 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 2mg	0%
Total Carb 16g	5%
Dietary Fiber Contains less than 1g	4%
Sugars 13g	
Protein 0g	

Vitamin A 0%	Vitamin C 8%
Calcium 0%	Iron 0%

*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

Ingredients: Apple Puree and Juice Concentrate, Mango Juice Concentrate, Orange Juice Concentrate, Carrot Juice Concentrate, Natural Flavor, Black Carrot Extract [for color], Pectin, Glazing Agent (coconut oil, shellac beeswax).

Packed in a facility that also processes tree nuts, peanuts, milk, wheat, egg, soy, and fish.

10. Based on the Nutrition Facts in the image below, please rate your level of agreement with the following claims.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
Low calorie							
Low fat							
Sugar free							
Low sodium							
Low cholesterol							

11. Please indicate **your level of agreement** with the following statements about nutritional information.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
When I come across news stories about nutritional claims, I find myself tying the							

stories to those I have had before.						
Often when I have learned something about nutritional claims from online news, I will recall it later when I think about it.						
I often interpret news stories about nutritional claims in a way that helps me make sense of them.						
I almost always try to find out additional information about nutritional claims from the news when I feel the information is important to my health.						
I often talk to my						

friends and family about the nutritional claims I've learned in the news.							
When I come across nutritional claims stories in my online media, I always try to figure out what is the real story that they're not telling me.							
I find it necessary to read between the lines of nutritional claims story to figure out what's really going on.							

Here are four questions that will ask you about your health orientation.

12. Please indicate **your level of agreement** with each of the following health statements.

	Strongly Disagree	Somewhat Disagree	Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
Living life in the best							

possible health is very important to me.							
Eating right, exercising, and taking preventative measures will keep me healthy for life.							
My health depends of how well I take care of myself.							
I actively try to prevent disease and illness.							
I do everything I can to stay healthy.							

13. Please indicate **your level of agreement** with each of the following health
    statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
I make a point to read and watch stories about health.							
I really enjoy learning about							

health issues.						
To be and stay healthy it's critical to be informed about health issues.						
The amount of health information available today makes it easier for me to take good care of my health.						
When I take medicine, I try to get as much information as possible about its benefits and side effects.						
I need to know about health issues so I can keep myself and my family healthy.						
Before making a decision about my						

health, I find out everything I can about the issue.							
It is important to me to be informed about health issues.							

14. Please rate the **level of importance** of the following statements about overall health.

	Not at all Important	Very Unimportant	Somewhat Unimportant	Neither Important or Unimportant	Somewhat Important	Very Important	Extremely Important
Eating a diet that is low in fat.							
Eating lots of fruits, vegetables, and grains.							
Drinking plenty of water every day.							
Taking vitamins and mineral supplements regularly.							
Exercising regularly.							
Not smoking cigarettes.							
Not drinking alcohol or drinking in moderation.							

Maintaining a healthy body weight.							

15. Please select all of the following **behaviors that you currently do to maintain your health**. Choose all that apply.

Eating a diet that is low in fat.	
Eating lots of fruits, vegetables, and grains.	
Drinking plenty of water every day.	
Taking vitamins and mineral supplements regularly.	
Exercising regularly.	
Not smoking cigarettes.	
Not drinking alcohol or drinking in moderation.	
Maintaining a healthy body weight.	

Now, please tell me about your online media habits throughout the following questions.

16. How often do you use online media? (e.g., social media, online newspapers and magazines, government organization websites)
    a. Never
    b. Once a month
    c. Two or three times per month
    d. Once a week
    e. Every few days
    f. Only one time per day
    g. Multiple times per day
    *If never, skip to 22.

17. Which kinds of online media do you use the **most**?

a. Social media (Facebook, Twitter, Snapchat, Instagram)
b. Online news sources (CNN, online magazines, Washington Post)
c. Government organization websites (CDC, NIH, FDA)

18. Please select the online media outlets that you use to **read about health food or health information** (e.g., an article with recipe for bread, advice on how to lose weight). Choose all that apply.
a. Social media (Facebook, Twitter, Snapchat, Instagram)
b. Online news sources (CNN, magazines, Washington Post)
c. Government organization websites (CDC, NIH, FDA)
d. I do not use online media to learn about health issues
*If d, skip to 22.

19. What is the **estimated percentage of time** that you spend reading about health food or health information on each of the following online media?
a. Social media (Facebook, Twitter, Snapchat, Instagram)

    _____

b. Online news sources (CNN, magazines, Washington Post)

    _____

c. Government organization websites (CDC, NIH, FDA)

    _____

20. During a typical week, how many days **do you watch, read, or listen to <u>health news</u> on**:

	0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
The Internet								
TV								
Printed newspapers								
Radio								
Social Media								

21. How much **attention** do you pay to **news about <u>health</u>** on:

	None at all	A little	A moderate amount	A lot	A great deal

The Internet					
TV					
Printed newspapers					
Radio					
Social Media					

22. Thinking of the past year, from which kinds of *online media* did you **learn something** about nutritional claims (e.g., low-fat claims, sugar-free claims)? Choose all that apply.
    a. Social media (Facebook, Twitter, Snapchat, Instagram)
    b. Online news sources (CNN, magazines, Washington Post)
    c. Government organization websites (CDC, NIH, FDA)
    d. I have not used online media in the last year to learn something about nutrient content claims

You're doing great! Thank you for your insight so far. You're almost finished. These questions will ask you to provide a self-assessment of your current health.

23. Please indicate the **level of importance** of the following statements about your health decisions.

	Not at all Important	Very Unimportant	Somewhat Unimportant	Neither Important or Unimportant	Somewhat Important	Very Important	Extremely Important
How important is it to you to eat healthy?							
How important is it to you to eat 2,000 calories per day?							
How important is it to you to eat organic?							
How							

important is it to you to eat low sugar?						
How important is it to you to eat low fat?						
How important is it to you to eat a well-balanced diet?						

24. Please **indicate your level of agreement** with the following statements about food packaging.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
The nutrition information on food packaging with claims is hard to interpret.							
Reading food packaging with claims takes more time than I can spend.							
Reading food packaging with claims makes it easier to							

choose foods.							
When I look at food packaging with claims, I make better food choices.							
Using claims to choose foods is better than just relying on my own knowledge about what is in them.							

25. In which weight category do you consider yourself to be?
   a. Underweight
   b. Normal weight
   c. Overweight
   d. Obese
   e. Pregnant
   f. I don't know

26. Compared to others your age, would you say your health is…
   a. Far below average
   b. Somewhat below average
   c. Average
   d. Somewhat above average
   e. Far above average

27. In the past 12 months, did a doctor or other health professional advise you to lose weight?
   a. Yes
   b. No
   c. I don't know
   d. I am pregnant

28. In the last 6 months, have you had an emotional conversation with someone about food and beverage choices?

a. Yes
b. No, I have not
c. No, I have talked about food and beverage choices, but the talks weren't emotional

We realize that these next questions about different nutrition information might be a little challenging. Please just try answer them to the best of your ability.

29. Which kind of fat is more likely to raise people's blood cholesterol levels?
    a. Saturated fats
    b. Polyunsaturated fats
    c. Both of them
    d. None of the above
    e. I don't know
30. Vegetables, fruits, and grain products contain…
    a. Complex carbohydrates
    b. Dietary fiber
    c. Both complex carbohydrates and dietary fiber
    d. Neither
    e. I don't know
31. Which food group provides protein, B vitamins, iron, and zinc?
    a. Meat, poultry, and fish
    b. Milk and dairy products
    c. Fruits
    d. Grain products such as bread, cereal, and rice
    e. I don't know
32. Nutrition guidelines suggest that no more than ___ percent of calories consumed in a day should come from *saturated fat*.
    a. 1%
    b. 10%
    c. 20%
    d. 30%
    e. I don't know
33. Is cholesterol found in…
    a. Vegetables and vegetables oils
    b. Animal products like meat and dairy
    c. All foods containing fat and oil
    d. None of the above
    e. I don't know
34. Normal blood pressure in adults is systolic less than ____ and diastolic less than ____.
    a. 120 mm Hg, 80 mm Hg
    b. 180 mm Hg, 95 mm Hg
    c. 105 mm Hg, 95 mm Hg
    d. 200 mm Hg, 110 mm Hg
    e. I don't know

Only a couple more questions left. These final questions will ask you about your demographic information.

35. Where is your area of residence? Please state your city, state, and country.

    _____

36. Where do you shop for groceries?

    _____

37. Are you the most frequent food purchaser in the home?
    a. Yes
    b. No
    c. I don't know

38. What is your age?
    a. Under 18 years old
    b. 18-24 years old
    c. 25-34 years old
    d. 35-44 years old
    e. 45-54 years old
    f. 55-64 years old
    g. 65+ years old

39. Which gender do you most closely identify with?

    _____

40. What is the highest degree or level of school you have completed?
    a. Some high school, no diploma
    b. High school diploma or equivalent
    c. Some college credit, no degree
    d. Trade/technical/vocational degree
    e. Bachelor's degree
    f. Graduate or professional degree
    g. Ph.D.

41. What is your income?
    a. Less than $20,000
    b. $20,000 to $40,000
    c. $40,001 to $60,000
    d. $60,001 to $80,000
    e. $80,001 to $100,000
    f. More than $100,000

42. How many children do you have in the household under the age of 18?
    a. None

        b. 1 child
        c. 2 children
        d. 3 or more children

Thank you for your time and effort to fill out this survey. Please click the arrows on the bottom right to submit your answers.

Once you have submitted your responses, you will be provided with a link to fill out your name and email to enter the drawing for a **$25 cash card**. A name will be drawn for every 100 responses. Your personal information will not be connected to your survey responses. Thanks again.

APPENDIX C: SAMPLE COMMUNICATIONS

Facebook
Hi friends! I'm doing a survey for my master's thesis about nutritional claims on food packaging (e.g., low fat, sugar free) and online media habits, so if you have ever read online about health, diet, food companies, or just enjoy food in general, please take it. Anyone 18 years or older may participate. You also can choose to be entered to win a $25 cash card! And if you wouldn't mind, please share this post or send the survey link to people you know who would be interested as well. Thank you so much for participating. [link]

Twitter
Twitter Sample 1: Foodies: please take & share this survey for my master's research. You can win $25! [link]

Twitter Sample 2: Do you make #food & #nutrition choices? Please take this survey! Bonus: You can win $25. [link]

Instagram
Hi friends! Please help me out by filling out my survey about nutritional claims, which are claims such as low fat and sugar free, and online media habits. Anyone 18 years or older may participate. You also can choose to be entered to win a $25 cash card! Follow the link in my profile to take the survey. Thank you for your help!

Sample Email
Hi [food blogger],

I am an avid reader of your food blog [blog title]. I love following along on social media with the healthy recipes you develop, and your journey to a wholesome life. I have ambitions to start a food blog upon my graduation in May. Your site has inspired me to develop a brand for myself and share my love of health, nutrition, and food to people.

My name is Kelly Williams and I am a collegiate runner and graduate student in the Reed College of Media at West Virginia University doing my master's thesis about health communication. Part of my study is conducting an online survey. The goal of my research is to find out consumers' understanding of nutritional claims and its link to online media habits. I have a passion for changing the way the food industry markets food.

I came up with this concept from spending time on one of my favorite sites, Pinterest (of course!). I noticed posts claiming "healthy cookies!" and after following the link to the recipe, realized that MY definition of healthy was not the same as another person's (i.e., 1/2 cup of granulated sugar compared to 1 cup = healthy to some…but not me). I got to really thinking about the concept of healthy and did some research to find that the FDA doesn't quite define the word. Same goes for natural. For consumers who do not have enough time/ care enough to read beyond the front of the package and its claims, I

became frustrated about the deceit and trickery caused by the food industry. A goal of my research is to uncover consumer's use and understanding of these claims.

The survey will take about 10 to 15 minutes to complete. It is voluntary, and you are not required to answer every question. The survey is confidential and your name will not be attached to your individual responses. We are only interested in aggregate findings. More information is explained at the beginning of the survey. This survey is IRB approved.

Would you take the survey at the link below and if possible, also share with your following? Thank you very much for helping me.

Here is the link:
[link]

Best wishes,

Kelly Williams
Graduate Assistant
Reed College of Media
West Virginia University

Emails were sent to the following 14 food bloggers:

ambitiouskitchen@gmail.com
runonveg@gmail.com
hummusapien@hotmail.com
erin@wellplated.com
fitfoodiefinds@gmail.com
taylor@foodfaithfitness.com
withsaltandwit@gmail.com
cookieandkate@gmail.com
theleangreenbean@gmail.com
tiffanyazure@yahoo.com
thereciperunner@gmail.com
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Sample Forum Post

Hi everyone,

I'm a graduate student in the College of Media at West Virginia University doing my master's thesis about consumers' understanding of nutrient content claims (e.g., low fat, sugar free) and its link to online media habits. Part of my study is conducting an online survey and I need your help. Because you subscribe to the ___ subreddit, you are a well-suited candidate for my survey. In exchange for your time, you can choose to be entered to win a $25 cash card, which will be given away for every 100 responses.

[link]

The survey will take 10 to 15 minutes to complete. Anyone 18 years or older may participate. It is voluntary, and you are not required to answer every question. The survey is confidential and your name will not be attached to your individual responses. We are only interested in aggregate findings. More information is explained at the beginning of the survey.

Would you take the survey at the link below and also share with people you know who are also interested in healthy eating? Thank you very much for helping me.

[link]

Below is a full list of subreddits that the message was posted on.

/r/Mountaineers	/r/ufl
/r/WVU	/r/UTAustin
/r/MorgantownWV	/r/UMD
/r/WestVirginia	/r/uofm
/r/OKState	/r/iastate
/r/Ohio	/r/waterloo
/r/OSU	/r/UofT
/r/UniversityofHouston	/r/MSU
/r/UIUC	/r/sooners
/r/baylor	/r/SampleSize
/r/udub	/r/CashSurveys