CONSUMER ATTITUDES TOWARD MILK AND PLANT-BASED DAIRY ALTERNATIVE BEVERAGES

A Dissertation

by

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Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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May 2021

Major Subject: Agricultural Leadership, Education, and Communications

ABSTRACT

FDA labeling standards are intended to assist consumers in making informed dietary decisions. Previous research found consumer food choices are predicted by attitudes toward products, normative social beliefs, and perceived normative pressures. However, there are instances when attitudes do not accurately predict behaviors. Despite holding an overall favorable attitude toward a product, consumers may abstain from consumption due specific product attributes.

This study examined the impact of the label "milk" on consumer attitudes and evaluations of product attributes. Using two between-groups experiments, the following hypotheses were tested: (1) the name "milk" is preferred over the name "juice" for plant-based dairy alternative beverages; (2) the size of this effect is moderated by personal preference for plant-based dairy alternative beverages over milk; (3) those exposed to dairy milk advertising will have more favorable milk attitudes than those exposed to control messages; (4) those exposed to plant-based dairy alternative beverage advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages; and (5) those exposed to dairy milk advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages. Participants, aged 18-35, were recruited from an undergraduate participant pool and from Amazon MTurk. Data was collected via an online questionnaire administered through Qualtrics and analyzed in IBM SPSS using descriptive statistics, multilinear regression and ANOVA.

While participants preferred “milk” as the name for plant-based dairy alternative beverages over an alternate name, this preference was not statistically significant. Further, no evidence was found for a halo effect caused by beverage advertising. Although the distinctions between milk and plant-based dairy alternative beverages are blurring for some consumers, the process of genericide is not yet complete. The currently unenforced FDA labeling standards may be directly contributing to both the economic hardships experienced by the dairy industry and the explosive growth in the plant-based dairy alternative beverage market. The results from this study have important health, legal, and legislative implications regarding the use of the word “milk.”

DEDICATION

To my mom, the most memorable woman I have ever known.

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my daughter, Rachel, who introduced me to Texas A&M University and its traditions, and to my husband, Rick, who patiently enabled me to pursue my passion for lifelong learning. Without you I could never have achieved this tremendous milestone.

Thank you to my mentors, Dr. Tracy Rutherford and Dr. Hart Blanton, for their guidance and support throughout the course of this research and graduate studies. Thanks also to my committee members, Dr. Holli Leggette and Dr. Summer Odom, for their assistance on matters large and small.

Drs. Homer Tolson, Glen Shinn, Tobin Redwine, Jennifer Lueck, Candace Hastings, Julie Harlin, and Nathan Crick inspired and informed my graduate studies. I appreciate each and every one of you. I would like to also express my appreciation for Dr. Maysa De Sousa, whose compassion and kindness for a stranger will not be forgotten.

Clarice Fulton served as my academic advisor, my encyclopedia, and my lifesaver. Thank you for helping me navigate the bureaucratic process (like a pit bull) and for keeping me on track. I read every single one of your emails.

I had the privilege of learning alongside some truly exceptional graduate students. Your friendship and unwavering support made this experience the best it could possibly be. In particular, I would like to acknowledge Lori Costello and Allison Dunn,

who tolerated my endless questions and graciously accepted last-minute requests for proofreading and editing assistance.

This project was completed despite the seemingly endless challenges I encountered over the past year—beginning with the death of my mother and ending with a global pandemic.

To my father—yes, I finally **Ph**inishe**D**.

CONTRIBUTORS AND FUNDING SOURCES

Contributors

This work was supervised by a dissertation committee consisting of my advisor and committee chair, Dr. Tracy Rutherford of the Department of Agricultural Leadership, Education, and Communications, my committee co-chair, Dr. Hart Blanton of the Department of Communication, and Drs. Holli Leggette and Summer Odom of the Department of Agricultural Leadership, Education, and Communications.

All other work conducted for the thesis (or) dissertation was completed by the student independently.

Funding Sources

Graduate study was supported by a graduate assistantship in the Department of Agricultural Leadership, Education, and Communications at Texas A&M University and in part by funds received from the Houston Livestock Show and Rodeo (HLSR). This work and its contents are solely the responsibility of the author and do not necessarily represent the official views of the HLSR.

NOMENCLATURE

FOP	Front of package label
IFICF	International Food Information Council Federation
MILK	Milk is the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows
"MILK"	Plant-based dairy alternative beverages (e.g., soy milk, almondmilk) and/or milk
NIP	Nutrition information panel
NMPF	National Milk Producers Federation

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CHAPTER 1

INTRODUCTION

Background of the Problem

One word can disrupt an entire industry. The use of the word "milk" as a product identifier is causing contention in the beverage industry. Dairy companies and distributors contend companies who produce plant-based dairy alternative beverages coopted the word "milk" to sell their products (e.g., almondmilk, rice milk, and soy milk). The National Milk Producers Federation has argued that plant-based beverage manufacturers are "attempting to directly compete with dairy products and are inappropriately taking advantage of the familiarity (and positive image) of dairy terminology in their labeling" (National Milk Producers Federation, 2000, para. 3). In so doing, they argue, these companies are (1) benefitting from the marketing of milk by the dairy industry and (2) confusing consumers. The use of the word "milk" as an identifier for non-dairy beverages may cause consumers to mistake one product for another, misunderstand product ingredients, and/or misattribute health risks and benefits (Grunert et al., 2000; Nagler, 2014; Nocella & Kennedy, 2012). These two arguments have and will likely continue to see litigation.

On January 12, 2017, Senator Tammy Baldwin (D-WI) and eight co-sponsors introduced S. 130 to require the FDA to enforce its labeling standards for milk and milk products. Defending Against Imitations and Replacements of Yogurt, Milk, and Cheese To Promote Regular Intake of Dairy Everyday Act, or the DAIRY PRIDE Act, was

introduced because the average American diet did not include the recommended amount from the dairy food group, according to the 2015–2020 Dietary Guidelines for Americans (DAIRY PRIDE Act, 2017a). "Though existing federal regulation is clear on this subject, the FDA has not enforced to ensure accurate labeling and the incorrect use of the terms 'milk,' 'yogurt,' and 'cheese' have increased rapidly" (DAIRY PRIDE Act, 2017b, sec. 2, para. 1). Congressman Peter Welch (D-VT) and 32 co-sponsors introduced H.R. 778 with identical text on January 31, 2017 (DAIRY PRIDE Act, 2017c). The bill summary is as follows:

> This bill amends the Federal Food, Drug, and Cosmetic Act to prohibit the sale of any food that uses the market name of a dairy product, is not the milk of a hooved animal, is not derived from such milk, and does not contain such milk as a primary ingredient. (DAIRY PRIDE Act, 2017a)."

The DAIRY PRIDE Act has been widely supported by the dairy industry and opposed by producers of dairy alternative beverages and the Plant Based Foods Association (Newhart, 2020). The legislative session ended without a vote on either bill. Rep. Welch reintroduced the bill on March 14, 2019 as H.R. 1769; Sen. Susan Collins (R-ME) similarly reintroduced the DAIRY PRIDE Act as S. 792 on April 1, 2019 (GovTrack.us., 2021). The legislative session again ended without a vote on either bill. This study sought to determine if there was any empirical evidence for consumer perceptions of plant "milks" as variations of milk, rather than as distinct products.

"Milk" has changed the landscape and market share of the dairy industry (Avery, 2017; Brachman, 2017). Consumer interest in plant-based dairy alternative beverages

has been steadily increasing over the past 20 years in the United States (Nielsen, 2016), while sales of fluid milk and milk consumption have decreased (Desilver, 2016). In 2018, for example, sales of plant-based dairy alternative beverages rose 9%; during the same period, milk sales declined 6% (Plant Based Foods Association, n.d.). Small dairies, many of which have been family-owned for generations, are merging to form larger dairies or are closing down (Fox, 2019). Wisconsin, for example, has 75% fewer dairies than it did 25 years ago (Fox, 2019). Large operations have also been impacted. Dean Foods, America's largest milk producer, filed for bankruptcy protection in 2019 and Borden Dairy, another major dairy company, filed for bankruptcy protection in 2020 (Higgins, 2020). According to the Plant Based Foods Association (n.d.), plant-based dairy alternative beverage sales now comprise 15% of total "milk" sales. Verbeke et al. (2009) noted familiarity with and positive attitudes toward food products, such as those generated by milk advertising, boosts ratings for similar products, such as plant-based dairy alternative beverages.

In traditional economic theories of consumer preferences, the importance consumers ascribe to product attributes is static (Arnold et al., 1998). These preferences can be measured and used in the development of a product marketing strategy. From this perspective, it might appear plant-based dairy alternative beverage companies have simply outperformed dairy companies in identifying and promoting the attributes consumers find most salient. However, psychological and communications research on attitude formation indicates the relationship between consumer attitudes and product

attributes may be more complicated (e.g., Ajzen, 1991; Fazio, 1995; Fishbein & Ajzen, 1975; Petty & Cacioppo, 1986; Schwarz, 2010).

Food Labeling Standards

According to the U.S. Food & Drug Administration (FDA) CFR 131.110(a), "Milk is the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows" (U.S. Food & Drug Administration, 2017b). Other countries, such as those in the European Union (EU), also have regulations restricting the use of dairy-related words (e.g., milk, yogurt) to animal-based products (Gambert & Linné, 2018). Unlike milk, no meaningful standard of identity for plant-based dairy alternative beverages currently exists. The FDA definition of "juice," however, defined in FDA CFR 120.101.17 as "the aqueous liquid expressed or extracted from one or more fruits or vegetables, purees of the edible portions of one or more fruits or vegetables, or any concentrates of such liquid or puree" (U.S. Food & Drug Administration, 2018c), more closely describes plant-based dairy alternative beverages. These beverages are essentially plant puree and water, fortified with vitamins, minerals, and flavoring (Blue Diamond, n.d.; H-E-B, n.d.ab; Silk, n.d.abc). As the label may be the only source of information available to the consumer at the time of purchase, the name of the product becomes the most important piece of information in making purchasing decisions (Bandara et al., 206; Palupi et al., 2012).

Using the name "juice," or another term for plant-based beverages (e.g., margarine as an alternative for butter), would better align U.S. labeling standards with global labeling standards. In Canada, Australia, New Zealand, and countries in the EU,

plant-based alternative products cannot be sold under dairy names such as milk, butter, cheese, and yogurt (Canadian Food Inspection Agency, 2019; Australian Government, 2015; Verband Sozialer Wettbewerb v TofuTown.com, 2017). Similarly, Japan defines milk as animal-derived (Ministry of Health and Welfare, 1951). India's Ministry of Health and Family Welfare defines milk as animal-derived and has strict non-vegetarian labeling regulations for dairy products (Auriga Research, 2018). As the plant-based food industry is thriving in other countries while complying with non-dairy labeling standards (Absolute Reports, 2019; Mordor Intelligence, 2018), one would not expect to see a significant loss in market share from adhering to non-dairy labeling standards in the U.S.

Consumers with specific health needs rely on the accuracy of product labels to prevent potentially life-threatening reactions. The Food Allergen Labeling and Consumer Protection Act of 2004 requires food labels to clearly identify the food source names of any ingredients that are one of the major food allergens or contain any protein derived from a major food allergen (U.S. Food & Drug Administration, 2018a). The distinctions between milk and plant-based dairy alternative beverages are especially salient for consumers with specific medical conditions, religious beliefs, and/or personal concerns (Bandara et al., 2016). Precise identification of these beverages is vital for the prevention of nutrition confusion and potentially serious negative health consequences. One in seven (15%) adults in the U.S. report having a food allergy; an additional 17% of adults have intolerances to one or more foods (Funk & Kennedy, 2016). There are over 160 different foods that can cause allergic reactions; however, eight account for 90% of all allergic reactions (U.S. Food & Drug Administration, 2018a). In addition to cow's

milk, these other highly allergenic foods include eggs, fish, crustacean shellfish, tree nuts, peanuts, wheat and soybeans. Almonds and soybeans are the most frequently used ingredients in plant-based dairy alternative beverages. Most allergic reactions cause mild symptoms; however, for some people reactions are severe or life-threatening. For these consumers, strict avoidance of these allergens is required to prevent serious health consequences (U.S. Food & Drug Administration, 2018a).

Consumer Understanding of Product Labels

While adherence to label identity standards is important, Tarabella and Burchi (2012) noted it does not guarantee consumers will correctly understand the information presented. Consumers can access information about a food product's ingredients, nutritional properties, and allergens using nutrition information panels (NIPs), front-of-pack labels (FOPs), and/or packaging health claims (Palupi et al., 2012; Talati et al., 2016). NIP form and content are mandated by FDA regulations. Examples of FOPs include product name, "calcium fortified," and "supports brain health." Laws require all food labels to be understood by the "average consumer," yet research suggests that consumers vary widely in their understanding of nutrition terms (e.g., Maubach et al., 2014). NIPs require some level of nutritional understanding to be useful for consumers (Grunert et al., 2010). Purchase and consumption decisions are based on consumers' attitudes toward healthy eating and their ability to accurately decode product advantages and disadvantages in order to meet their individual dietary needs. Further, NIPs rely on a conscious intention by the consumer to use the labels, as they are routinely placed on the back or side panels of the packaging (Talati et al., 2016).

Food Literacy

Food is a key factor in maintaining health and preventing malnutrition, obesity, and diet-related diseases. Informed consumption decisions are based on the consumer's ability to accurately decode product advantages and disadvantages in order to meet their individual dietary needs. Food literacy is one measure of consumers understanding of food, nutrition, and the impact of food on health (Thomas et al., 2019). Low levels of food literacy contribute to nutrition confusion and nutrition backlash, and have serious implications for consumer health.

Many consumers do not understand the relationships between nutritional attributes and their impact on health (Nocella & Kennedy, 2012). In one study, for example, participants averaged only 69% correct on a comprehension test of the information on food labels they were shown (Rothman et al., 2006). The nutritional values (e.g., protein, potassium, and phosphorous) provided on labels for food that is combined with milk (e.g. cereal) are specific to cow milk (U.S. Food & Drug Administration, 2017a). Consumers who do not fully understand the nutritional differences between milk and plant-based dairy alternative beverages may make choices that are not in their own best interest. Enforcing distinctive labeling requirements for dairy and plant-based alternative beverages will allow consumers to select food products that meet their health needs and personal preferences (Bandara et al., 2016) and more easily avoid food allergens (U.S. Food & Drug Administration, 2018a).

For some consumers, there are benefits for transitioning to plant-based dairy alternative beverages. Consumers with kidney disease, for example, should avoid or

limit dairy because of its high phosphorus and potassium content which is difficult for a damaged kidney to process (Stall & Adams, 2017). Many consumers with kidney disease do not perceive almond milk as an exemption to their doctor's recommendation to avoid or limit milk and thus abstain from consuming products that are actually acceptable (Stall & Adams, 2017). Likewise, lactose intolerance and lactose maldigestion in adults can lead to symptoms such as abdominal pain and flatulence, which in turn leads to a preference for dairy avoidance (Paterson, 2016). Other consumers use product labels to select foods to meet their personal preferences (e.g., calorie, protein, or sugar content). When one product (e.g., Almond Breeze almond milk, Silk soy milk) piggybacks on the marketing of another product (e.g. dairy milk) by using that name on its label, consumers are prone to make health-relevant misinformed judgments (Fernan et al., 2018).

Diet-Related Intentions and Behaviors

Most consumers examine the labels on food products to some degree (Golodner, 1993). Purchasing and consumption decisions are subsequently based on consumers' perceptions and evaluations of the product. Misperceptions of a food's dietary advantages or disadvantages caused by attribute transfer may be a contributing factor in nutrition confusion (Fernan et al., 2018), which Nagler (2014) defined as perceived ambiguity resulting from exposure to conflicting information, recommendations, and/or nutrition research. Nutrition confusion arises when consumers are exposed to health-related messages about a specific behavior or nutrition recommendation which produces more than one distinct outcome (Nagler, 2014). For example, a consumer may view a

television commercial which links drinking milk to strong bone growth in children (outcome #1) and later read an article linking milk consumption to early puberty in girls (outcome #2). The consumer would then be unsure whether or not it would be healthy for her child to consume milk. Consumers are regularly exposed to such conflicting messages in the media (Nagler, 2014). Consumers experiencing nutrition confusion will accept or avoid a product based on misperceptions of its dietary advantages or disadvantages.

Further, Nagler (2014) found that nutrition confusion was positively associated with nutrition backlash, where consumers are angered by conflicting information and choose to disregard all information. Nutrition backlash was predictive of lowered intentions to engage in recommended health behaviors. For example, a consumer who follows the Dietary Guidelines for Americans will drink three cups of milk each day to maintain a healthy eating lifestyle (ChooseMyPlate, n.d.). This consumer may read social media posts that describe milk as unsanitary, such as "That's a million pus cells per spoonful of milk. Grossed out?!? [face with medical mask emoji] [nauseated face emoji]" (Mercy for Animals, 2018). The consumer may feel confused about the healthfulness of milk and stop following all recommendations from the Dietary Guidelines for Americans. When the conflicting messages come from scientists or government agencies, the potential for nutrition backlash as a result of nutrition confusion is even greater (Nagler, 2014).

The Rhetoric of Food Labels

The nuance of one word – a name or identifier – can make a significant difference in how information is processed by consumers (Neilsen, 2018). Product names act as a microframe, priming consumers to evaluate the product in a particular way (Goffman, 1974). Marketing campaigns frame foods and production processes, priming consumers to evaluate the product in a particular way and provoking a desired emotive response. By leveraging word choice, message channels, repetition and timing, and source credibility, marketers influence consumer attitudes toward their products and toward those of their competition.

Attitudes are formed in response to these messages (Fishbein & Ajzen, 2010; Jerop et al., 2014). Attitudes are malleable and context dependent (Ajzen et al., 2015; Cialdini et al., 2006), such that a consumer may have liked drinking milk as a child but now prefers drinking plant-based dairy alternative beverages when out with friends. Attitudes may become relatively stable over time and may exhibit ceiling effects (de Andrade et al., 2016; Piqueras-Fiszman &Jaeger, 2014). A product attitude is the amalgamation of beliefs related to that products; in other words, it is the summation of the evaluations of the many attributes associated with the product (Fishbein & Ajzen, 2010). Marketers target attitudinal properties to maintain product loyalty (stability) or to sway consumers to change products (malleability) through packaging and promotional campaigns (Lee et al., 2011; Lindgren, 2018).

The nuance of one word can also blur distinctions between products. Seminal research by Thorndike (1920) demonstrated the existence of halo effects—cognitive bias

ratings of one quality bled over onto assessments of other characteristics. Marketers frequently take advantage of halo effects to sell products and services (Aditya, 2001). Familiarity with and positive attitudes toward food products, such as milk, boosts ratings for similar products, such as plant-based dairy alternative beverages (Verbeke et al., 2009). Teratanavat and Hooker (2006) found consumers tend to prefer food products which have a healthy image and contain natural ingredients. They also found familiarity with the product increased its attractiveness, marketing message credibility, and purchase intentions.

Health and nutrition claims, in particular, provide food companies marketing opportunities for product differentiation and/or alignment (Verbeke et al., 2009). Often, consumers do not clearly distinguish between nutrition facts and health claims, nor fully understand the ability of the body to utilize nutrients in different forms, such as the absorbability of naturally occurring calcium in milk versus the fortified calcium in plant-based dairy alternative beverages. For example, studies have documented consumers incorrectly inferring the existence of attributes in food products based on health-related claims on product labels (Fernan et al., 2018; Roe et al., 1999). Consumers may opt to consume plant-based beverages labeled “milk” because of a halo effect, where they perceive the nutritional benefits to be identical to that of dairy. Similarly, consumers may avoid plant-based beverages labeled “milk” because they perceive the nutritional risks to be identical to that of dairy. Halo effects related to the use of the word “milk” for non-dairy beverages may also lead to consumer acceptance of persuasive marketing

statements as scientific facts (Fernan et al., 2018; Roe et al., 1999). Inferences based on the product name provoke the strongest transfer of attributes (Fernan et al., 2018).

Social norms, the expected beliefs and/or behaviors in a given context, also prime consumers to react to products in a given manner (Cialdini et al., 1991). Consumers may select certain products (e.g., soy milk) because they believe those around them, or those important to them, think that product is the better choice. Attribute transfer may influence hegemonic norms, such that if a product labeled "milk" is perceived to be the same product as milk, one would expect the hegemonic norms associated with milk to also be associated with plant-based dairy alternative beverages. Further, connotative meanings, defined by social norms within a culture, are often more persuasive than the actual definition of a word due to their increased valence and salience (Lindgren, 2018; Macagno & Walton, 2010). These connotative meanings allow words to emphasize differences, create similarity associations, and provoke emotive responses; as such, words are persuasive and powerful tools for marketing, branding, and education purposes, particularly in the context of food (Lindgren, 2018).

Purpose of the Study

According to Boersma et al. (2019), "naming is framing" (p. 231), yet there is little in the literature about the role a name plays in consumer understanding of food and beverages. "An unrecognized problem is that a name is not just a source of misunderstanding; it is a conceptual label playing an important role in the shaping of evaluations and knowledge" (p. 231). Consumers' perceptions and attitudes toward consuming a healthy diet are directly tied to their choices of which foods to consume.

Some consumers associate plant-based dairy alternative beverages with healthier diets, which has caused a shift in the retail beverage market and in agricultural production practices (Avery, 2017). The distinctions between milk and plant-based dairy alternative beverages are especially salient for consumers with specific medical conditions, religious beliefs, and/or personal concerns. Purchasing and consumption decisions may be based on a consumer's ability to accurately decode the product's favorable and unfavorable qualities. The name on the product label may be the only source of information available to the consumers at the time of consumption (Bandara et al., 2016; Palupi et al., 2012). As such, the product name (e.g., "milk") is a critical determinant in shaping consumer perceptions, attitudes, and consumption intentions, as well as in reducing nutrition confusion.

Therefore, the purpose of this study was (1) to examine the impact of beverage identification (e.g., "milk" on label) on consumer attitudes and (2) to determine if there was any empirical evidence for the National Milk Producers Federation claim of a halo effect created by beverage advertising. If consumers equally associated milk attributes (e.g., source of calcium, contains hormones) and subjective milk norms with plant-based "milks," it would indicate milk and plant-based dairy alternative beverages are considered variations of a product (i.e., generic), rather than distinct products. Such an association could contribute to a halo effect based on the product name "milk" which has provided plant-based dairy alternative beverages with an undue marketing benefit and contributed to consumers' nutrition confusion related to "milk."

Research Hypotheses

I developed the following hypotheses, based upon a thorough review of prior literature, to determine if consumers perceive milk and plant "milks" to be distinct products, rather than as variations of milk. Evidence in support of the first two hypotheses would indicate plant-based dairy alternative beverages are perceived as variations of milk rather than as distinct products. Evidence in support of the last three hypotheses would indicate the existence of a halo effect caused by product advertising. I tested these hypotheses using two between-subjects, random assignment experiments.

H1: The name "milk" is preferred over the name "juice" for plant-based dairy alternative beverages.

H2: The size of this effect is moderated by personal preference for plant-based dairy alternative beverages over milk.

H3: Those exposed to dairy milk advertising will have more favorable milk attitudes than those exposed to control messages.

H4: Those exposed to plant-based dairy alternative beverage advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages.

H5: Those exposed to dairy milk advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages.

Significance of the Study

Consumers and policymakers are faced with making decisions on increasingly complex issues related to food and health (Doerfert, 2011). The vast majority of Americans are intellectually and emotionally disconnected from agricultural production and processing (Doerfert, 2011). Yet the purchasing and voting decisions made by these individuals directly impact the American agricultural system (Enns, Martin, & Spielmaker, 2016). Providing consumers and policymakers with accurate information about agricultural concepts has been an ongoing effort in literature for more than 25 years (Enns, Martin, & Spielmaker, 2016). The American Association for Agricultural Educators has included "informing public and policymakers" as a priority on their national research agenda for more than a decade (Doerfert, 2011; Roberts, et al., 2016). Yet, consumer research that informs policy making remains an urgent need (Maubach et al., 2014). Public understanding of science, such as agriculture, nutrition and health, is so important the National Science Foundation has recently mandated a "public engagement" component as a requirement for project funding.

Empirically investigating whether the plant-based beverage industry is receiving a marketing benefit from using the word "milk," and in doing so committing genericide, is also of great economic value. Genericide is the most extreme case of a halo effect (Taylor & Walsh, 2002), where consumers no longer differentiate between the original product and its competitors (e.g., use of "Kleenex" for all facial tissue). Dearden and Lilien (2001) found advertising for one product (e.g., milk) benefitted a substitute good (e.g., plant-based dairy alternative beverage). Use of the word "milk" to identify plant-

based dairy alternative beverages not only impacts sales of dairy products in the U.S., but around the world as well. Many other countries (e.g., Canadian Food Inspection Agency, 2019) prohibit plant-based dairy alternative products from using dairy words (e.g., milk) to promote their products. Enforcing current FDA labeling standards would better align U.S. labeling standards with global labeling standards. Thus, the issue of genericide is critical to both U.S. market share and to global trade exports of dairy products.

Further, FDA labeling standards are intended to assist consumers in making informed dietary decisions (e.g., avoid food containing allergens, meet recommended daily allowances for nutrients). As such, the misidentification of food products may have potentially serious health consequences for consumers. A better understanding of how consumers interpret product attributes will facilitate the creation of more effective health and nutrition interventions, as well as appropriate strategies to mitigate nutrition confusion and backlash.

Summary

Consumers' perceptions and attitudes toward healthy eating are directly tied to their choices of which foods to eat. Some consumers associate plant-based dairy alternative beverages with healthier diets, which has caused a shift in the retail beverage market and in agricultural production practices. The distinctions between milk and plant-based dairy alternative beverages are especially salient for consumers with specific medical conditions, religious beliefs, and/or personal concerns. The name on the product label may be the only source of information available to the consumers at the time of

purchase. Purchasing decisions may be based on a consumer's ability to accurately decode product advantages and disadvantages. The name of the product, therefore, is a critical determinant in shaping consumer perceptions, attitudes, and consumption intentions.

In this study, I examined the impact of beverage identification on consumer attitudes and evaluations of "milk" attributes. A halo effect created by the association of milk attributes with plant-based dairy alternative beverages, based on the product name "milk," would provide plant-based dairy alternative beverage companies with an undue marketing benefit and contribute to the genericide of the word "milk." Such association would also serve as an antecedent to nutrition confusion and backlash related to the word "milk" and milk attributes.

CHAPTER II

LITERATURE REVIEW

Overview

In the previous chapter, I established the need for, and context of, the current study. I provide an overview of research related to attitude formation, decision-making processes, and marketing influences on consumer attitudes and behavior in this chapter.

Consumer Attitude Formation

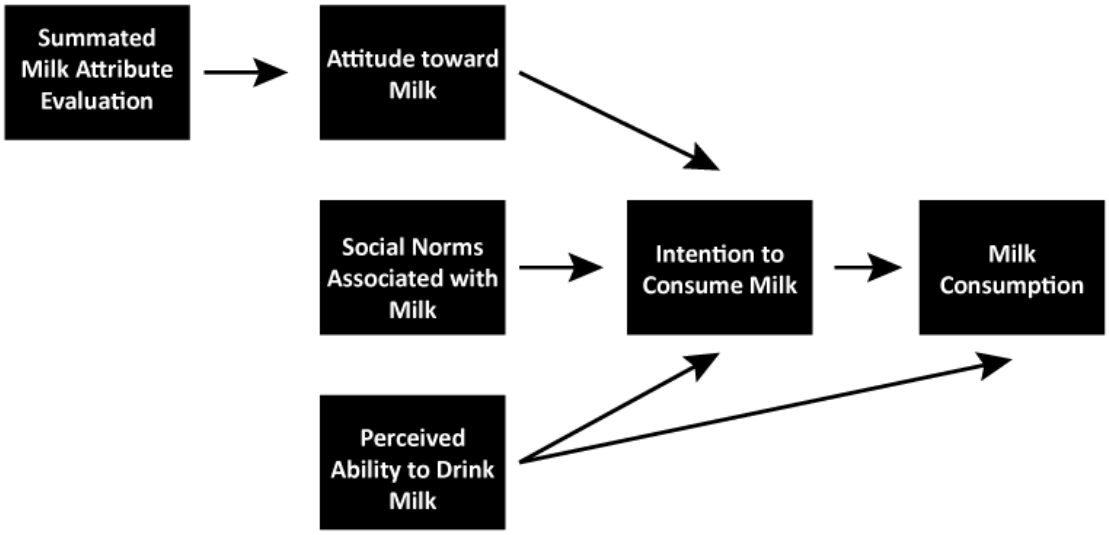
Attitude Formation

Shepherd (1999) suggested exploring attitude-behavior relationships is an effective approach to understanding consumer food choices, as consumers often make food decisions based on the way they feel about a certain product. Eagly and Chaiken defined attitude as a "psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (1993, p. 1). According to the reasoned action approach (Fishbein & Ajzen, 2010), consumer behavior is the direct result of intention, which is predicted by consumer attitudes toward products, normative social beliefs regarding the use or consumption of those products, perceived normative pressures, and self-efficacy (Ajzen, 1991; Jerop et al., 2014). Attitudes are thought to be created from the summated beliefs about, or perceptions of, an object (Fishbein & Ajzen, 1975). Depending on the discipline, beliefs are also referred to in the literature as perceptions, preferences, drivers of liking, and attribute evaluations. Beliefs, or perceptions, are cognitive responses to product attributes (e.g., milk contains protein),

while attitudes are affective responses to the products themselves (e.g., milk is good) (Ajzen, 1991; Ledgerwood et al., 2018). These cognitive and affective responses in turn influence a behavioral intention (e.g., I will drink milk), which in turn predicts behavior (Fishbein & Ajzen, 1975; Fazio, 2007). The more favorable the attitude and subjective norm with respect to a certain behavior, such as drinking a plant-based dairy alternative beverage, the stronger the consumer's intention to perform that behavior. Consumers are then expected to carry out their intentions when an opportunity to do so arises (Ajzen et al., 2005). The decision to consume milk or a plant-based dairy alternative beverage is thus based on a consumer's perceptions and attitudes toward the beverage. Figure 1 illustrates this process.

Figure 1

Predictors of Milk Consumption under the Reasoned Action Approach



Note. Conceptual model adapted from Fishebein and Ajzen's (2010) reasoned action approach.

Attitudes can be linked and organized in cognitive frameworks according to general ideologies, such as veganism, which may impact the persuasive ability of others to change the attitude (Fabrigar et al., 2005). Sheeran et al. (2016) conducted a meta-analysis and found changes in attitudes and/or norms led to changes in consumer intentions and behavior. Experimentally induced changes in attitudes and/or norms led to medium-sized changes in intention and small changes in behavior. Stronger attitudes are more predictive of behavior and are less likely to change (Egan 2015; Gass & Seiter, 2018).

While the predictive ability of the reasoned action approach is supported by extensive research, this ability is associated with "thoughtful behavior" (Maio et al., 2019). Salient beliefs are most predictive of behavior, particularly when they are associated with positive or negative outcomes in a specific context (Maio et al., 2019). For example, a consumer may believe milk tastes good and associates its consumption with the positive outcome of a pleasurable drinking experience. Conversely, the negative outcome associated with drinking milk by someone who is lactose intolerant is likely more predictive than the positive outcome of drinking milk that tastes good.

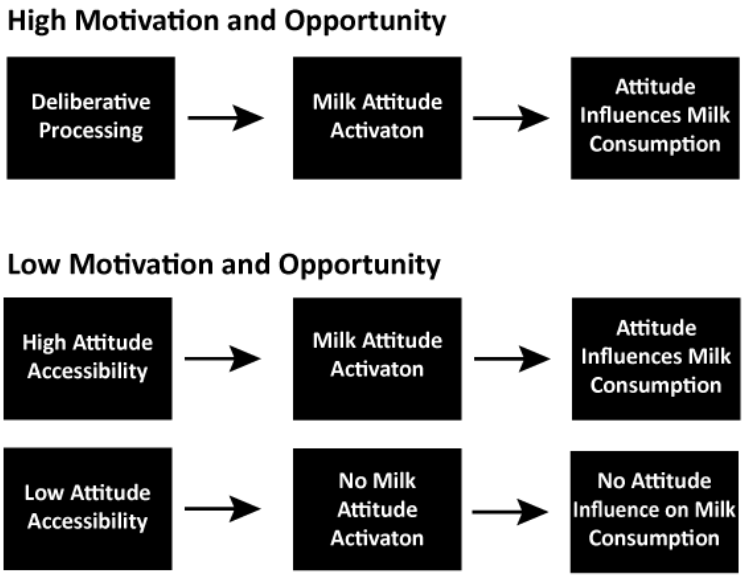
However, there are instances when attitudes do not accurately predict purchase and/or consumption behaviors (Gass & Seiter, 2018; Maio et al., 2019). Consumers may hold favorable attitudes towards a product, but other factors may deter purchase and/or consumption (Egan, 2015; Grimmer & Miles, 2017; Solomon, 2013; Wassenaar et al., 2019). These factors may include product availability, cost, identity, situational norms, and/or specific product attributes. For example, a consumer may like milk, but is lactose

sensitive and therefore avoids consumption; likewise, a consumer may be in the company of people who are vegan and therefore opts to drink an alternate beverage in this context.

Fazio's (1990) motivation and opportunity as determinants model (MODE) was developed in acknowledgment that intentions do not always predict behaviors. There are also times when consumers act spontaneously rather than thoughtfully. The MODE model defines different information processing mechanisms for deliberate and spontaneous behaviors. The relationship between attitudes and behavior depends upon attitude accessibility. Highly accessible attitudes are processed spontaneously, while less accessible attitudes are processed deliberately. Figure 2 illustrates these processes.

Figure 2

Predictors of Milk Consumption under the MODE Model



Note. Conceptual model adapted from Fazio's (1990) MODE Model.

Social and Collective Identity

Attitudes are often learned from others and help to create social and collective identities (Albarracín et al., 2018). According to social identity theory (Tajfel & Turner, 1979), consumers categorize themselves as belonging to one or more in-groups, which can be very broad (e.g., American) or very narrow (e.g., vegan animal rights activist) depending on their current context (Chattaraman et al., 2010; Reed, 2002; Versluis & Papies, 2016). A specific social identity varies in its relative importance for guiding how a consumer thinks, feels, and behaves (Chattaraman et al., 2010). When social identity salience is triggered by environmental cues, it primes identity congruent attitudes, decisions, and behaviors (Reed, 2002). The higher the identity salience, the greater the probability of identity-related behavioral choices (Chattaraman et al., 2010). Identity and consumption habits may be influenced by exposure to mass media. Hjelmar (2011), for example, found changes in group behavior can come from strong visuals and moral portrayals of agricultural processes in mass media. The role social identities play in influencing consumer response to marketing is increasingly recognized in the literature (Reed, 2002).

Consumers prefer products that align with their various social identities and communicate these identities to others (Kleine, Kleine, & Kernan, 1993; Reed, 2002). Consumer-product identification is a psychological process where consumers form committed and meaningful relationships with products, and these relationships become an integral part of consumers' self-identities (Shirazi et al., 2013; Tuškej et al., 2013). Consumers develop these relationships with products not only for what the product can

functionally do, but also to make a statement about themselves (De Chernatony et al., 2011; Lin & Sung, 2014; Tuškej et al., 2013). Consumers' interpretation of "milk" may reflect norms embedded within their food identities. For example, consumers with a vegan food identity may drink plant-based dairy alternative beverages to demonstrate to others they are ethical people who support animal rights (Grunert, 2006; Jasper, 1997). The moderating effect of a consumer's identity has been repeatedly demonstrated in the domain of consumption behavior (Hjelmar, 2011; Versluis & Papies, 2016).

A variety of religious and personal identities influence consumer decisions to purchase plant-based products instead of dairy products (Katz et al., 2013; Paterson, 2016; Stall & Adams, 2017). Many religions have requirements stipulating what can be eaten and when (Funk & Kennedy, 2016). For example, Eastern Orthodox Christians abstain from consuming all dairy products during Lent (Dugan, 1994). Jews who follow the religion's strict dietary laws ("kosher") are prohibited from mixing meat and dairy (Kedem, 1995). Chicken, for example, cannot be consumed with milk, nor with bread that has been made with milk, butter, cheese, or sour cream. This prohibition extends beyond meal ingredients, as meat and dairy food preparation requires separate utensils, dishes, and counter spaces (Dugan, 1994).

Personal food identities can similarly impact consumer consumption and purchase behaviors (Funk & Kennedy, 2016). Some consumers believe that the use of animals for food is immoral or have concerns about the environmental impacts of modern farm animal production practices (Croney & Anthony, 2011). Vegans, for example, assert that raising animals as a commodity, such as dairy cattle for milk, is

inherently cruel (Burwood & Wyeth, 1998). Other consumers assert dairy farms negatively impact the environment, citing issues such as pollution, runoff, and land degradation (Fox & Ward, 2008) as reasons for abstaining from the consumption of milk. Bartels and Reinders (2010) found identity is more predictive of specific food consumption than standard demographic markers (e.g., age, gender, ethnicity). They studied consumer intentions and behavior in an organic food context. Marketing messages that made sustainable behavior salient were effective in increasing organic food consumption in consumers with strong environmentally friendly identities.

Normative Beliefs

Norms promote behaviors by providing information about social expectations and serve as a heuristic cue in guiding behaviors (Goldstein & Cialdini, 2007). According to the focus theory of normative conduct (Cialdini et al., 1991), there are two types of norms—descriptive and injunctive—that influence consumer beliefs, attitudes, and behaviors in different ways. These implied codes of conduct (descriptive norms) and presumed ramifications (injunctive norms) influence behavior to the extent that they are salient (Goldstein & Cialdini, 2007).

Food preferences and consumption behavior are affected by the consumer's social environment (Cialdini, 2006). As such, consumers can be more or less likely to respond in a particular manner based on how a product, such as "milk," is defined, labeled, and associated (Pratkanis, 2007). The vast majority of Americans (91%) say they are omnivores, while 12% of adults age 18 to 49 say they consume a primarily plant-based diet (Funk & Kennedy, 2016). Many consumers purchase both milk and

plant-based dairy alternative beverages (McCarthy et al., 2017), but milk consumption is the hegemonic—most dominant descriptive—norm in the U.S. (Wiley, 2016).

Cereal is regularly marketed as a breakfast food that is consumed with milk. This norm is defined and reinforced through photographs and graphics on cereal packaging, which typically displays the product in a bowl with milk and provides a visual guide as to how much cereal is appropriate to serve (Jackson et al., 2009; Tal et al., 2017). Evidence of the norm of consuming cereal with milk is prevalent in the media as well. A writer for BuzzFeed humorously lamented the idea of cereal eaten with something other than milk.

> Look. I love a nice bowl of cereal as much as the next guy. But it's come to my attention that some of you are committing an absolutely HEINOUS crime with your daily breakfast... Because it turns out that some of you are using water instead of milk on your cereal. (LaConte, 2019)

Social norms are context dependent and behaviors are motivated by the salience of a particular norm at a given time, such as the consumption of milk with breakfast cereal (Shulman et al., 2017).

Goldstein and Cialdini (2007) noted social norms guide behavior, mediated by social identity, particularly when one's central attitudes and behaviors are less common—such as consumers who adhere to strictly vegetarian diets. According to deviance regulation theory (Blanton & Christie, 2003), consumers may adopt counter-normative behaviors in order to stand out from others in a positive way. Wiley (2016)

suggested performing perceived eco-friendly behaviors (e.g., consuming plant-based diets) may activate an enhanced self-image.

Food identity moderates the relationship between norms and behavioral intention. The stronger the identity, the stronger the influence of norms on behavior (Rimal & Lapinski, 2015). However, Stok et al. (2018) noted the outcomes of social norm interventions for health promotion have been mixed and that social norm effects are not yet well-understood. They suggested further research was needed on the moderating and mediating variables in the context of eating behavior, which was one of the aims of the present study.

Marketing Influences on Consumer Attitudes and Behavior

Rhetorical Strategies

Consumer identities can be leveraged by marketers to increase the sales of specific products. Marketers use past behavior to infer consumer attitudes and create personas (templates) in order to tailor messages for specific consumer identities (Gass & Seiter, 2018). Consumer habits, emotions, behaviors, and demographic markers (e.g., age, gender, socio-economic status) inform the rhetorical strategies marketers use to strategically influence consumers to prefer, and ultimately purchase, their products (Miles & Nilsson, 2018). According to Aristotle, "Rhetoric may be defined as the faculty of observing in any given case the available means of persuasion" (Roberts translation, 2010, p. 6). In marketing, verbal rhetoric is often paired with visual rhetoric to activate the consumer's wants, needs, and/or interests in situational contexts. Verbal rhetoric describes the words or phrases used to convey meaning, while visual rhetoric describes

the images, colors, or semiotic signs designed to provoke a specific response (Miles & Nilsson, 2018). Words are persuasive and powerful tools for marketing, particularly in the context of food (Lindgren, 2018).

Marketers skilled in rhetoric use language to affect consumers' perceptions of reality and to change their behavior (Sparks, 2020). Nitzke et al. (2007) noted attitudes about foods tend to reflect cultural values that are strongly influenced by marketers and the media. "For example, perceptions, attitudes, and beliefs about fat have shifted in the last half of this century, much of it because of social trends and marketing campaigns" (p. 1228). The Academy of Nutrition and Dietetics discouraged the widespread emphasis on "good" and "bad" foods, stating moderation of consumption in a wide variety of foods was the healthiest approach to eating (Freeland-Graves & Nitzke, 2013). Consumers who avoided "bad" foods were the least likely to maintain their diets long-term and the most likely to regain any weight lost—plus more (Nitzke et al., 2007).

The persuasive appeals most frequently used by marketers are based on Aristotle's concepts of pathos (emotion), logos (logic), ethos (credibility), and kairos (urgency) (Johar & Sirgy, 1991). These appeals may be used alone or in combination. Baker (2012) described how one organic juice company attempted to persuade consumers to purchase its product using three of the four aforementioned appeals on its product packaging. Uncle Matt's Organic Grapefruit Juice established credibility through its company name—Uncle Matt—and the accompanying image of a gray-haired, spectacled man to connote wisdom and experience. "Uncle Matt's is not just a faceless corporate entity, there are 'real' people who work there" (p. 32). The logical

appeal—a "USDA Organic" label—spoke to the consumer's desire for a healthy product. Carefully selected pastoral images and the statements "family-owned" and "All USA fruit" played to the consumer's emotions—*I'm patriotic so purchasing this product supports people like me* (Baker, 2012). John et al. (2019) found promotional messages containing words such as "vitamins," "minerals," "healthy," "choice," and "habit" were most salient to low-income consumers. Jenkins, Madhavi, Signal, and Bowers (2014) found that taste/flavor appeals were used most often in food marketing, followed by health appeals/nutritional content.

The choice of a single word in lieu of one of its synonyms can alter the consumer's interpretation of the product and its benefits (Nielsen, 2018). Adjectives used in food marketing act as microframes, priming consumers to evaluate the product in a particular way (Goffman, 1974). Connotative meanings are often more persuasive than the conventional definition of the word, as they allow words to emphasize differences, create similarity associations, and provoke emotive responses (Lindgren, 2018; Macagno & Walton, 2010). The nuances between similar words elicit strikingly different emotional responses in consumers (Grunert et al., 2000). Consider the connotative differences between "conventional" and its synonyms. Dictionary.com (n.d.) defines "conventional" as "conforming or adhering to accepted standards." Synonyms for "conventional" include "current," "ordinary," "regular," "traditional," and "typical" (as listed on thesaurus.com, n.d.) In America, a word such as "current" connotes newness while "traditional" connotes the opposite. Likewise, conventional food "conforming or adhering to accepted standards" should connote "safe to eat." "Organic" is frequently

used by food marketers as an antonym to “conventional” and connotes “healthiest” and “safest to eat” (Larceneux et al., 2012).

Maio et al. (2019) noted consumers tend to have more positive attitudes toward objects they are familiar with (perceptual fluency). Thus, “milk” attitudes would likely be positive based on the use of the familiar word milk—even if the consumer does not consume milk. Marketers often employ evaluative conditioning in their branding efforts. By pairing the attitude object (e.g., “milk”) with a valenced stimulus (e.g., milk presented in happy family context or a healthy, athletic activity), marketers hope consumer attitudes toward “milk” will be unconsciously associated with nostalgia or feelings of health and physical ability in future encounters with “milk” (Maio et al., 2019).

Branding is the process by which marketers develop connotative associations between a company or product name and specific concepts in the minds of consumers. According to the American Marketing Association, “A brand is a name, term, design, symbol or any other feature that identifies one seller's good or service as distinct from those of other sellers” (n.d.). Brands allow consumers to make quick decisions about a product’s quality, price, and usefulness (Keller, 2012). Brands also allow consumers to express identity and make a statement about who they are to others (Tuškej et. al, 2013). Branding creates awareness about an organization and its products (Du Plessis, 2015). A strong brand may bring price premiums for the product; as such, the brand represents a valuable asset to the producer (Keller, 2012). Brand loyalty leads to highly desirable outcomes such as increased sales and reduced costs for attracting and maintaining

customers (Aaker, 1991; Shirazi et al., 2013). Leveraging brand loyalty is an important part of assuring a company's brand equity and long-term financial success (Chaudhuri & Holbrook, 2001; De Chernatony, McDonald & Wallace, 2011).

Unlike pant-based dairy alternative beverages, milk is typically sold as unbranded product. Milk is produced by many individual dairies and marketed as a commodity with industry-funded promotions, known as commodity checkoff programs, which typically focus on common attributes such as nutritional content, origin, or quality (Ward, 2010). Check off dollars and advertising campaigns are managed by industry associations, such as the National Milk Producers Federation, rather than by the individual producers who fund these programs.

The U.S. meat industry is also typically promoted as a commodity product. Ward and Ferrara (2005) found branding increased beef sales over non-branded beef. "Product innovations, preference differences and changes, safety concerns, and underlying structure throughout the vertical system for meats all contribute to the importance of (or lack of) brands" (Ward & Ferrara, 2005, p. 1). Plant-based dairy alternative beverages may have a competitive market advantage over milk as these "milks" are sold as branded products. This differentiation is especially salient for Millennial and Gen Z consumers as they tend to be more brand conscious and innovation-oriented than other demographics (e.g., Joshi & Garg, 2021; Özkan & Solmaz, 2017; Thomas et al., 2018).

Halo Effects and Attribute Transfer

Rhetorical strategies stimulate demand for similar products by creating a halo effect. Halo effects in impression formation are well documented phenomena. Seminal

research by Thorndike (1920) demonstrated the existence of halo effects, a phenomenon where the cognitive bias ratings of one quality bleed over onto assessments of other characteristics. For example, a cookie labeled “organic” will be perceived as healthier than a cookie without the label even if the cookies are identical in their high calorie, fat, and sugar content. Aditya (2001) found halo effects are enhanced through the manipulation of emotional arousal, such as by the carefully chosen words used by marketers. Further, Sundar et al. (2014) found negative labels produced stronger halo effects than positive labels.

A halo effect can occur at the product category level (e.g., non-dairy alternative beverage), brand level (e.g., Blue Diamond Almonds), individual product level (e.g., Almond Breeze almondmilk), and the attribute level (e.g., taste). Baker (2012) described how the rhetorical differences in packaging used by organic milk producers and conventional milk producers create halo effects at the product category and attribute levels.

> A half-gallon of Organic Valley milk comes in a paperboard carton with a multitude of pastoral images; whereas the majority of conventional milk sold in large grocery stores is packaged in gallon and half-gallon semi-opaque plastic jugs with only a small sticker or printed area containing the brand name and required nutritional information. Another difference in organic product packaging is the frequent presence on the packages of narratives of varying length about the company or farm where the item was produced or grown (Baker, 2012, p. 3).

Baker asserted the different packaging presentations created a halo effect where consumers would associate the attribute “organic” with the attributes “natural” and “local.” Consumers would subsequently evaluate all organic milk as containing “better for my health” ingredients than conventional milk.

Betts and Taran (2004) noted “In the case of a 'brand halo', an individual would evaluate a product based on the level of some attribute generally associated with the brand. This evaluation would supplement or replace the evaluation based on the actual level of the attribute present in the specific model being evaluated” (p. 9). For example, consumers typically perceive food from McDonald’s to be less healthy than food from Subway, though the meals ordered from Subway typically contain much higher calorie counts than consumers estimate (Burton et al., 2014). Similarly, Hubbard et al. (2016) found overall liking and purchase intention for cottage cheese was higher for familiar brand name products than for generic products. Marketers frequently create and leverage halo effects to sell their products (Aditya, 2001). Using the word “milk” as an identifier for plant-based dairy alternatives beverages may cause consumers to mistake one product for the another (Nagler, 2014; Nocella & Kennedy, 2012). The product familiarity generated by milk advertising may boost consumer ratings of plant-based dairy alternative beverages simply by having the word “milk” in the product name (Larceneux et al., 2012; Teratanavat & Hooker, 2006; Verbeke et al., 2009).

The attribute transfer effect is a special type of halo effect that explains the process by which consumers evaluate products as having specific attributes that are not present. For example, a consumer who avoids milk because it contains high levels of

potassium or lactose may similarly avoid plant-based dairy alternative beverages because they mistakenly believe these ingredients are present (Paterson, 2016; Stall & Adams, 2017). Similarly, a consumer may infer plant-based dairy alternative beverages have the same amount of protein and calcium as milk. As such, consumer attitudes may be based on transferred, rather than actual, product attribute evaluations (Larceneux et al., 2012).

Figure 3

Conceptual Model of the Attribute Transfer Effect

Attribute transfer may influence normative beliefs and behaviors such that if a product labeled "milk" is perceived to be the same product as milk, one would expect the normative beliefs and behaviors associated with milk to also be associated with plant-based dairy alternative beverages. Boersma et al. (2019) noted "When attitude extension occurs, attitudes about the known concept are transferred to the new concept, whereby the attitudes towards the familiar concept can be used to make decisions about

the unfamiliar concept" (p. 221). Park et al. (1996) similarly discussed "association transfer" whereby the attributes associated with a branded product would be associated with other products by that brand. Fernan et al. (2018) noted inferences based on the product name provoke the strongest transfer of attributes.

The Role of Halo Effects in Brand Equity

According to Keller (2012), brand equity is the value a name adds to a product above and beyond its physical assets. Brand equity has five components: brand associations, brand awareness, brand loyalty, perceived quality, and proprietary assets (Aaker, 1991). High brand equity is linked with premium pricing, consistently strong consumer demand, and competitive advantage within the industry (Farjam & Hongyi, 2015). The global Starbucks brand, for example, was valued at approximately $9.6 billion in 2018 (Statistica, 2019a). Brand equity can be increased or diminished through a halo effect, where consumers evaluate products based on their general attitudes toward similar products (Roe et al., 1999; Thorndike, 1920). A product recall, for example, typically negatively impacts sales and stock market performance not only for the recalled brand, but also for similar brands across the product segment (Borah & Tellis, 2016).

When brand equity is low, marketers employ verbal and visual rhetoric to link products to those with higher brand equity. Aditya (2001) noted packaging for lesser-known products is often designed to look like that of a more popular brand. Notably, Larceneux et al. (2012) found qualifying product labels were more effective in improving product perceptions than other strategies. "Organic milk" was rated as more

desirable by study participants than "milk." The use of the "milk" label for plant-based dairy alternative beverages likely increases consumer perceptions of product quality. Marketers exert considerable time and money into creating and protecting brand equity but are not always successful.

The most extreme case of a halo effect is genericide. Genericide occurs when the courts rule that a name has become generic and thereby cancel the right to the name (Taylor & Walsh, 2002). For example, the name "zipper" was trademarked in 1925, but B.F. Goodrich lost its rights to the term in 1930 because the word had entered the common lexicon as a generic term (Quick, 2019). Consumer Reports noted other trademark rights lost to genericide include thermos, yo-yo, escalator, and TV Dinner (Quick, 2019). More recently, McDonald's lost the rights to the "Big Mac" trademark in Europe after a legal battle with the Irish company Supermac's (Reuters, 2019). Brand equity is lost once a name is declared generic, resulting in both the loss of a financial asset and a source of long-term competitive advantage (Taylor & Walsh, 2002).

In the case of dairy and plant-based dairy alternative beverages, California courts have asserted that reasonable consumers are not confused by plant-based beverages using the word "milk" (Cynthia Cardarelli Painter v. Blue Diamond Growers, 2017). Yet according to a recent survey, 20% of consumers are unsure if plant-based "milks" contain cow's milk and 52% are unsure if lactose-free milk contains cow's milk (International Food Information Council Foundation, 2018). A halo effect may provide plant-based dairy alternative beverage producers with undue marketing benefits by allowing them to capitalize on the positive associations generated by dairy industry

marketing. The influence of halo effects on food choice and behavioral intentions is of particular importance in the acceptance or rejection of foods (Villegas et al. 2008). For example, Costell et al. (2010) found consumers who prioritized healthy eating considered a soy beverage sample more acceptable than the dairy samples. These consumers also reported a higher purchase intention not only for the soy beverage sample but also for all plant-based beverage samples. Substitute products do not need to be identical for health halo effects to impact product sales, as Kinnucan and Miao (2000) found even juice producers benefited from dairy advertising.

The Federal Trade Commission (FTC) protects consumers from unfair and deceptive practices and unfair competition. Section 5(a) of the FTC Act rules a practice unfair or deceptive practice if it "causes or is likely to cause substantial consumer injury which is not reasonably avoidable by consumers themselves and not outweighed by countervailing benefits to consumers or competition" (Federal Trade Commission, 2019, 15 U.S.C. Sec. 45(n)). Aditya (2001) noted legal definitions can be different from what is understood by consumers. The meaning of "deceive," according to Dictionary.com (n.d.), is "mislead by false statement; falsely persuade others." Further, definitions of deceptive practices do not necessarily consider whether there was a deliberate intent to deceive for the purpose of acquiring a larger portion of the market but "Deception in the context of marketing practices is unethical and unfair to the deceived" (Aditya, 2001, p. 737). The American Marketing Association's Code of Ethics (n.d.) requires members to "Represent products in a clear way in selling, advertising and other forms of communication; this includes the avoidance of false, misleading and deceptive

promotion" (Ethical Values section). Not all marketers adhere to this code of conduct. A common type of deception occurs when product packaging is intentionally designed to imitate a popular brand (Aditya, 2001).

Brand or product names may cause confusion if they share or connote the same meaning in the minds of consumers. For example, the word "Kleenex" is often used by U. S. consumers to refer to all brands of facial tissue. Source confusion caused by the use of the word "milk" could provide plant-based dairy alternative beverages with undue marketing benefits by allowing them to capitalize on the positive associations generated by dairy industry marketing. As Ward and Ferrara (2005) found in their study on branded and commodity beef, branded plant-based "milk" is likely deemed a more favorable variation of milk by consumers.

Trademark case law has repeatedly demonstrated that similarity between names and similarity between meanings are the most important determinants in confusion about source association. Meanings need not be identical to cause confusion (Howard et al., 2000). Misidentifying a product may cause consumers to mistakenly infer the product has attributes that it does not. Consumers may then choose or avoid products, such as plant-based dairy alternative beverages, based on misperceptions of their dietary advantages or disadvantages. Consumer interest in plant-based dairy alternative beverages has been steadily increasing over the past 20 years in the United States (Nielsen, 2016), while milk consumption has decreased (Desilver, 2016). An attribute transfer effect caused by misidentification may be one explanation for this change in consumer preference.

The Role of Halo Effects in Nutrition Confusion

In a 2017 study by the International Food Information Council Foundation (IFICF), 80% of U.S. consumers reported being exposed to "a lot" of conflicting information about which foods to eat and what to avoid. Millennials, in particular, experienced nutrition confusion—a state where consumers are unclear or have misperceptions about a food's dietary advantages or disadvantages (Nagler, 2014). Approximately 60% of Millennials surveyed by the IFICF said they were not confident they could make good dietary choices due to the abundance of conflicting information (International Food Information Council Foundation, 2017).

Nutrition confusion, such as a misattribution of health benefits, can lead to consumer acceptance of persuasive marketing statements as scientific facts; for example, the definition of "organic" can vary greatly between product categories yet many consumers believe it means "healthier" (Lindgren, 2018; Nielsen, 2018). The word "natural" has no FDA definition (U.S. Food & Drug Administration, 2018b); it is merely a marketing term. Chandon and Wansink (2007) studied the biasing effects of halos on nutrition inferences from health claims. They found consumers frequently draw inferences about product attributes from the brand positioning or from the attributes of comparable products. In addition, they found consumers with high nutrition knowledge were just as likely to be influenced by health claims as consumers with limited nutrition knowledge. Fernan et al. (2008) found evidence that consumer perceptions of healthfulness are driven by the declared presence of beneficial nutrients (e.g., protein, calcium, etc.) on product labels, as well as the declared absence of potentially

detrimental properties (e.g., sugar, salt, and fat). The declared presence (versus absence) of beneficial nutrients (particularly protein) had more influence on consumers than the actual level of nutrient the product contained.

Most Americans (73%) believe that healthy eating is important, yet most (58%) believe they are not eating healthy enough (Desilver, 2016). Paterson (2001) noted consumer interest in nutrition is high but found consumer skepticism is too. Nutrition confusion is positively associated with nutrition backlash, where consumers are angered by conflicting information and choose to disregard all health-related information (Nagler, 2014). For example, consumers have long been told to use margarine as a heart-healthy substitute for butter to margarine (Bloch, 2019). New research, however, has found the trans fatty acids in margarine are worse for consumers' health than the saturated fats in butter they had been told to avoid (Bloch, 2019). Conflicting messages such as this often results in nutrition backlash.

Consumers' perceptions and attitudes toward healthy eating are directly tied to their choices of which foods to eat. Despite a lack of strong empirical evidence that organic foods are more nutritious than conventionally grown foods (Palupi et al., 2012; Smith-Spangler et al., 2012), 75% of Americans believe organically grown foods are healthier than conventionally grown foods (Funk & Kennedy, 2016). Some consumers similarly associate plant-based dairy alternative beverages with healthier diets based on the words used in marketing campaigns and on product packaging (Packaged Facts, 2017). Words such as "milk," "natural," "healthy," and "sustainable" are driving double

digit growth in the plant-based dairy alternative beverage market (MarketsandMarkets, 2019).

Previous research has demonstrated front-of-pack labels (FOPs) and health claims influence nutrition confusion through a halo effect. For example, a "low-fat" label associates competing products with high fat content; "no GMOs" and "hormone-free" labels similarly imply competing products contain GMOs and hormones. Kozup et al. (2003) found adding a "heart-healthy" symbol on a restaurant menu reduced consumers' perceived risk of heart disease even when placed next to an unhealthy menu item. Wansink (2003) found consumers had "negative taste" associated with products indicating they contained soy, regardless of whether the products contained soy or not. Some consumers associate "not healthy" with "tastes good" (Raghunathan et al., 2006); such consumers may be resistant to interventions aimed at improving the nutritional quality of their diets.

Consumers may similarly infer quality dimensions like taste and health from the name "milk;" such inferences are stronger for consumers who actually buy milk products (Grunert et al., 2000). The repeated use of the name "milk" for plant-based dairy alternative beverages is likely leading consumers to heuristically process beverages that visually resemble milk as "milk," leading to greater levels of nutrition confusion (Nagler, 2014; Petty & Cacioppo, 1986). Shepherd (1999) noted "beliefs about the nutritional quality and health effects of a food may be more important than the actual nutritional quality and health consequences in determining an individual's choice" (p. 808). In the context of food, this blurring of distinctions can lead to potentially grave

health consequences for consumers. Unless consumers are actively seeking nutritional information, the potential for confusion about nutritional benefits is rife (Avery, 2017).

Consumers may be choosing to drink plant-based dairy alternative beverages labeled "milk" because of a halo effect, where they perceive the nutritional benefits to be identical to that of milk. People have consumed milk from cows for centuries (Varnam & Sutherland, 2001), believing it to be an important source of essential nutrients (Haug et al., 2007) such as calcium, potassium, protein, iron, riboflavin, vitamin A, vitamin D, vitamin B12 and essential amino acids (Kempen et al., 2017). While dairy and plant-based beverages appear similar in appearance, they possess different nutritional properties.

Product Evaluation and Decision-Making Processes

Food Literacy

Nutrition confusion may be exacerbated by poor literacy skills. Results from the 1992 National Adult Literacy Survey (NALS) revealed over half of the U.S. adult population possesses literacy skills below a sixth-grade level of equivalency (Kirsch et al., 1993). The 2003 NALS results indicated literacy levels were further declining, with roughly half of U.S. adults possessing below basic or basic levels for prose (43%), document (34%), and quantitative (55%) literacy (Kutner et al., 2006). Lower levels of literacy negatively impact consumers' ability to make healthy food choices. For example, John et al. (2019) found Supplemental Nutrition Assistance Program (SNAP) recipients had low basic knowledge about milk. Most participants in their study believed

whole milk was the healthiest choice because 1% and non-fat milk was "watered down" and therefore contained fewer nutrients, such as calcium or Vitamin D.

Colatruglio and Slater (2014) noted obesity and diet-related chronic disease rates have become national crises. In response, a "food as medicine" philosophy and a call for increased food literacy has emerged in the literature and educational programs (Colatruglio & Slater, 2014). The mission of the Harvard University Dining Service's Food Literacy Project, for example, is to cultivate an understanding of food from the ground up. "Education focuses on four integrated areas of food and society: sustainability, nutrition, food preparation and community. Ultimately, the project goal is to promote enduring knowledge, enabling consumers to make informed food choices" (Harvard Dining Services, n.d., mission section).

Desjardins (2013) asserted food literacy was comprised of the following components: food skills (the ability to use cooking implements and appliances, handle food ingredients); knowledge (nutrition for good health, interpreting food labels, food safety); and planning ability (organizing meals; food budgeting)." Colatruglio and Slater (2014) noted food literacy fosters connections between food, people, health and the environment.

> Procuring food and maintaining good health through diet has been one of humankind's main pursuits, and has always had its challenges. However, despite significant technological advancements in food production and transportation methods and scientific progression in nutrition research, the ability of people to

> maintain health and well-being through food and nutrition has paradoxically become increasingly difficult. (Colatruglio & Slater, 2014, p. 37)

They asserted health-conscious consumers are responding with an increased demand for functional foods (e.g., milk, bread) and nutraceuticals, foods consumed as medicine for their physiological benefits. The researchers also noted consumers are frequently exposed to marketing messages for diet and nutrition products that conflict with public health guidelines for healthy eating.

Thomas et al. (2019) noted the lack of consensus about food literacy terminology in the literature and the need to develop a consistent vocabulary to guide future food literacy research and measurement. Of particular note for this study are their definitions for "food and nutrition knowledge," "self-efficacy and confidence," and "food decisions." Food and nutrition knowledge is defined as an awareness of types of foods (e.g., milk), an understanding of where this food comes from (e.g., cow) and how it is produced or processed (e.g., pasteurized). It also includes an awareness of nutrients (e.g., calcium) and an understanding of how they fit into a balanced diet, as well as an understanding of commonly used words and terms used to describe nutrient characteristics (e.g., fortified). Self-efficacy and confidence include the ability to locate and understand food information, the ability to decipher product labels, and a belief in one's own ability to select, buy, and prepare healthy foods. See Table 1.

Table 1

Components of Food Literacy

Component	Characteristics	Descriptors
Food and Nutrition Knowledge	Food Knowledge	Awareness of the type and varieties of foods; understanding of where food comes from; where food is produced, processed, and sold; food ingredients; and ability to make informed food choices
	Nutrition Knowledge	Awareness of nutrients and their relevance to health; ability to find reliable information about food; understanding how foods fit into a balanced diet
	Nutrition Language	Understanding of commonly used terms that distinguish nutritional characteristics
Self-Efficacy and Confidence	Nutrition Literacy	Ability to locate, decipher, and understand food information, product labels and recipes
	Nutrition Self-Efficacy	Belief in own relative ability to select, buy, and prepare healthy foods
Food Decisions	Dietary Behavior	Ability to apply knowledge, information, and skills to make healthy food choices

Note. Adapted from categories defined by Thomas et al. (2019).

The importance of food literacy is highlighted by the findings from a 2012 study by the International Food Information Council Foundation (IFICF) found that nearly half of U.S. consumers think it is harder to eat right than do their taxes. Further, 67% on consumers indicated they routinely experienced some level of nutrition confusion. Repeating the study in 2017, the IFICF also noted a preponderance of health halos. Over half (58%) of consumers believed a fresh product was healthier than its canned alternative, despite having identical nutrition information panels (International Food Information Council Foundation, 2017). Products purchased at a natural foods store were considered healthier than the same products purchased at a convenience store

(International Food Information Council Foundation, 2017). One-third (36%) of consumers also believed products with fewer ingredients were healthier options than those with more ingredients, despite having identical nutrition information panels (International Food Information Council Foundation, 2017). Lower levels of food literacy often lead to nutrition confusion, while higher levels of food literacy increase consumers' ability to decode labels and packaging in order to make informed dietary choices (Colatruglio & Slater, 2014).

Decoding Product Labels

Distinctive labeling requirements play an important role for consumers in selecting between dairy and plant-based products in order to meet their individual dietary needs and personal preferences. While most consumers would use nutrition labels if prompted, only a minority examine the labels when shopping (Bandara et al., 2016; Bialkova & van Trijp, 2010; John et al., 2019). Consumers may choose not to examine food labels because of their loyalty to a specific brand and/or because of the complicated nature of food labels (Bandara et al., 2016). Familiarity with the label and its location were key determinants of consumer attention to labels (Bialkova & van Trijp, 2010). Consumers examined labels to evaluate if the food product was animal-free, met religious requirements, met health preferences, and/or organically grown (Bandara et al., 2016; Bialkova & van Trijp, 2010). Consumers reported the name of the food was the most important information on the label (Bandara et al., 2016), and yet Bialkova and van Trijp (2010) noted most research on packaging focuses on its physical and visual characteristics, ignoring this most basic factor – the product name.

Dairy labels are examined more frequently than those of other food groups (Mruchu et al.2018). Klintman (2002b) called for more nuanced descriptions of food labeling as well as more consumer education about the "vast exaggerations of what food labelling can, or cannot, tell us" (p. 248). For example, in the case of bioengineered foods it is important for consumers to understand that seemingly equivalent products (e.g., synthetic milk and cow's milk) were created using different processes. As foods that were created in a lab become more prevalent, consumer understanding of the distinctions will be important to maintain consumer trust and address food safety concerns (Klintman, 2002a).

Consumers typically evaluate product labels using one of two processes—central (systematic) or peripheral (heuristic). Both the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and the heuristic-systematic model of information processing (Chaiken, 1987) describe the differences between these two processes. When labels are processed systematically (centrally), consumers are highly motivated to understand the information presented on the label and use critical thinking to carefully weigh the advantages and disadvantages of consumption. When information is processed heuristically (peripherally), consumers make rushed judgments that are often based on extraneous and irrelevant cues. Gass and Seiter (2028) found when consumers possess a lot of knowledge about a topic, such as nutrition, they tend to process labels more systematically. In a real in-store environment, consumers are exposed to a great variety of labels, products, and brands which all compete for the consumer's attention (Bialkova

& van Trijp, 2010). As such, they are much more likely to process labels heuristically (Chaiken, 1987; Gass & Seiter, 2018).

Fiske and Taylor (2017) noted heuristics improve cognitive efficiency in making inferences and act as shortcuts in decision-making. Heuristics or cues available at the point of product selection influence consumer behavior (Hooker et al., 2018). Brand names act as a heuristic, allowing consumers to process product information more quickly and peripherally (Keller, 2012). Heuristic processing likely contributes to the nutrition confusion experienced by many consumers (Nagler, 2014).

Boersma et al. (2019) discussed the effects of priming and categorization on decision-making. Priming, which they define as the activation of particular knowledge or what consumers already know, is one type of cue. A name, such as "milk," is a very strong cue in the activation of knowledge (Boersma et al., 2019). Categorization, a mechanism by which people give meaning to concepts with which they are unfamiliar, is another type of cue (Rosch, 1975). Categories are depicted by names, such as "milk." When consumers are confronted with something unfamiliar, they use categories that appear similar in name as a frame of interpretation.

> Therefore, the process of understanding a complex concept is not the result of learning the isolated facts; rather, it results from how the facts relate to present *and* activated knowledge, whereby a name can determine the eventual 'shape' of understanding by activating present knowledge (Boersma et al., 2019, p. 221).

The word “milk” primes consumers to mistake one product for the other (Nocella & Kennedy, 2012). Thus, consumers may link “almondmilk” to “milk,” especially in noisy daily-life situations, such as a supermarket (Boermsa et al., 2019).

Decisions are also strongly affected by framing; small differences in a frame can cause major differences in decision outcomes (Fiske & Taylor, 2017). Thus, the use of the word “milk” as an identifier for plant-based dairy alternatives beverages may cause consumers to misunderstand product ingredients, and/or misattribute health risks and benefits (Nagler, 2014; Nocella & Kennedy, 2012). Reijnen et al. (2013) noted consumers tend to focus on only one or two attributes, such as the word “soy” or “organic,” when making food decisions rather than evaluating all of the product attributes. Vidal et al. (2019) found that consumers had more positive attitudes towards gain-framed messages, but loss-framed messages led to changes in deterring consumption behavior. By extension, consumers who believe plant-based products are healthier than animal-based products may have a positive attitude toward “soy milk” and therefore will be more likely to choose it over “not soy” milk.

A third type of cue involves habitual behaviors. Maio et al. (2019) noted habits are automatic responses to specific cues, actions occurring without conscious awareness, acquired by repetitious behaviors. They found once habits are formed, behavior is better predicted by context than by intention. Purchasing and consumption behaviors often become habitual (Egan, 2015; Grunert et al., 2010; Ji & Wood, 2007). Frequent and habitual consumption are associated with strong, stable attitudes, particularly when compounded by socially normative factors (Welsch & Kühling, 2009). Habitual

consumption of a food increases its acceptability (Costell et al., 2010). Consequently, the more frequently consumers see plant-based dairy alternative beverages labeled as "milk," the more likely they would process these labels heuristically (Petty & Cacioppo, 1986). They are thus more likely to associate any beverage that visually resembles milk with the word "milk," increasing the likelihood of genericide and nutrition confusion. King and Meiselman (2010) found frequent consumption of a beverage is associated with stronger positive emotions toward that beverage. Piqueras-Fiszmana and Jaeger (2014) found consumer attitudes toward foods (1) they frequently eat, (2) are widely consumed within their culture, and (3) are functional (e.g., dairy, bread) tend to be more stable across time. Habitual behaviors can be more difficult to change (John et al., 2019). Thus, frequency of past milk consumption may be a better predictor of future milk consumption than attitude toward milk.

Attribute Valence

Ledgerwood et al. (2018) noted consumers' evaluation of a product was a different construct than their evaluation of its attributes; however, these evaluations are not necessarily distinct cognitive processes. Each attribute is typically evaluated heuristically (Nocella & Kennedy, 2012; Petty & Cacioppo, 1986) and associated with other products that contain this same attribute (Ledgerwood et al., 2018). For example, "creamy" may be implicitly associated with milk, even though the product under evaluation is not milk. Ledgerwood et al. (2018) found a predictive relationship between positive evaluations of attributes and liking of products with those attributes; thus, we would expect consumers who like creaminess to like many beverages that are creamy.

They also noted a positive evaluation of an attribute does not necessarily result in a preference for products with that attribute; as such, consumers who like creaminess may not like juices that are creamy. Further, Ledgerwood et al. (2018) noted prior research offered little insight into consumer perceptions of individual attributes across similar products, such as milk and plant-based dairy alternative beverages. Rather, the literature tends to focus on the influence of summated attributions on products as a whole.

In food markets, Grunert et al. (1996) extricated four attribute dimensions that determine consumers' product quality judgments: (1) sensory attributes (e.g., taste, appearance, and smell); (2) health attributes (e.g., food safety, beneficial for health); (3) process attributes (e.g, organic, non-GMO); and (4) convenience (e.g., easily found, quick to prepare). Other research has shown that attributes, such as taste, price, and nutritional value, influence consumption intentions (McCarthy et al., 2017; Mital & Steinkraus, 1976; Palacios, Badran, Drake, Reisner, & Moskowitz, 2009; Schyver & Smith, 2005; Villegas, Carbonell, & Costell, 2009).

When faced with a choice among competing products, a consumer assesses each product in terms of the combination of attributes that characterize it. Its overall evaluation is assumed to be a weighted average of the subjective values associated with the individual product attributes. Consumers who hold favorable attitudes are likely to notice the product's positive attributes, while consumers with unfavorable attitudes toward the product are likely to direct attention to its negative qualities (Ajzen, 2008).

Nutrition information panels (NIPs) and front-of-pack labels (FOPs) further inform consumers about specific characteristics and also indirectly tell consumers about

other product attributes by generating inferential beliefs (Larceneux et al., 2012). If, for example, a product is labeled with the word "milk," participants may perceive the product as containing protein, and then deem it as nutritious. If the same product is labeled with the word "juice" instead, participants may perceive the product as not containing protein, then deem it is as less, or not at all, nutritious.

Bir et al. (2019) found that consumers evaluate milk on many attributes, including price, packaging, and taste, as well as hormone-free, humane handling, and organic labels. Other research has shown that consumers prefer the taste of higher fat content milks more than lower or fat-free varieties (Palacios et al., 2009). All milk varieties were rated as better tasting than almond (McCarthy et al., 2017) and soy "milks" (McCarthy et al., 2017; Mital & Steinkraus, 1976; Palacios et al., 2009; Villegas et al., 2009). One study showed that women tend to be able to better detect differences in flavor between "milk" varieties (Bray et al., 1977). The difference in price point between milk and plant-based alternative beverages may also influence consumption intentions. Some consumers reported cost as a barrier to purchasing plant-based alternative beverages (Schyver & Smith, 2005), particularly those in lower socioeconomic groups (Tarantola & Wujastyk, 2009).

The transfer of attributes may be also a contributing factor in consumer nutrition confusion—a state where consumers are unclear or have misperceptions about a food's dietary advantages or disadvantages (Nagler, 2014). Previous research has documented consumers incorrectly inferring the existence of attributes in food products based on health-related claims on product labels, as well as incorrectly inferring health benefits

based on health-related claims on the product labels of other products (Bandara et al., 2016; Fernan et al., 2018; Lähteenmäki et al., 2010; Palupi et al., 2012; Roe et al., 1999). For example, if the label indicates the product is low in cholesterol, the consumer may assume it is also low in fat and/or will prevent cardiovascular disease (Nocella & Kennedy, 2012). Attribute evaluations may be based on knowledge gained through experience or education, and as such, are an indicator of food literacy. For example, fewer than half (45%) of consumers in a 2017 study could identify a single food or nutrient associated with a desired health benefit (International Food Information Council Foundation, 2017).

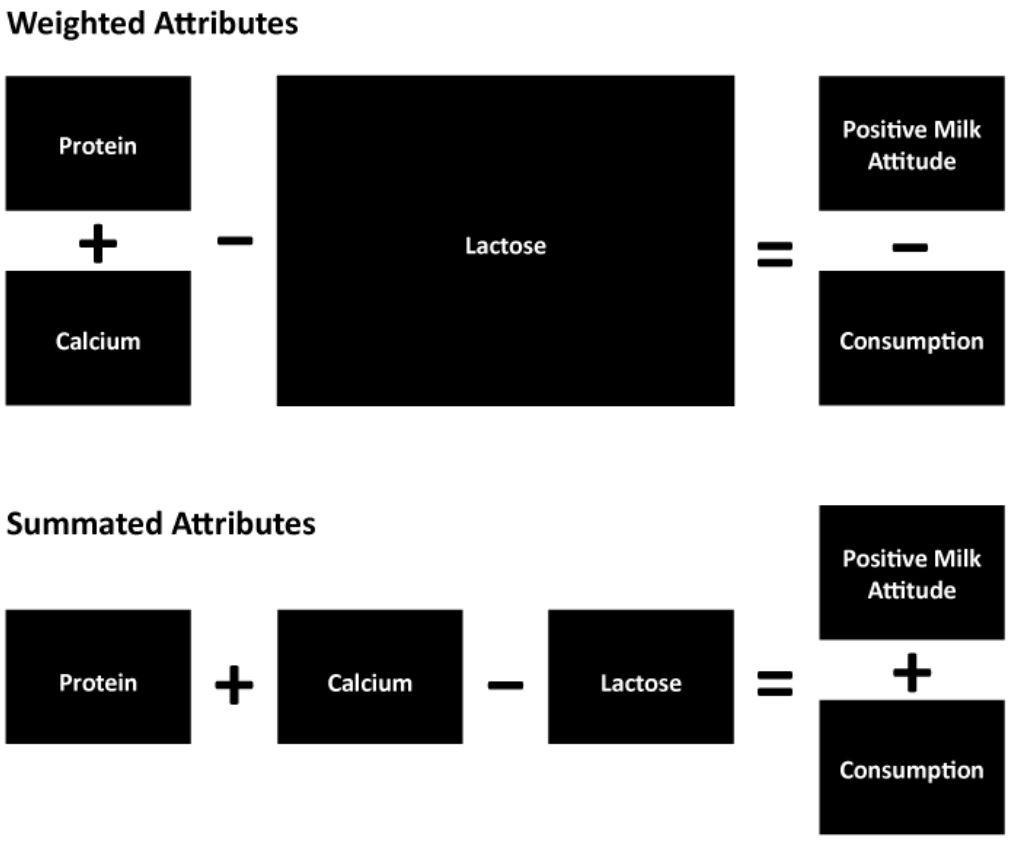
The weightings of attributes are used to rank preferences between milk products, form attitudes toward milk in general, and influence purchase and consumption intentions (Bir et al., 2019; Fishbein & Ajzen 1975; Ledgerwood, et al., 2018). Albarracín (2018) noted in many instances, neither summative nor averaging belief models may be applicable, and cited evidence from several studies showing consumers' attitudes toward the aggregate of two attributes are not predictable from their evaluation of each attribute considered in isolation. Highly valanced products, such as foods derived from animals, may elicit particularly strong attitudes that are infused with emotion, linked with important attitudes—such as personal ethics and self-identity—and are passionately defended against persuasive appeals (Albarracín, 2018).

Eastwick et al. (2019) noted a lack of research on how summated attribute preferences are formed and the challenges associated with experimentally changing consumers attribute preferences. They studied participants' preferences for a potential

partner and tested whether those attributes predicted preferences across multiple potential partners. They found participants would use one attribute as a standard to compare the other partner attributes against. This weighting of individual attribute evaluations might explain why consumers' attitudes do not always predict behaviors as expected. For example, if consumers positively evaluate whole milk beverages as "delicious," milk consumption would be expected. However, if whole milk was also evaluated as "high in fat," consumers may limit consumption or avoid consumption altogether. Visser et al. (2006) also noted the need for research focusing on specific attributes and their influence on attitudes in the realm of public health. For example, if the "low in fat" attribute is associated with the "low in tastiness" attribute, intention to consume/purchase may be low even though product attitude is favorable. Similarly, evaluating milk as high in "protein" and "calcium" attributes may summate to a "milk is good" attitude, but milk is still rejected for consumption because the "lactose" attribute overrules all other attributes for those who are sensitive to it. Understanding the process by which attitudes are formed, maintained, and changed via attribute evaluations has potential to inform strategies to minimize nutrition confusion and nutrition backlash, and develop strategies to increase behavior intention. Attributes are evaluated individually and weighted according to their advantages or disadvantages. These evaluations are then summated, with potentially differing attitudinal and behavioral outcomes (as shown in Figure 4).

Figure 4.

Attitude Formation and Consumption Behavior with Weighted Versus Summated Milk Attributes



The weighted attribute model offers an explanation of why attitudes do not always predict behavior

A 2012 study by the International Food Information Council Federation (IFICF) demonstrated the impact of a weighted attribute model to understanding consumer health behavior. Consumers said they knew they should be eating more whole grains, fiber, and protein, wand eating less calories, sugar, fats, and salt. However, 87% of consumer said

taste was the most significant attribute in determining food selection, not any of the health-related attributes. The weighting of attributes likely explains many discrepancies between consumer attitudes and intentions and their actual behavior.

Summary

In this chapter, I provided an overview of research related to attitude formation, marketing influences on consumer behavior, and consumer decision-making processes. Exploring attitude-behavior relationships is an effective approach to understanding consumer food choices, as consumers often make food decisions based on the way they feel about a certain product. Consumer behavior is the direct result of intention, which is predicted by consumer attitudes toward products, normative social beliefs regarding the use or consumption of those products, perceived normative pressures, and self-efficacy.

However, there are instances when attitudes do not accurately predict purchase and/or consumption behaviors. I explored several possible explanations for this dissonance in this chapter. One possible explanation is that behavior is mediated by social and/or collective identity or by social norms. Consumers develop relationships with products not only for what the product can functionally do, but also to help say something about themselves. For example, a consumer may believe milk is nutritious, but their religious or ideological doctrine prohibits milk consumption. Further, food preferences and consumption behavior are often affected by the consumer's social environment. Normative beliefs that a consumer should, or should not, consume particular foods influences their behavior differently in specific contexts.

Another possible explanation is the influence of marketing tactics on consumers. Marketers skilled in rhetoric use language to affect consumers' perceptions of reality and to change their behavior. Adjectives used in food marketing act as microframes, priming consumers to evaluate the product in a particular way. For example, halo effects caused by product misidentification play a role in both industry brand equity and consumer nutrition confusion. Heuristics or cues available at the point of product selection may also influence consumer behavior. The more frequently a consumer is exposed to the word "milk" as a label for non-dairy beverages, the more likely "milk" will be used heuristically. Likewise, low levels of food literacy and/or high levels of nutrition confusion. Consumers may not understand how food is grown and processed and/or the implications of different processing types. It is likely a consumer with low food literacy processes food labels peripherally—or does not use them at all. By extension, a consumer with low food literacy is more likely to experience nutrition confusion.

A third possible explanation for the dissonance is that food attributes are not merely summations but are weighted summations that influence attitudes and/or behavior. One, or several, negative attributes may outweigh the summated positive attributes. For example, a consumer may believe that milk is believe milk is nutritious but is against using animals as commodities. This "animal-based" attribute may explain why the consumer has a positive attitude toward milk but does not perform the behavior of drinking milk.

CHAPTER III

METHODS

Overview

Much research on consumer preferences has been conducted using UPC scanner data; however, this method is not ideal as measuring consumer purchases may be more reflective of in-store availability rather than actual consumer preference (Bir et al., 2019). Other researchers have measured consumers' general attitudes to understand their preferences (Ajzen, 2015; Butler et al., 2008; Roininen et al., 1999). Yet, as attitudes are comprised of many individual perceptions of attributes (Ledgerwood et al., 2018), a deeper understanding of these perceptions is critical for understanding attitude formation and decision-making processes. In this chapter, I describe the study's objectives, hypotheses, design, procedures, and analytic strategy.

Research Objectives and Hypotheses

The purpose of this study was (1) to examine the impact of beverage identification (e.g., "milk" on label) on consumer attitudes and (2) to determine if there was any empirical evidence for the National Milk Producers Federation claim of a halo effect created by beverage advertising. If consumers equally associated milk attributes (e.g., source of calcium, contains hormones) and subjective milk norms with plant-based "milk," it would indicate milk and plant-based dairy alternative beverages (e.g., soy milk, almondmilk) are considered variations of milk (i.e., generic), rather than distinct products. Such an association could contribute to a halo effect based on the product

name “milk” that (1) has provided plant-based dairy alternative beverages with an undue marketing benefit and (2) contributed to consumers’ nutrition confusion related to “milk.” Evidence in support of the first two hypotheses would indicate plant-based dairy alternative beverages are perceived as variations of milk rather than as distinct products. Evidence in support of the last three hypotheses would indicate the existence of a halo effect caused by product advertising. I tested these hypotheses using two between-subjects, random assignment experiments.

H1: The name “milk” is preferred over the name “juice” for plant-based dairy alternative beverages.

H2: The size of this effect is moderated by personal preference for plant-based dairy alternative beverages over milk.

H3: Those exposed to dairy milk advertising will have more favorable milk attitudes than those exposed to control messages.

H4: Those exposed to soy milk advertising will have more favorable soy milk attitudes than those exposed to control messages.

H5: Those in exposed to dairy milk advertising will have more favorable soy milk attitudes than those exposed to control messages.

Descriptions of study participants, study design, instrumentation, data collection procedures, and analytic strategies are provided.

Study Participants

The target population for participation was U. S. consumers between the ages of 18 and 35, inclusive. This population is considered part of the Millennial (born 1981 to

1996) and Gen Z (born after 1996) generations (Pew Research Center, 2019). These consumers comprise 48.6% of the U.S. population (Statistica, 2019b) and 63.5% of the global population (Miller & Lu, 2018). Gen Z alone, according to Forbes, "is shaping up to have unparalleled buying power in the vicinity of $150 billion" (Woo, 2018, para. 2). Thus, the preferences of this demographic have the potential to strongly influence the retail economy for the next several decades.

I recruited consumers in this target population for this study from one of two participant pools. Each pool provided me with reliable validation controls (e.g., single user account, unique identifiers, qualifiers) to ensure participants could only participate once. The reliability of data from participant pools is widely accepted in social and behavioral research (Behrend et al., 2011; Casler et al., 2013; Jamnik & Lane, 2017). The first pool I used was an undergraduate participant pool managed by the Department of Communication at Texas A&M University (SONA). Undergraduate pools are widely used in social science research because participants are easily accessible and affordable as participants are typically compensated with extra credit in a course (Padilla-Walker et al., 2005). The SONA pool offers undergraduate students the opportunity to receive extra credit in designated courses in exchange for participation in a research study. Nearly all (n=95%) of undergraduates enrolled at Texas A&M University in Fall 2019 were residents of the state of Texas (Texas A&M University, 2020). As prior research has identified a possible difference between students who participate in undergraduate pools and those who do not, some researchers question the generalizability of results from studies that use solely undergraduate pools (Padilla-Walker et al., 2005).

The second pool I used was Amazon Mechanical Turk (MTurk), an online crowdsourcing platform (Amazon Mechanical Turk, n.d.). Individuals sign up to be MTurk workers and are then paid to perform Human Intelligence Tasks (HITs); the completion of a research questionnaire is one example of a HIT (Amazon Mechanical Turk, 2017). Researchers, as MTurk requesters, recruit participants to complete a HIT for a requester-specified fee. Following suggestions by Smith et al. (2016), I validated the samples used in this study by using qualifications—the screening procedures embedded in MTurk. Workers could only see the HIT if they were located in the U.S. and between the ages of 18 and 35. I also set a qualification that automatically blocked workers from completing the instrument more than once. Further, I examined IP addresses to verify the absence of duplicate participants.

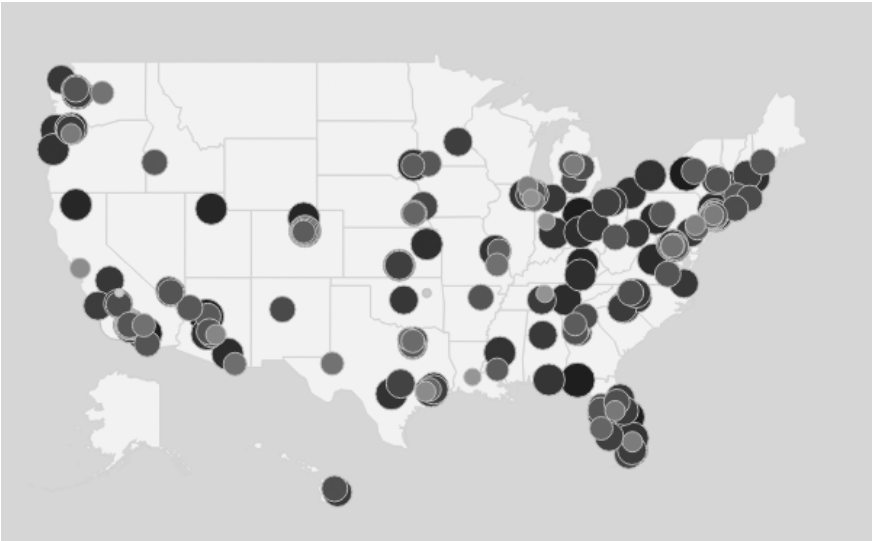
Using a national pool, such as MTurk, has some advantages. For example, MTurk offers the ability to recruit participants from diverse geographical locations to enhance the generalizability of the study's results, as shown in Figure 5 below. While this pool is not necessarily nationally representative, it is far more diverse than most common convenience samples (e.g., an undergraduate participant pool in Texas) and tends to replicate well (Berinksy et al., 2012; Kennedy et al., 2018). Second, data collection is expedient. It took several weeks to recruit the undergraduate participants in this study, while MTurk participants were recruited in less than 24 hours. A third advantage of using MTurk is the ability to validate responses. I was able to clean data during collection to ensure an adequate number of quality responses. In contrast, the

undergraduate participant pool required oversampling to ensure sufficient quality responses.

There are also drawbacks to using MTurk workers as participants. The first is cost, as compensation is required and workers choose HITs based on the value of their time in relation to their reward (Barger et al., 2011). Second, workers are incentivized to perform well. As such, they may be "trained" in study participation. Repeated exposure to similar measures and/or instruments may bias their responses, a problem less likely to be seen in undergraduate pools (Hauser & Schwarz, 2016).

Figure 5

Map of Participant Locations in Experiment 2



Note. This figure illustrates locations from which participants in experiment 2 responded. The darker the color indicator, the more participants responded from that area.

All participants self-selected into the study. Dillman et al. (2014) emphasized the importance of using a social exchange perspective to motivate participation in research studies. They stated people are more likely to agree to a request (e.g., participating in a research study), if they believe the reward (e.g., compensation) will exceed the cost of complying (e.g., time). Cash incentives have consistently been shown to be effective for improving survey response (Dillman et al., 2014). Therefore, I compensated all participants. Participants recruited from MTurk received $1 credited to their MTurk worker account. Participants recruited from the undergraduate participant pool were assigned extra credit in a designated communication course. For each experiment, I recruited a minimum of 65 participants per cell, which is considered the sample size "rule of thumb" to allow for higher order analyses (VanVoorhis & Morgan, 2007).

Research Permission and Ethical Considerations

I secured Texas A&M University Institutional Review Board approval prior to collecting data (IRB2019-1050M). The pool administrators masked participants identities from me and all participant responses were anonymous. Participants reviewed the study information sheet on their personal computer. After they indicated their understanding of study procedures and agreement to participate, participants were able to access the questionnaire. Completing the questionnaire posed no more risk to participants than they would be exposed to in their daily lives. The questions asked were neither intrusive nor on socially sensitive matters, and participants could withdraw participation at any time without penalty.

Study Design and Procedures

Fraenkel et al. (2012) recommended experimental design as the best method for testing hypotheses due to the ability to manipulate independent variables. Between-groups is a commonly used experimental design where each group of participants is assigned to a different condition (e.g., intervention, treatment). Each participant only experiences one of the experimental conditions (Field, 2018). Further, Shadish et al. (2002) noted random assignment reduces possible threats to internal validity by distributing them randomly over conditions. To most clearly understand the impact of beverage identification (e.g., name "milk" on label) on consumer evaluations of product attributes, I tested the hypotheses for this study in two between-groups random assignment experiments. By using a series of experiments, results from the prior experiment(s) could be replicated and expanded upon.

I collected data for the experiments using questionnaires administered through Qualtrics, an online platform used by many researchers to build and distribute surveys. Online survey software, such as Qualtrics, is more efficient for data collection than paper survey or interview methods (Fraenkl et al., 2012). Qualtrics provides useful tools such as an additional layer of masking between the pool and researcher for participant anonymity, automatic and balanced random assignment of participants into study conditions, and libraries for storing repeated question blocks (Qualtrics, n.d.). Further, completed responses are immediately available and can be downloaded in a variety of formats.

I developed each questionnaire based on recommendations by Ajzen (2006) and Dillman et al. (2014); questionnaires are provided in Appendix A and Appendix B. I modeled individual items included in the questionnaire after similar items in other attitude researchers' instruments (e.g., Ajzen, 2006; Butler et al., 2008; Costell et al., 2010; Fernan et al., 2018; Grunert et al., 2000; Hossain & Onyango, 2004; McCarthy et al., 2017; Nagler, 2014). I measured some constructs using a single item, others with a multi-item scale. Willits et al. (2011) noted that a single item is appropriate when the concept being measured is singular, concrete, and easily understood. Complex concepts typically require a multi-item scale to provide a stable summary of a participant's attitude. Participants were asked to make ratings using 7-point Likert-type scales, with higher number indicating more agreement or favorability. Likert-type scales are widely used in attitude research (Rocereto et al., 2011; Schwarz, 2010; Willits et al., 2016). Previous research has demonstrated that using 7-point scales produces more reliable responses than scales using either fewer or more points (Preston & Colman, 2000). Test–retest reliability tends to decrease as the number of anchor points increases above ten and scales using less than five anchor points do not provide adequate reliability, validity, and discriminating power (Preston & Colman, 2000). I describe procedures used in each experiment in detail next. Experimental designs are illustrated in Figure 6 and Figure 7 in the sections to follow.

Fraenkl et al. (2012) described procedures for ensuring internal and external validity. I established internal validity for this study through construct and face validity of the study instruments. I established construct validity, the degree to which an

instrument measures what it intends to measure, for this study's instruments by using items based on those used in established literature. A faculty advisor confirmed the instrument's face validity, the degree to which an instrument seems to logically measure an intended variable. I established external validity, or the generalizability of results to others in the target population, through randomization and the use of multiple participant pools.

Experiment 1: Genericide

The purpose of the first experiment was to examine the impact of beverage identification (e.g., "milk" on label) on consumer attitudes toward plant-based dairy alternative beverages. Evidence in support of each of the following hypotheses would indicate plant-based dairy alternative beverages are perceived as variations of milk and as not distinct products.

H1: The name "milk" is preferred over the name "juice" for plant-based dairy alternative beverages.

H2: The size of this effect is moderated by personal preference for plant-based dairy alternative beverages over milk.

I tested the hypotheses using a between-subjects, random assignment experiment. The research design for experiment 1 is illustrated in Figure 6, where R represents random assignment, X represents the experimental condition, M represents the milk label condition, J represents the juice label condition, and O represents the outcome.

Figure 6

Research Design for Experiment 1

$$\begin{array}{lll} R & X_M & O \\ R & X_J & O \end{array}$$

Instrument and Measures

Participants completed an online questionnaire with questions presented to them in blocks. Each block represented a different construct. The independent variables in experiment 1 were prior attitudes toward milk, and experimental condition. The dependent variable was plant-based dairy alternative beverage attitude. I provided the instrument, with individual questions listed by construct, in Appendix A.

Milk Attitude. I assessed attitude toward milk in general using a three-item scale (e.g., "In general, how favorable or unfavorable is your view towards drinking milk?"). Responses were rated on a 7-point Likert-type scale that ranged from 1 = "extremely unfavorable" to 7 = "extremely favorable." I dummy coded the means of these responses as a continuous variable.

Experimental Condition. Participants were randomly assigned to one of two beverage identification conditions. I selected the plant-based dairy alternative beverages presented for use in this experiment based on their availability at local grocery stores and ranged from the probably familiar to possibly unfamiliar: soy, almond, rice, and hemp. As the more accurate name for plant-based dairy alternative beverages is juice (U.S. Food & Drug Administration, 2018c), I assessed attitudes toward these beverages when identified as either "milk" or "juice." In condition 1, the identification of the plant-based

dairy alternative beverages was experimentally manipulated to include the word "milk" as the name of the beverage (e.g., soy milk), as the products are currently marketed. In condition 2, the identification of plant-based dairy alternative beverages was experimentally manipulated to include the word "juice" as the name of the beverage (e.g., soy juice). Each beverage was presented and briefly described.

Plant Beverage Attitude. After each beverage description, participants were asked to rate their overall liking of the beverage using a three-question scale to measure overall attitudes (e.g., "In general, how much do you like drinking soy milk (or soy juice)?"). Ratings were made using a 7-point Likert-type scale that ranged from 1 = "dislike a great deal" to 7 = "like a great deal." I averaged responses and coded them as a continuous variable.

Demographics. Participants were asked to provide general information about themselves (e.g., age, gender, ethnicity, and beverage consumption habits).

Suspicion Probe. I used an open-text suspicion probe, "What do you think we're studying and why?" to determine whether participants had guessed the study hypotheses and subsequently adjusted their responses (Nichols & Maner, 2008; Taylor et al., 1996). Had a participant indicated suspicion, their responses could have been removed from the dataset.

Reliability of Measures

I used Cronbach's alpha reliability coefficient to test the consistency of items in the continuous variables. The items used to comprise the independent (Milk_Att $\alpha = .95$)

and dependent (Plant_Att $\alpha = .93$) variables produced sufficient alpha values ($\alpha \geq .70$) and were considered acceptable and reliable (Raykov & Marcoulides, 2011).

Experiment 2: Affect Transfer

The purpose of the second experiment was to determine whether or not exposure to dairy advertising improved attitudes toward and attribute evaluations of plant-based dairy alternative beverages. I tested the following hypotheses using a between-groups random assignment experimental design. Evidence in support of these hypotheses would indicate the existence of a halo effect caused by product advertising.

H3: Those exposed to dairy milk advertising will have more favorable milk attitudes than those exposed to control messages.

H4: Those exposed to plant-based dairy alternative beverage advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages.

H5: Those exposed to dairy milk advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages.

The research design for experiment 2 is illustrated in Figure 7, where R represents random assignment, X represents the experimental condition, M represents the milk condition, P represents the plant-based dairy alternative beverage condition, C represents the control condition, and O represents the outcome. The control condition ensured that differences between the groups would be due to the prime (beverage commercial) and not to chance.

Figure 7

Research Design for Experiment 2

$$\begin{array}{lll} R & X_M & O \\ R & X_P & O \\ R & X_C & O \end{array}$$

Instrument and Measures

Participants completed an online questionnaire with questions presented to them in blocks. Each block represented a different construct. The independent variable in experiment 2 was the experimental condition. The dependent variables were milk attitude and plant-based dairy alternative beverage attitude. The instrument, with individual questions listed by construct, is provided in Appendix B.

Experimental Condition. As the dairy industry alleges the plant beverage industry is unduly benefitting from the marketing of milk (National Milk Producers Federation, 2000), I assessed attitudes after participants watched beverage advertising. Participants were randomly assigned to one of three advertising conditions. In condition 1, participants watched a commercial promoting the nutritional benefits of drinking milk. In condition 2, participants watched a commercial promoting the nutritional benefits of drinking soy milk. Condition 3 served as a control condition; participants watched a refrigerator commercial in which a woman drinks lemonade. All videos were approximately 30-seconds in length and had previously aired on national network television. To deflect suspicion of manipulation, participants were asked to answer three

questions about the effectiveness of the commercial for persuading consumers to buy that product.

Milk Attitude. I assessed general attitudes toward milk using a three-item scale (e.g., "In general, how favorable or unfavorable is your view towards drinking milk?"). Responses were rated on a 7-point Likert-type scale that ranged from 1 = "extremely unfavorable" to 7 = "extremely favorable." I dummy coded the means of these responses as a continuous variable.

Plant Beverage Attitude. I assessed general attitudes toward plant-based dairy alternative beverages using a three-item scale (e.g., "In general, how favorable or unfavorable is your view towards drinking plant-based dairy alternative beverages?"). Responses were rated on a 7-point Likert-type scale that ranged from 1 = "extremely unfavorable" to 7 = "extremely favorable." I dummy coded the means of these responses as a continuous variable.

Demographics. Participants were asked to provide general information about themselves (e.g., age, gender, ethnicity, beverage consumption habits). If participants indicated they did not consume milk (or plant-based dairy alternative beverages), they were asked if religious, medical and/or personal/political reasons deterred their consumption. Participants were also asked to indicate the type of community they lived in for most of their lives (i.e., urban, suburban, rural).

Attention Check. To ensure that participants were completing the questionnaire with intention, and to identify responses bots, participants were requested to respond to an attention check question with a specified answer (Hauser & Schwarz, 2016).

Participants saw the following text: “The purpose of this question is to ensure that you are completing this questionnaire with intention. Please demonstrate that you have read and understood this question by not making any selection below. All options should remain blank.” Three possible responses were available, “with meals,” between meals,” and “both with and between meals.” If a participant had responses to this question, I removed their data and recruited another participant.

Suspicion Probe. I used an open-text suspicion probe, “Do you have any thoughts on what we are studying?” to determine whether participants had guessed the study hypotheses and subsequently adjusted their responses (Nichols & Maner, 2008; Taylor et al., 1996). Had a participant indicated suspicion, their responses could have been removed from the dataset.

Reliability of Measures

I used Cronbach’s alpha reliability coefficient to test the consistency of items in the continuous variables. The items used to comprise the attitude and positive attribute variable constructs produced sufficient alpha values (milk_att α=.93; plant_att α=.93) and were considered acceptable and reliable (Raykov & Marcoulides, 2011).

Data Analysis

Preparing Data for Analysis

Baker and Downes-LeGuin (2007) described characteristics of suspicious surveys. These characteristics include unusually short completion times, high levels of non-response, and gibberish in open text fields. I considered these characteristics during the data cleaning process. I removed questionnaires with incomplete or incongruent

answers (e.g., Q: “What year were you born?” A: “Lewisville”) from each dataset, as were questionnaires from participants who failed the attention check. No responses were removed from analysis based on awareness of the study hypotheses in the suspicion probes.

For experiment 1, I recruited participants (*n*=296) from an undergraduate participant pool at Texas A&M University and compensated them with extra credit for their participation. I removed questionnaires with incomplete or incongruent answers (e.g., Q: what year were you born? A: Lewisville) from the dataset (*n*=22). I present the results from the analysis of the final dataset of 274 questionnaires in the following chapter.

For experiment 2, I recruited participants (*n*=226) from MTurk and compensated them financially for their participation. I removed questionnaires (*n*=34) with incomplete or incongruent answers from the dataset, as well as questionnaires from participants who failed the attention check. I present the results from the analysis of the final dataset of 192 questionnaires in the following chapter.

Analytic strategy

I analyzed the final datasets in IBM SPSS version 25. I analyzed demographic data using frequency and descriptive measures (Field, 2018). I used multilinear regression to test main effects and interaction effects (Jaccard & Turrisi, 2003). Regression is frequently used to explain the relationship between independent and moderator variables on a dependent variable (Edlund & Nichols, 2019; Fraenkl et al.,

2012). Prior to running each regression, I examined the data to ensure the following nine assumptions were met:

1. One continuous dependent variable.
2. One or more continuous independent variables.
3. One dichotomous moderator variable.
4. Independence of observations, assessed by Durbin-Watson statistics approximately equal to 2.
5. Linear relationships between (a) the dependent variable and each of the independent variables, and (b) the dependent variable and the independent variables collectively, assessed by visual inspection of partial regression plots and plots of studentized residuals against the predicted values.
6. Homoscedasticity of residuals, assessed by visual inspection of plots of studentized residuals against unstandardized predicted values.
7. Lack of multicollinearity, assessed by tolerance or the variation inflation factor (VIF) results.
8. Absence of significant outliers, high leverage points or highly influential points, assessed by studentized deleted residuals, cutoff value, and Cook's Distance results.
9. Normal distribution of residuals, assessed by Shapiro-Wilk's tests ($p > .05$).

In experiment 1, there was evidence of multicollinearity. According to Hayes (2018), multicollinearity is not unexpected with dichotomous moderator variables (e.g., ad condition). Regression is robust enough to overcome this issue (Hayes, 2018), so it was ignored. I identified possible outliers (cases with studentized deleted residuals greater than ± 2 standard deviations) during analysis. I removed three cases ($SD > \pm 2.5$) from the dataset. I present the results from the analysis of the final dataset of 271 questionnaires in the following chapter.

In experiment 2, I identified eight possible outliers (SRE > ± 2.5 standard deviations) during analysis. I removed these cases from the dataset. I present the results from the analysis of the final dataset of 185 questionnaires in the following chapter.

Summary

The purpose of this study was (1) to examine the impact of beverage identification (e.g., "milk" on label) on consumer attitudes and (2) to determine if there was any empirical evidence for the National Milk Producers Federation claim of a halo effect created by beverage advertising. I tested the study hypotheses using two between-groups random assignment experiments. I collected data for the experiments using questionnaires administered through Qualtrics. I recruited U. S. consumers between the ages of 18 and 35, inclusive, from one of two participant pools, an undergraduate participant pool at Texas A&M University and Amazon Mechanical Turk (MTurk). For each experiment, I recruited a minimum of 65 participants per cell. I then cleaned the datasets from each experiment and analyzed them in IBM SPSS version 25. Statistical

procedures included descriptive statistics, multilinear regression, and analysis of variance.

CHAPTER IV

RESULTS

Overview

The overarching purpose of this study was (1) to examine the impact of beverage identification (e.g., "milk" on label) on consumer attitudes and (2) to determine if there was any empirical evidence for the National Milk Producers Federation claim of a halo effect created by beverage advertising. I tested study hypotheses using two between-groups random assignment experiments. I describe the results of these experiments in this chapter.

Experiment 1: Genericide

If consumers perceived plant-based dairy alternative beverages as variations of milk, rather than distinct products, it would provide evidence for genericide of the word "milk." Therefore, I designed this experiment to test whether or not the name "milk" influenced participants' attitudes toward dairy and plant-based dairy alternative beverages. I tested the following hypotheses using a between-groups random assignment experimental design.

H1: The name "milk" is preferred over the name "juice" for plant-based dairy alternative beverages.

H2: The size of this effect is moderated by personal preference for plant-based dairy alternative beverages over milk.

Descriptive Statistics

Participants (n = 271) ranged in age from 18 to 34 (M = 20.5; SD = 1.66) and were recruited from the SONA pool. The majority indicated they were female (74.5%, n = 202) and Caucasian (n = 182, 67.2%), as shown in Table 2.

Table 2

Demographic Characteristics of Participants in Experiment 1

	Female		Male		Total	
Ethnicity	n	%	n	%	n	%
Caucasian	133	49.1	49	18.1	182	67.2
Hispanic	46	17.0	7	2.6	53	19.6
Black	11	4.1	6	2.2	17	6.3
Asian	8	3.0	5	1.8	13	4.8
American Indian/ Alaska Native	2	0.7	0	0.0	2	0.7
Other	2	0.7	2	0.7	4	1.5
Total	202	74.5	69	25.5	271	100.0

The vast majority of participants consumed milk (84.5%, n = 229). Of these participants, roughly half preferred to consume 2% low-fat milk (61.1%, n = 140); and more than half consumed milk at least once a week (69.9%, n =160). Of the participants who did not consume milk, 64.3% (n=27) reported a medial reason, and 81.0% (n=34) reported a personal or political reason. No participants reported a religious reason for abstaining. A summary of participants' milk consumption frequency is shown below in Table 3.

Nearly every participant consumed juice (95.9%, n = 260). Most participants indicated they drank fruit juice at least once a month (80.4%, n = 107), but only a third

drank vegetable juice that often (38.6%, *n* = 51). A summary of participants' juice consumption frequency is shown in Table 3. However, frequency of fruit and vegetable juice consumption data was only collected for half of the participants due to an error in the instrument construction.

Table 3

Frequency of Milk and Juice Consumption by Participants in Experiment 1

Frequency of consumption	*N*	*%*	*M*	*SD*
Milk			3.43	1.31
Daily (5)	61	22.5		
Weekly (4)	99	36.5		
Monthly (3)	37	13.7		
Rarely (2)	40	14.8		
Never (1)	32	11.8		
Fruit Juices			3.52	1.08
Daily (5)	26	19.5		
Weekly (4)	47	35.3		
Monthly (3)	34	25.6		
Rarely (2)	22	16.5		
Never (1)	4	3.0		
Vegetable Juices			2.05	.98
Daily (5)	1	0.7		
Weekly (4)	12	9.2		
Monthly (3)	23	17.6		
Rarely (2)	51	38.9		
Never (1)	44	33.6		

Note. Frequency of juice consumption data was only collected for half of the participants due to an error in the instrument construction

Most participants indicated they drank plant-based dairy alternative beverages as well (69.4%, *n* = 188), though they did not drink them as often (*M* = 1.58, *SD* = .61). These participants preferred to consume almondmilk (*M* = 2.35, *SD* = 1.28) over the

other plant-based dairy alternative beverages presented. A summary of participants' plant-based dairy alternative beverage consumption frequency is shown in Table 4.

Table 4

Frequency of Plant-Based Dairy Alternative Beverage Consumption by Participants in Experiment 1

Frequency of consumption	*N*	*%*	*M*	*SD*
Almond			2.35	1.28
Daily (5)	16	5.9		
Weekly (4)	51	18.8		
Monthly (3)	38	14.0		
Rarely (2)	74	27.3		
Never (1)	92	33.9		
Soy			1.54	.88
Daily (5)	3	1.1		
Weekly (4)	1	0.4		
Monthly (3)	19	7.0		
Rarely (2)	62	22.9		
Never (1)	174	64.2		
Rice			1.15	.52
Daily (5)	0	0.0		
Weekly (4)	2	0.7		
Monthly (3)	8	3.0		
Rarely (2)	36	13.3		
Never (1)	222	81.8		
Hemp			1.22	.52
Daily (5)	1	0.4		
Weekly (4)	4	1.5		
Monthly (3)	2	0.7		
Rarely (2)	19	7.0		
Never (1)	243	89.7		

Participant attitudes toward milk (M = 4.80; SD = 1.77) were favorable. Overall, participant attitudes toward plant-based dairy alternative beverages were relatively

neutral (*M*=3.55; *SD*=1.27). Plant "milk" was rated higher (*M*=3.59; *SD*=1.22) than plant "juice" (*M*=3.56; *SD*=1.37).

When asked if using the word "milk" to identify plant-based dairy alternative beverages was confusing for consumers, participants were relatively neutral on the issue (*M* = 4.13, *SD* = 1.76). However, one-half (50.9%) indicated the word was confusing to some degree. Participant agreement is shown in Table 5.

Table 5

Participant Agreement with Use of "Milk" for Plant-Based Dairy Alternative Beverages is Confusing in Experiment 1

Agree	Unsure	Disagree
50.9%	11.8%	37.4%

Inferential Statistics

A preference for the name "milk" for plant-based dairy alternative beverages would indicate consumers perceive milk and plant-based dairy alternative beverages to be variations, rather than distinct products. I regressed name condition (e.g., soy milk, soy juice) and attitudes toward milk (model 1) and their interaction term (model 2) on plant-based dairy alternative beverage attitude. Neither model was statistically significant, indicating no preference for either the "milk" or the "juice" name in general. No evidence was found to support H1 *The name "milk" is preferred over the name "juice" for plant-based dairy alternative beverages* or H2 *The size of this effect is*

moderated by personal preference for plant-based dairy alternative beverages over milk. Results are summarized in Table 6.

Table 6

Regression Analysis Summary for Milk Attitude and Name Condition on Attitude toward Plant-Based Dairy Alternative Beverage Attitudes in Experiment 1

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	3.59	.23		15.85	.01	3.59	.23
	MilkAttitude	-.01	.04	-.01	-.18	.86	-.01	.04
	Condition	.09	.16	.04	.59	.56	.09	.16
2	(Constant)	3.64	.23		15.96	.01	3.64	.23
	MilkAttitude	-.012	.04	-.02	-.36	.72	-.02	.04
	Condition	.77	.46	.30	1.69	.09	.77	.46
	Interaction	-.14	.09	-.28	-1.58	.12	-.14	.09

a. Dependent Variable: PlantBeverageAttitude

Experiment 2: Affect Transfer

The purpose of the second experiment was to determine whether or not exposure to dairy advertising improved attitudes toward and attribute evaluations of plant-based dairy alternative beverages. If affect transferred to plant-based dairy alternative beverages based on exposure to dairy advertising, it would provide evidence for the dairy industry's claim of a halo effect based on the use of the word "milk." I tested the following hypotheses using a between-groups random assignment experimental design.

H3: Those exposed to dairy milk advertising will have more favorable milk attitudes than those exposed to control messages.

H4: Those exposed to plant-based dairy alternative beverage advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages.

H5: Those exposed to dairy milk advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages.

Descriptive Statistics

Participants (*n*=185) ranged in age from 19 to 35 (*M*=27.5; *SD*=3.2) and were recruited from MTurk. Half of the participants indicated they were male (*n*=95, 51.3%) and most participants indicated they were Caucasian (*n*=135, 73.0%), as shown in Table 7. Most participants lived in primarily urban areas (*n*=61, 31.8%) or suburban areas (*n*=103, 53.6%). Only 14.6% of participants described the area in which they lived as rural (*n*=28).

Table 7

Demographic Characteristics of Participants in Experiment 2

	Male		Female		Other		Total	
Ethnicity	n	%	n	%	n	%	n	%
Caucasian	74	40.0	60	32.4	1	0.5	135	73.0
Black	6	3.2	11	5.9	0	0.0	17	9.2
Asian	5	2.7	5	2.7	1	0.5	11	5.9
Hispanic	8	4.3	9	4.9	0	0.0	17	9.2
American Indian/ Alaska Native	0	0.0	1	0.5	0	0.0	1	0.5
Native Hawaiian/Pacific Islander	1	0.5	0	0.0	0	0.0	1	0.5
Other	1	0.5	2	1.1	0	0.0	3	1.6
Total	95	51.3	88	47.6	2	1.1	185	100.0

The vast majority of participants in experiment 2 consumed milk (82.8%, *n*=159). Of these participants, roughly one third preferred to consume whole milk (42.8%, *n*=68) and another third preferred low-fat milk (40.9%, *n*=65). Two-thirds of participants consumed milk at least once a month (76.1%, *n*=121). Of the participants who did not consume milk (*n*=33), one-third (39.4%, *n*=13) reported a personal or political reason and another third (30.3%, *n*=10) reported a medical reason. No participants reported a religious reason for abstaining. Participant consumption frequency is summarized in Table 8.

Table 8

Frequency of Consumption by Participants in Experiment 2

Frequency of consumption	*N*	*%*	*M*	*SD*
Milk			3.67	1.11
Daily (4)	42	26.4		
Weekly (3)	60	37.7		
Monthly (2)	19	11.9		
Rarely (1)	38	23.9		
Never (0)	33	17.2		
Plant-Based Dairy Alternative Beverage			3.15	1.05
Daily (4)	19	12.7		
Weekly (3)	39	26.0		
Monthly (2)	38	25.3		
Rarely (1)	54	36.0		
Never (0)	42	21.9		

Most participants also consumed plant-based dairy alternative beverages (78.1%, *n*=150). Almond (69.2%, *n*=110), soy (22.7%, *n*=34) and coconut (25.3%, *n*=38) "milks" were most preferred by these participants. While participants did consume plant-

based dairy alternative beverages, they did not consume them frequently (Table 8). Over half of participants consumed these beverages 12 or fewer times per year (61.3%, *n*=92). Only 12.7% of participants consumed these beverages on a daily basis (*n*=19). Of the participants who did not consume plant-based dairy alternative beverages (*n*=42), one-third (31.9%, *n*=13) reported a personal or political reason and three participants reported a medical reason (7.1%). One participant reported a religious reason for abstaining.

Attitudes toward milk (*M*=4.54; *SD*=1.85) and plant-based dairy alternative beverages (*M*=4.95; *SD*=1.62) were favorable. Participants agreed with statements about positive attributes in milk (*M*=5.30; *SD*=1.19) and plant-based dairy alternative beverages (*M*=4.95; *SD*=1.11). Participants disagreed with statements about negative attributes in milk (*M*=3.77; *SD*=1.25) and plant-based dairy alternative beverages (*M*=3.46; *SD*=1.14). Descriptive statistics for these constructs are shown in Table 9.

Table 9

Descriptive Statistics for Constructs in Experiment 2

Construct	Min.	Max.	*M*	*SD*
Milk				
Attitude	1	7	4.54	1.85
Positive Attribute	1	7	5.30	1.19
Negative Attribute	1	7	3.77	1.25
Plant-Based Dairy Alternative Beverage				
Attitude	1	7	4.95	1.62
Positive Attribute	1	7	4.95	1.11
Negative Attribute	1	7	3.46	1.14

Participants agreed with statements that milk contained protein (*M* = 5.36, *SD* = 1.43) and calcium (*M* = 5.82, *SD* = 1.20), tasted good (*M* = 4.85, *SD* = 1.95), and was healthy (*M* = 5.01, *SD* = 1.53) and nutritious (*M* = 5.41, *SD* = 1.32). Participants disagreed with statements that milk contained gluten (*M* = 3.18, *SD* = 1.65) and chemicals (*M* = 3.72, *SD* = 1.32). Participants neither agreed nor disagreed with statements that milk contained hormones (*M* = 4.36, *SD* = 1.62). Participant agreement with the existence of the individual attributes which comprised the positive and negative constructs for milk are shown in Table 10.

Table 10

Participant Agreement with the Existence of Positive and Negative Attributes in Milk in Experiment 2

Attribute	Min.	Max.	*M*	*SD*
Positive				
Protein	1	7	5.36	1.43
Healthy	1	7	5.01	1.53
Calcium	1	7	5.82	1.20
Taste	1	7	4.85	1.95
Nutritious	1	7	5.41	1.32
Negative				
Gluten	1	7	3.18	1.65
Chemicals	1	7	3.72	1.62
Hormones	1	7	4.36	1.62

Participants agreed with statements that plant-based dairy alternative beverages contained protein (*M* = 4.73, *SD* = 1.41) and calcium (*M* = 4.63, *SD* = 1.23), tasted good (*M* = 4.83, *SD* = 1.69), and was healthy (*M* = 5.56, *SD* = 1.10) and nutritious (*M* = 5.23, *SD* = 1.09). Participants disagreed with statements that plant-based dairy alternative

beverages contained gluten (*M* = 3.60, *SD* = 1.38), chemicals (*M* = 3.7257 *SD* = 1.37), and hormones (*M* = 3.16, *SD* = 1.39). Participant agreement with the existence of the individual attributes which comprised the positive and negative constructs for plant-base dairy alternative beverages are shown in Table 11.

Table 11

Participant Agreement with the Existence of Positive and Negative Attributes in Plant-Based Diary Alternative Beverage Attributes in Experiment 2

Attribute	Min.	Max.	*M*	*SD*
Positive				
Protein	1	7	4.73	1.41
Healthy	1	7	5.56	1.10
Calcium	1	7	4.63	1.23
Taste	1	7	4.83	1.69
Nutritious	1	7	5.23	1.09
Negative				
Gluten	1	7	3.60	1.38
Chemicals	1	7	3.57	1.37
Hormones	1	7	3.16	1.39

More participants rated milk as nutritious than plant-based dairy alternative beverages, but fewer rated milk as healthy than plant-based dairy alternative beverages. Some participants were not sure whether milk contained gluten (37.8%), chemicals (24.3%), or hormones (24.9%), as shown in Table 12. One-third of participants were unclear whether these attributes were in plant-based dairy alternative beverages (gluten, 46.7%; chemical, 33.9%; hormones, 33.7%). Overall, participants were more confident in their responses for milk attributes than for plant-based dairy alternative beverage attributes.

Table 12

Percentage of Participant Agreement with Attribute Statements in Experiment 2

Attribute	Milk			Plant-Based Beverages		
	Agree	Unsure	Disagree	Agree	Unsure	Disagree
Positive						
Protein	80.0	9.2	10.8	59.3	21.7	19.0
Healthy	73.5	11.9	14.6	83.2	13.0	16.8
Calcium	89.2	3.8	6.5	51.1	35.3	13.6
Taste	70.3	7.0	22.7	60.8	19.0	20.1
Nutritious	83.8	8.6	7.6	76.1	18.5	5.4
Negative						
Gluten	14.0	37.8	48.1	19.0	46.7	34.2
Chemicals	30.8	24.3	44.9	21.9	33.9	44.3
Hormones	49.3	24.9	25.9	13.0	33.7	53.3

When asked if using the word "milk" to identify plant-based dairy alternative beverages was confusing for consumers, overall participants somewhat disagreed (M = 3.29, SD = 1.85). However, one-third (33.3%) indicated the word was confusing. Participant agreement is shown in Table 13.

Table 13

Participant Agreement with Use of "Milk" for Plant-Based Dairy Alternative Beverages is Confusing in Experiment 2

Agree	Unsure	Disagree
33.3%	7.1%	59.6%

Inferential Statistics

If milk advertising caused a halo effect such that it increased consumers' attitudes toward plant-based beverages, as the dairy industry alleged, one would expect

advertising for milk and advertising for plant-based dairy alternative beverages to similarly boost consumer attitudes. I ran a one-way analysis of variance to determine if there were differences in participant attitudes based on exposure to milk, "milk," or control advertising. I did not find any statistically significant differences for attitudes toward milk, as shown in Table 14. Further, I did not find any statistically significant differences for attitudes toward plant-based dairy alternative beverages, as shown in Table 15. Had I found statistically significant differences, I would have run post-hoc testing to identify what those differences were,

Table 14

Analysis of Variance for Advertising Condition on Participant Attitudes toward Milk

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1.31[a]	2	.65	.19	.83
Intercept	3794.79	1	3794.79	1094.18	.01
Condition	1.31	2	.65	.19	.83
Error	631.20	182	3.47		
Total	4431.44	185			
Corrected Total	632.51	184			

a. R Squared = .002 (Adjusted R Squared = -.009)

Table 15

Analysis of Variance for Advertising Condition on Participant Attitudes toward Plant-Based Dairy Alternative Beverages

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	5.88[a]	2	2.94	1.18	.31
Intercept	4537.89	1	4537.89	1822.67	.01
Condition	5.88	2	2.94	1.18	.31
Error	450.63	181	2.49		
Total	5003.33	184			
Corrected Total	456.51	183			

a. R Squared = .013 (Adjusted R Squared = .002)

I did not find any evidence was found to support H3 *Those exposed to dairy milk advertising will have more favorable milk attitudes than those exposed to control messages*; H4 *Those exposed to plant-based dairy alternative beverage advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages*; or H5 *Those exposed to dairy milk advertising will have more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages*.

Limitations

I only considered dairy and plant-based beverages in this study. Studies of other products, even related products such as cheese and yogurt, may provide different results. Additionally, I only considered Millennial and Gen Z consumers (ages 18-35). Results for other generations may differ. Further, I relied on self-reported data. Previous studies

have shown that participants may or may not answer accurately for a variety of reasons and may be confounded by social desirability biases (Shulman et al., 2017).

Self-report measures are subject to social desirability bias, where participants answer what they believe is the socially accepted answer rather than their true feelings (Gass & Seiter, 2018). Some participants may not have an opinion or may not know how they feel. Social desirability bias impels these participants to provide an answer anyway.

Likert-type scales may be subject to response bias, particularly in extreme response categories in a scale. Participants from individualist cultures, such as the U.S. for example, are more likely to respond at the poles (e.g., 1 or 7) than participants from collectivist cultures (Rocerto et al., 2011).

Summary

I provided the results from two between-groups random assignment experiments in this chapter. I tested five hypotheses and analyzed the data using descriptive statistics, multilinear regression, and analysis of variance. The significant findings suggest beverage identification (e.g., name "milk" on label) has some effect on consumer attitudes.

In experiment 1, the plant-based beverage label ("milk," "juice") did not influence participant ratings. I did not find evidence to indicate the name "milk" was preferred over the name "juice" for plant-based dairy alternative beverages (H1). I did not find evidence to indicate the ratings were moderated by personal preference for plant-based dairy alternative beverages over milk (H2).

In experiment 2, exposure to dairy advertising did not influence participant ratings. I did not find evidence was found to indicate participants exposed to dairy milk advertising had more favorable milk attitudes than those exposed to control messages (H3); participants exposed to plant-based dairy alternative beverage advertising had more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages (H4); or participants exposed to dairy milk advertising had more favorable plant-based dairy alternative beverage attitudes than those exposed to control messages (H5).

I interpret the key findings, present the implications of these findings, and provide recommendations for theory, practice, and policy in the next chapter.

CHAPTER V

CONCLUSIONS

Overview

The overarching purpose of this study was (1) to examine the impact of beverage identification (e.g., "milk" on label) on consumer attitudes and (2) to determine if there was any empirical evidence for the National Milk Producers Federation claim of a halo effect created by beverage advertising. I examined two issues in this study: (1) whether or not consumers perceive plant-based dairy alternative beverage to be variation of milk rather than distinct products; and (2) whether or not beverage advertising contributes to a halo effect. I tested study hypotheses using two between-groups random assignment experiments, as described in the previous chapter. I interpret the key findings, present the implications of these findings, and provide recommendations for theory, practice, and policy in this chapter.

Genericide

In the first experiment, I tested whether or not milk and plant-based dairy alternative beverages were perceived by consumers as variations of milk rather than as distinct products. The perception of these beverages as variations of "milk," rather than as distinct food products, would offer the manufacturers of plant-based dairy alternative beverages a distinct marketing benefit by allowing them to capitalize on the positive attitudes generated by dairy marketing. However, the plant-based beverage name ("milk," "juice") did not influence participant ratings as predicted in H1. The name

"milk" was preferred over the name "juice," but this difference was not statistically significant. The results from experiment 1 indicated milk and plant-based dairy alternative beverages are still distinct products for consumers. Consumer indifference to the product name supported the dairy industry request to the FDA to enforce current labeling standards. While overall it seemed consumers still perceive dairy and plant-based "milks" as distinct products, these distinctions are blurring for some consumers. The evidence indicated that the process of genericide is indeed underway but has not yet been completed. I did not examine whether or not strict enforcement of current FDA labeling standards would slow or stop this process in this study.

Affect Transfer

Halo effects (Thorndike, 1920) are a phenomenon where the cognitive bias ratings of one quality bleed over onto assessments of other characteristics. The rhetorical strategies used in marketing stimulate demand for similar products by creating a halo effect. The dairy industry claims plant-based beverage manufacturers have created such a halo effect based on the use of the name "milk" in advertising their products. In experiment 2, I examined whether beverage ratings increased in response to exposure to beverage advertising. Attitude measures by condition served as a manipulation check. If the manipulation was successful, the priming condition (commercial) should have influenced participant responses—it did not. I showed several combinations of videos to participant samples; only results from the final sample were reported. As such, no evidence for a halo effect from dairy advertising was found. It is possible that the commercials used were ineffective and with alternative stimuli the results would have

been different. It is also possible that television commercials do not provide the level of transportation Aditya (2001) and others found necessary to prime participant attitudes. Halo effects do have a ceiling (Boersma et al., 2019). Therefore, another possibility is that dairy attitudes have already stabilized at their maximum.

Consumers often make food decisions based on the way they feel about a certain product (Shepherd, 1999); however, a discrepancy often exists between consumers' attitudes and behavior. Attribute transfer and/or the weighted summations of attributes in attitude development may explain this discrepancy. For example, although attitudes toward both milk and plant-based beverages were favorable, consumption patterns were not indicative of attitude levels across the two experiments. Despite very similar attitude levels, milk was consumed much more frequently than plant-based dairy alternative beverages. A deeper understanding of attribute transfer is necessary to fully understand the process by which individual attributes are assessed.

Nutrition Confusion

Food is a key factor in maintaining health and preventing malnutrition, obesity, and diet-related diseases. Informed consumption decisions are based on the consumer's ability to accurately decode product advantages and disadvantages in order to meet their individual dietary needs. Food literacy is one measure of consumers understanding of food, nutrition, and the impact of food on health (Thomas et al., 2019). The ability to accurately decode product labels is one measure of food literacy (John et al., 2019).

Most consumers do not examine nutrition labels when shopping (Bandara et al., 2016; Bialkova & van Trijp, 2010; John et al., 2019). Consumers are exposed to a wide

variety of labels, products, and brands that all compete for the consumer's attention (Bialkova & van Trijp, 2010). Stimuli overload often leads to heuristic processing of labels when they are examined (Gass & Seiter, 2018). Further, almost half of Americans have poor literacy skills (Kutner et al., 2006). Lower levels of food literacy often lead to nutrition confusion (Nagler, 2014), while higher levels of food literacy increase consumers' ability to decode labels and packaging in order to make informed dietary choices (Colatruglio & Slater, 2014). While participants did not indicate high levels of confusion associated with the use of the word "milk" as a label for plant-based dairy alternative beverages, only self-report measurements of confusion were included in this study. Comparing confusion ratings with the results of a food literacy assessment would better explicate the actual level of confusion associated with the use of the word "milk." What is particularly telling in this study is the number of participants who were unsure about whether a beverage contained a particular attribute. Participants were much less confident in declaring the existence (or lack of) negative attributes (e.g., gluten, chemicals, and hormones), the ones most detrimental for to their health. Further, some participants who answered confidently (rated 6 or 7 on a 7-point scale) were incorrect in their assessment (e.g., milk does not contain gluten).

General Discussion

The use of the word "milk" as a product identifier is causing contention in the beverage industry. Dairy companies and distributors contend companies who produce plant-based dairy alternative beverages coopted the word "milk" to sell their products (e.g., almond milk, rice milk, and soy milk). They argue, these companies are (1)

benefitting from the marketing of milk by the dairy industry and (2) confusing consumers. The use of the word "milk" as an identifier for non-dairy beverages may cause consumers to mistake one product for another, misunderstand product ingredients, and/or misattribute health risks and benefits (Grunert et al., 2000; Nagler, 2014; Nocella & Kennedy, 2012). Findings from this study provide evidence to support for this claim.

Attitudes, marketing influences, and decision-making processes impact consumer perceptions of "milk" as well as their consumption behavior. Exploring attitude-behavior relationships is an effective approach to understanding consumer beverage choices, as consumers often make decisions based on the way they feel about a certain product. Intention and behavior have long been thought to be predicted by consumer attitudes toward the beverage (Ajzen, 1991; Fishbein, 1967), yet there are instances when beverage attitudes do not accurately predict purchase and/or consumption behaviors.

Several possible explanations for this dissonance were explored in this manuscript. Behavior is mediated by social identity and/or by social norms (Cialdini et al., 1991; Tajfel & Turner, 1979). Consumers develop relationships with products not only for what the product can functionally do, but also to help say something about themselves. Findings from this study did not indicate these influences are prevalent for milk and plant-based dairy alternative beverages. Food preferences and consumption behavior are often affected by the consumer's social environment. Normative beliefs that a particular food should, or should not, be eaten influences consumers' behavior differently in different contexts. Findings from this study provided evidence that milk

and plant-based dairy alternative beverages exert the same influence on milk and plant-based dairy alternative beverage attitudes and consumption.

A second possible explanation is the influence of marketing rhetoric on consumers' perceptions of beverages and their attributes. Aditya (2001) noted marketers frequently take advantage of halo effects to sell products and services. The dairy industry has claimed the producers of plant-based beverages are intentionally using a halo effect to mislead consumers and increase sales of their product. There is much in the literature that would seem to support the claim that the name "milk" would frame plant-based dairy alternative beverages as a variation of milk (e.g., Bandara et al., 2016; Boersma et al., 2019; Palupi et al., 2012; Teratanavat & Hooker, 2006; Verbeke et al., 2009). Findings did not indicate the existence of a halo effect as the result of exposure to dairy advertising. While the distinctions between milk and plant-based dairy alternative beverages are blurring for some consumers, the products are still seen as different products. "Milk" acts as a microframe and the more frequently a consumer is exposed to "milk" as an identifier for non-dairy beverages, the more likely consumers will perceive plant-based dairy alternative beverages as variations of milk. Once this happens, genericide will be complete.

A third possible explanation for the dissonance between attitudes and behavioral predictability is consumers' low levels of food literacy and/or high levels of nutrition confusion. A consumer's ability to accurately decode product advantages and disadvantages in order to meet their individual dietary needs depends on a sufficient level of food literacy. Food literacy is a key factor in maintaining health and preventing

malnutrition, obesity, and diet-related diseases. Low levels of food literacy may result in an attribute transfer effect where consumers believe attributes in similar foods are identical. It is also likely a consumer with low food literacy processes food labels peripherally—or does not use them at all. By extension, a consumer with low food literacy is more likely to experience nutrition confusion. While food literacy was not directly measured in this study, some evidence of nutrition confusion was found.

The fourth possible explanation examined in this study is an attribute transfer effect. In the model presented, attributes are weighted and grouped as complex beliefs. One, or several, negative food attributes may outweigh the summated positive attributes leading to positive attitudes, but not to consumption. Visser et al. (2006) noted the need for research focusing on specific attributes and their influence on attitudes in the realm of public health.

Recommendations

Recommendations for Theory

The results of this study raised some interesting theoretical questions. It appears that some, but not all "milk" attributes transfer from milk to plant-based dairy alternative beverages. Findings from this study extend Fishbein and Ajzen's (2010) reasoned action approach, a framework to predict and change consumer behavior, by more fully describing belief formation, the precursory process to attitude formation. Specifically, the process by which consumers evaluate and weight and weight attributes should be further delineated. Attribute transfer mechanisms have not, and should be, included in this delineation.

The contexts that influence attribute evaluation processes should be also delineated. According to the social norms component of the reasoned action approach and the focus theory of normative conduct, behavior is context dependent. Contextual influence is highly complex, varying in salience for many different demographic factors. It is important to understand which contexts mediate and moderate food consumption behaviors. Further, understanding the processes by which consumer food identities are formed would be of great value to both marketing and health researchers and practitioners. The results from this study extend the social norms body of knowledge beyond high-risk behaviors and add to the understanding of decision-making and mundane behaviors.

Food literacy is a measure of consumer understanding of food, nutrition, and the impact of food on health. The questions about milk and plant-based attributes revealed some misperceptions, which were likely due to participants' repeated exposure to marketing rhetoric. Several theories discussed in this manuscript address systematic and heuristic processing. This study highlighted the need for more understanding of how marketing rhetoric mediates and moderates consumer decision-making processes and their food literacy levels. Misinterpretation of product attributes is likely due to heuristic processing. Examining the influence of naming conventions on consumer food literacy provides a unique and informative perspective for testing and extending attitude formation and social norm theories.

Recommendations for Future Research

A follow up study should be conducted to determine whether the null result in experiment 2 was a result of a lack of transportation or a ceiling effect.

Future research should also examine the impact of naming on consumer perceptions, particularly focusing on correlations with halo effects, for products like plant butter, alternative proteins, and bioengineered foods.

The process of completing this study generated many questions for future research projects that revolve around food literacy, such as the impact of attribute valence on consumer behavior and the influence of rhetorical strategies used in the marketing of food on nutrition confusion. First and foremost, an instrument to assess food literacy should be developed. This instrument would allow us to explore the relationship between low levels of food literacy and nutrition confusion, as well measure the effectiveness of interventions to increase food literacy levels. The relationship between low levels of food literacy and nutrition confusion should also be explored. It is important to understand where consumers learn about food, nutrition, and the impact of food on their health, as well as how they determine message credibility. Prior research on "fake news" could serve as a starting point for determining how many times a consumer is exposed to misinformation before accepting it as fact. The development of effective strategies to increase food literacy could help reduce nutrition confusion and backlash.

The attribute transfer effect model should be further developed. Identifying mediators, moderators, and delineating the theoretical boundaries would be beneficial

for both theoreticians and marketers. Projects in this area should examine consumer perceptions of functional foods (e.g., dairy, meat) as well as their plant-based and bioengineered alternatives. A deeper understanding of the normative influences of these perceptions and the impact of attributes on consumption intentions is needed. Additionally, more research is needed to identify the most salient attributes for specific foods as well as identify which attributes transfer, which do not, and why. A deeper understanding of attribute transfer is necessary to fully understand the process by which attributes are assessed.

Future research on rhetorical strategies should further examine the impact of naming on consumer product perceptions, particularly focusing on its correlations with halo effects, attribute transfer, health misinformation, and nutrition confusion. In addition to milk, other food products, such as plant butter, meat, and bioengineered foods, should be examined.

Recommendations for Policy

As plant-based dairy alternative beverages most closely adhere to the current FDA labeling standard for juice, the FDA should require the manufacturers of these beverages to adhere to this labeling standard and prohibit them from using "milk" as a label. If the manufacturers find this option unacceptable, another option would be for the FDA to create a new labeling standard specifically describing plant-based dairy alternative beverages. Clear and consistent labeling would allow consumers to select beverages that meet both their personal preferences and their health needs, as well as avoid potentially serious allergic reactions.

Recommendations for Practice

Millennial and Gen Z consumers prefer branded products; therefore, it is time for milk to transition from being marketed as a commodity product to being marketed a branded product. Dairy associations, like the National Milk Producers Federation, should focus on making milk a niche product – as other beverage distributors have recently done with their water products. Changes should be made to marketing campaigns and product packaging to highlight a variety of primary attributes that better appeal to consumers aged 18-35. For example, offering single serving-sized containers and containers made with recycled packaging would be more attractive to this demographic. Extension agents should encourage producers to support check off programs that include these types of changes.

For healthy food choices to become the hegemonic norm, consumers must be exposed, frequently and over their entire lifetime, to the Dietary Guidelines for Americans and tools such as the USDA's ChooseMyPlate. The dietary guidelines are updated every five years. Frequent exposure will ensure consumers are aware of the most recent recommendations. An understanding of why the guidelines were changed will also help to reduce consumers' nutrition confusion and backlash. As such, food literacy should become part of the classroom curriculum at each level of education. Educators in public health, agricultural communications, and agricultural economics in particular should include food literacy in their courses, as these students will likely choose professions where they can in turn, directly or indirectly, educate consumers.

Obesity and diet-related chronic disease rates have become national crises. A "food as medicine" philosophy and a call for increased food literacy has emerged in the literature. Low levels of food literacy are correlated with nutrition confusion and have serious implications for consumer health. Higher levels of food literacy are correlated with consumers' ability to accurately decode product labels. Food literacy instruction is one method for improving consumers critical thinking skills.

Educators in agricultural communications and agricultural economic should also stress the importance of accurate representations in marketing collateral. The ethical and legal ramifications of product misrepresentation can be devasting for long-term brand equity.

Implications

Implications for Policy

The American Association for Agricultural Educators has included "informing public and policymakers" as a priority on their national research agenda for more than a decade. Yet, Maubach et al. (2014) asserted consumer research that informs policy making remains an urgent need. This study has direct ramifications for The DAIRY PRIDE Act. The intent for labeling standards is to allow consumers to make informed dietary decisions. Participants in experiment 1 showed no statistical preference for the name "milk." One-half of participants in experiment 1 and one-third of participants in experiment 2 indicated the use of "milk" as a label for non-dairy beverages was confusing. The practical significance of these data support the National Milk Producers Federation request to enforce the FDA labeling standard for the use of the word "milk."

As the name of the beverage shapes consumer perceptions, attitudes, and consumption intentions, the currently unenforced labeling standards is indirectly contributing to poor judgement in diet-related decisions (Bandara et al., 2016; Fernan et al., 2018). Failure to enforce labeling standards encourages manufacturers to ignore them which may lead to serious health repercussions for consumers.

Labeling standards must also be enforced to prevent genericide, a critical issue for both U.S. market share and global trade exports of dairy products. Further, using the name "juice," or another term for plant-based beverages (e.g., margarine as an alternative for butter), would better align U.S. labeling standards with global labeling standards.

There are additional issues with the current FDA labeling standard for milk that were not addressed in this study. For example, was the intent truly for milk to be defined as solely originating from one or more healthy cows—to the exclusion of other mammals, such as sheep and goats, or for that matter, human breast milk? Perhaps every variation of "milk" requires a qualifier, such that the dairy beverage would be labeled as "cow's milk" to remove any possibility of source confusion.

Implications for Practice

How marketers talk about food matters. As the name of the food is the most important information on the label (Bandara et al., 2016), much thought and focus group testing should be done prior to releasing new products. There has been tremendous consumer backlash against the term "genetically modified," for example, which could have perhaps been avoided by using a term with less "scary" connotations. As milks and

meats created in a lab become more prevalent, for example, selecting appropriate names will be important to maintain consumer trust and address food safety concerns (Klintman, 2002a). Product differentiation is a fundamental marketing strategy. Differentiation should begin with the product name in order to avoid confusing consumers and to ensure long-term trademark rights.

Summary

In this chapter, I interpreted the key findings, presented the implications of these findings, and provided recommendations for future research. The distinctions between milk and plant-based dairy alternative beverages are blurring for consumers. However, the process of genericide does not yet seem to be complete. Participants were indifferent to the word "milk" as the label for plant-based dairy alternative beverages, but they indicated this label was confusing to some consumers. The currently unenforced labeling standards may be indirectly contributing to poor judgement in diet-related decisions. More research is needed.

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APPENDIX A

INSTRUMENT FOR EXPERIMENT 1

Survey Flow

Block: IRB consent (2 Questions)
Standard: Dairy Milk Ratings (4 Questions)
Standard: Attitudes toward milk in general (7 Questions)
Standard: Juice Ratings (4 Questions)
Standard: Attitudes toward juice in general (6 Questions)

BlockRandomizer: 1 - Evenly Present Elements

- **Block: Random Assignment - Milk (26 Questions)**
- **Block: Random Assignment - Juice (26 Questions)**

Standard: Covariates (8 Questions)
Standard: Demographics (4 Questions)
Standard: Suspicion probe (1 Question)
Standard: Debrief (1 Question)

EmbeddedData
idValue will be set from Panel or URL.

Page Break

Start of Block: IRB consent

You are invited to take part in a research study being conducted by Sharon Wagner, a researcher from Texas A&M University. The information below is provided to help you decide whether or not to take part. If you decide to participate, you will be asked to proceed to the questionnaire. If you do not want to participate, there will be no penalty to you.

Why Is This Study Being Done? The purpose of this study is to understand consumer attitudes toward milk and juice.

How Many People Will Be Asked to Be in This Study? Approximately 300 people will be invited to participate in this study.

What Are the Alternatives to being in this study? The alternative to being in the study is not to participate.

What Will I Be Asked to Do in This Study? You will be asked to answer questions on your attitudes about milk and juice. The questionnaire should take approximately 20 minutes to complete.

Are There Any Risks to Me? Answering the questions has no greater risks than risks than you would come across in everyday life.

Will There Be Any Costs to Me? Aside from your time, there are no costs for taking part in the study.

Will I Be Paid to Be in This Study? You will receive course credit for completing the questionnaire.

Will Information from This Study Be Kept Private? The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely in computer files protected with a password. Only the private investigators will have access to the records.

Information about you will be kept confidential to the extent permitted or required by law. People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly.

Who may I Contact for More Information? You may contact the Principal Investigator about concerns or complaints about this research. Sharon Wagner may be reached at (979) 845-6923 or sharon.wagner@tamu.edu. You may also contact Dr. Hart Blanton at (979) 458-0222 or hblanton@tamu.edu.

For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may call the Texas A&M University Human Subjects Protection Program office at (979) 458-4067 or irb@tamu.edu.

What if I Change My Mind About Participating? Participation is voluntary, and you have the choice whether to be in this research study or not. You may decide to not participate or to stop participating at any time.

By completing the questionnaire, you are giving permission for the investigator to use your answers for research purposes.

Thank you.
Sharon Wagner, M.S.

TAMU IRB2018-0902M, Approved 11/2/2018, Expiration 11/1/2023

Page Break

End of Block: IRB consent

Start of Block: Dairy Milk Ratings

The following questions focus on your attitudes towards drinking milk. In this questionnaire, when we refer to "milk" we are referring specifically to dairy milk, from a cow.

Before we begin, we would like to know if you ever drink milk. If you do not (for medical or personal reasons), we still want you to complete the questionnaire but it will be helpful for us to know this fact, and so please answer the following:

Do you, or would you ever, drink milk?

- ○ Yes, I sometime do drink milk or I might drink it if it was available.
- ○ No, under no circumstance do I or would I drink milk.

Display This Question:
If Do you, or would you ever, drink milk? = Yes, I sometime do drink milk or I might drink it if it was available.

If you were to drink milk, what type(s) of milk are you most likely to choose?

- ☐ Whole milk
- ☐ 2% Low fat milk
- ☐ 1% low fat milk
- ☐ Fat free (skim) milk
- ☐ Lactose free milk
- ☐ Other

Display This Question:
If If you were to drink milk, what type(s) of milk are you most likely to choose? = Other

What type of “other” milk would you be most likely to choose?

_____

End of Block: Dairy Milk Ratings

Start of Block: Attitudes toward milk in general

Display This Question:
If Do you, or would you ever, drink milk? = Yes, I sometime do drink milk or I might drink it if it was available.

In the questions that follow when we ask you about your views on milk, please focus on the type of milk that you are *most likely to drink*. Later in the questionnaire, we will ask you about these different types of milks (e.g., whole milk, 2% milk, etc.).

Display This Question:
If Do you, or would you ever, drink milk? = No, under no circumstance do I or would I drink milk.

The following questions focus on your attitudes towards milk. You indicated that you do not drink milk but it would be helpful, in addition, to know your attitudes. The next set of questions ask about attitudes towards milk.

In general, how much do you like drinking milk?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

When you think about drinking milk, how positive or negative is your reaction?

- Extremely positive
- Moderately positive
- Slightly positive
- Neither positive nor negative
- Slightly negative
- Moderately negative
- Extremely negative

In general, how favorable or unfavorable is your view towards drinking milk?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring milk over breakfast cereal and eating it?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

Page Break

We next ask about the different types of milk. How positive or negative do you feel about each of these?

	Extremely positive	Moderately positive	Slightly positive	Neither positive nor negative	Slightly negative	Moderately negative	Extremely negative
Whole milk	○	○	○	○	○	○	○
2% low fat milk	○	○	○	○	○	○	○
1% low fat milk	○	○	○	○	○	○	○
Fat free (skim) milk	○	○	○	○	○	○	○
Lactose free milk	○	○	○	○	○	○	○

End of Block: Attitudes toward milk in general

Start of Block: Juice Ratings

The following questions focus on your attitudes towards fruit and vegetable juices.

Before we begin, we would like to know if you ever drink juice. If you do not (for dietary or personal reasons), we still want you to complete the questionnaire but it will be helpful for us to know this fact, and so please answer the following:

Do you or would you ever drink fruit or vegetable juice?

- ○ Yes, I sometime do drink juice or I might drink it if it was available.
- ○ No, under no circumstance do I or would I drink juice.

Display This Question:
If Do you or would you ever drink fruit or vegetable juice? = Yes, I sometime do drink juice or I might drink it if it was available.

If you were to drink juice, what type of juice are you most likely to choose?

- [ ] Orange
- [ ] Apple
- [ ] Pineapple
- [ ] Cranberry
- [ ] Grapefruit
- [ ] Tomato
- [ ] Other

Display This Question:
If If you were to drink juice, what type of juice are you most likely to choose? = Other

What type of "other" juice would you be most likely to choose?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

End of Block: Juice Ratings

Start of Block: Attitudes toward juice in general

Display This Question:
If Do you or would you ever drink fruit or vegetable juice? = Yes, I sometime do drink juice or I might drink it if it was available.

In the questions that follow when we ask you about your views on juice, please focus on the type of juice that you are most *likely to drink*. Later in the questionnaire, we will ask you more specific questions about different types of juices (e.g., apple, orange, etc.).

Display This Question:
If Do you or would you ever drink fruit or vegetable juice? = No, under no circumstance do I or would I drink juice.

The following questions focus on your attitudes towards juice. You indicated that you do not drink juice but it would be helpful, in addition, to know your attitudes. The next set of questions ask about attitudes towards juice.

In general, how much do you like drinking juice?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

When you think about drinking juice, how positive or negative is your reaction?

- ○ Extremely positive
- ○ Moderately positive
- ○ Slightly positive
- ○ Neither positive nor negative
- ○ Slightly negative
- ○ Moderately negative
- ○ Extremely negative

In general, how favorable or unfavorable is your view towards drinking juice?

- ○ Extremely favorable
- ○ Moderately favorable
- ○ Slightly favorable
- ○ Neither favorable nor unfavorable
- ○ Slightly unfavorable
- ○ Moderately unfavorable
- ○ Extremely unfavorable

Page Break

We next ask about the different types of fruit juice. How positive or negative do you feel about each of these?

	Extremely positive	Moderately positive	Slightly positive	Neither positive nor negative	Slightly negative	Moderately negative	Extremely negative
Orange	○	○	○	○	○	○	○
Apple	○	○	○	○	○	○	○
Pineapple	○	○	○	○	○	○	○
Cranberry	○	○	○	○	○	○	○
Grapefruit	○	○	○	○	○	○	○
Tomato	○	○	○	○	○	○	○

Page Break

End of Block: Attitudes toward juice in general

Start of Block: Random Assignment - Milk

The next set of questions ask you about your thoughts on plant-based milks. We will introduce four different plant-based milks (soy, almond, rice and hemp) and ask you your evaluation of them.

Page Break

Soy milk is a plant-based drink produced by soaking and grinding soybeans, boiling the mixture, and filtering out remaining particulates. It is a stable emulsion of oil, water, and protein. Its original form is a natural byproduct of the manufacture of tofu.

In general, how much do you like drinking soy milk?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

When you think about drinking soy milk, how positive or negative is your reaction?

- ○ Extremely positive
- ○ Moderately positive
- ○ Slightly positive
- ○ Neither positive nor negative
- ○ Slightly negative
- ○ Moderately negative
- ○ Extremely negative

In general, how favorable or unfavorable is your view towards drinking soy milk?

- ○ Extremely favorable
- ○ Moderately favorable
- ○ Slightly favorable
- ○ Neither favorable nor unfavorable
- ○ Slightly unfavorable
- ○ Moderately unfavorable
- ○ Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring soy milk over breakfast cereal and eating it?

- ○ Extremely favorable
- ○ Moderately favorable
- ○ Slightly favorable
- ○ Neither favorable nor unfavorable
- ○ Slightly unfavorable
- ○ Moderately unfavorable
- ○ Extremely unfavorable

Page Break

Almond milk is a plant milk manufactured from almonds, with a creamy texture and nutty flavor. Commercial almond milk comes in sweetened, unsweetened, plain, vanilla and chocolate flavors, and is usually fortified with micronutrients. It can also be made at home using a blender, almonds and water.

In general, how much do you like drinking almond milk?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

When you think about drinking almond milk, how positive or negative is your reaction?

- ○ Extremely positive
- ○ Moderately positive
- ○ Slightly positive
- ○ Neither positive nor negative
- ○ Slightly negative
- ○ Moderately negative
- ○ Extremely negative

In general, how favorable or unfavorable is your view towards drinking almond milk?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring almond milk over breakfast cereal and eating it?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

Page Break

Rice milk is a grain milk made mostly from brown rice and is commonly unsweetened. The sweetness in most rice milk varieties is generated by a natural enzymatic process that cleaves the carbohydrates into sugars, especially glucose. Some rice milks may be also sweetened with sugarcane syrup or other sugars.

In general, how much do you like drinking rice milk?

- Like a great deal
- Like a moderate amount
- Like a little
- Neither like nor dislike
- Dislike a little
- Dislike a moderate amount
- Dislike a great deal

When you think about drinking rice milk, how positive or negative is your reaction?

- Extremely positive
- Moderately positive
- Slightly positive
- Neither positive nor negative
- Slightly negative
- Moderately negative
- Extremely negative

In general, how favorable or unfavorable is your view towards drinking rice milk?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring rice milk over breakfast cereal and eating it?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

Page Break

Hemp milk is a plant milk made from hemp seeds that are soaked and ground in water. The result resembles milk in color, texture, and flavor. Plain hemp milk may be sweetened or flavored.

In general, how much do you like drinking hemp milk?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

When you think about drinking hemp milk, how positive or negative is your reaction?

- ○ Extremely positive
- ○ Moderately positive
- ○ Slightly positive
- ○ Neither positive nor negative
- ○ Slightly negative
- ○ Moderately negative
- ○ Extremely negative

In general, how favorable or unfavorable is your view towards drinking hemp milk?

- ○ Extremely favorable
- ○ Moderately favorable
- ○ Slightly favorable
- ○ Neither favorable nor unfavorable
- ○ Slightly unfavorable
- ○ Moderately unfavorable
- ○ Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring hemp milk over breakfast cereal and eating it?

- ○ Extremely favorable
- ○ Moderately favorable
- ○ Slightly favorable
- ○ Neither favorable nor unfavorable
- ○ Slightly unfavorable
- ○ Moderately unfavorable
- ○ Extremely unfavorable

Page Break

How often do you drink each of the following?

	Daily	Weekly	Monthly	Rarely	Never
Dairy milk	○	○	○	○	○
Almond milk	○	○	○	○	○
Soy milk	○	○	○	○	○
Rice milk	○	○	○	○	○
Hemp milk	○	○	○	○	○

Page Break

Display This Question:
If How often do you drink each of the following? = Dairy milk [Never]
Or How often do you drink each of the following? = Dairy milk [Rarely]

Do you have a religious reason for not drinking dairy milk?

- ○ Yes
- ○ No

Display This Question:
If How often do you drink each of the following? = Dairy milk [Never]
Or How often do you drink each of the following? = Dairy milk [Rarely]

Do you have a medical reason for not drinking dairy milk? (e.g., kidney disease, lactose intolerance)

- Yes
- No

Display This Question:
If How often do you drink each of the following? = Dairy milk [Never]
Or How often do you drink each of the following? = Dairy milk [Rarely]

Do you have a personal or political reason for not drinking dairy milk? (e.g., taste/flavor, environmental concerns)

- Yes
- No

Page Break

Some people worry that the use of “milk” to describe plant-based dairy alternatives (e.g., Soy Milk, Almond Milk) is confusing to consumers. Do you agree or disagree that this is confusing to consumers?

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Page Break

End of Block: Random Assignment - Milk

Start of Block: Random Assignment - Juice

The next set of questions ask you about your thoughts on plant-based juices. We will introduce four different plant-based juices (soy, almond, rice and hemp) and ask you your evaluation of them.

To clarify, sometimes these juices are marketed as a form of “milk” but this term is not

technically correct. The correct term for these plant-based beverages is juice. For this reason, the questions that follow ask you about your views on these plant-based juices.

Page Break

Soy juice is a plant-based drink produced by soaking and grinding soybeans, boiling the mixture, and filtering out remaining particulates. It is a stable emulsion of oil, water, and protein. Its original form is a natural byproduct of the manufacture of tofu.

Page Break

In general, how much do you like the idea of drinking soy juice?

- Like a great deal
- Like a moderate amount
- Like a little
- Neither like nor dislike
- Dislike a little
- Dislike a moderate amount
- Dislike a great deal

When you think about drinking soy juice, how positive or negative is your reaction?

- Extremely positive
- Moderately positive
- Slightly positive
- Neither positive nor negative
- Slightly negative
- Moderately negative
- Extremely negative

In general, how favorable or unfavorable is your view towards drinking soy juice?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring soy juice over breakfast cereal and eating it?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

Page Break

Almond juice is a plant juice manufactured from almonds, with a creamy texture and nutty flavor. Commercial almond juice comes in sweetened, unsweetened, plain, vanilla and chocolate flavors, and is usually fortified with micronutrients. It can also be made at home using a blender, almonds and water.

In general, how much do you like the idea of drinking almond juice?

- Like a great deal
- Like a moderate amount
- Like a little
- Neither like nor dislike
- Dislike a little
- Dislike a moderate amount
- Dislike a great deal

When you think about drinking almond juice, how positive or negative is your reaction?

- Extremely positive
- Moderately positive
- Slightly positive
- Neither positive nor negative
- Slightly negative
- Moderately negative
- Extremely negative

In general, how favorable or unfavorable is your view towards drinking almond juice?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring almond juice over breakfast cereal and eating it?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

Page Break

Rice juice is a grain juice made mostly from brown rice and is commonly unsweetened. The sweetness in most rice juice varieties is generated by a natural enzymatic process that cleaves the carbohydrates into sugars, especially glucose. Some rice juices may be also sweetened with sugarcane syrup or other sugars.

In general, how much do you like the idea of drinking rice juice?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

When you think about drinking rice juice, how positive or negative is your reaction?

- ○ Extremely positive
- ○ Moderately positive
- ○ Slightly positive
- ○ Neither positive nor negative
- ○ Slightly negative
- ○ Moderately negative
- ○ Extremely negative

In general, how favorable or unfavorable is your view towards drinking rice juice?

- ○ Extremely favorable
- ○ Moderately favorable
- ○ Slightly favorable
- ○ Neither favorable nor unfavorable
- ○ Slightly unfavorable
- ○ Moderately unfavorable
- ○ Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring rice juice over breakfast cereal and eating it?

- ○ Extremely favorable
- ○ Moderately favorable
- ○ Slightly favorable
- ○ Neither favorable nor unfavorable
- ○ Slightly unfavorable
- ○ Moderately unfavorable
- ○ Extremely unfavorable

Page Break

Hemp juice is made from hemp seeds that are soaked and ground in water. The result resembles milk in color, texture, and flavor. Plain hemp juice may be sweetened or flavored.

In general, how much do you like the idea of drinking hemp juice?

- ○ Like a great deal
- ○ Like a moderate amount
- ○ Like a little
- ○ Neither like nor dislike
- ○ Dislike a little
- ○ Dislike a moderate amount
- ○ Dislike a great deal

When you think about drinking hemp juice, how positive or negative is your reaction?

- ○ Extremely positive
- ○ Moderately positive
- ○ Slightly positive
- ○ Neither positive nor negative
- ○ Slightly negative
- ○ Moderately negative
- ○ Extremely negative

In general, how favorable or unfavorable is your view towards drinking hemp juice?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

In general, how favorable or unfavorable is your view towards pouring hemp juice over breakfast cereal and eating it?

- Extremely favorable
- Moderately favorable
- Slightly favorable
- Neither favorable nor unfavorable
- Slightly unfavorable
- Moderately unfavorable
- Extremely unfavorable

Page Break

How often do you drink each of the following?

	Daily	Weekly	Monthly	Rarely	Never
Dairy milk	○	○	○	○	○
Fruit juice	○	○	○	○	○
Vegetable juice	○	○	○	○	○
Almond juice	○	○	○	○	○
Rice juice	○	○	○	○	○
Soy juice	○	○	○	○	○
Hemp juice	○	○	○	○	○

Display This Question:
If How often do you drink each of the following? = Dairy milk [Never]
Or How often do you drink each of the following? = Dairy milk [Rarely]

Do you have a religious reason for not drinking dairy milk?

- ○ Yes
- ○ No

Display This Question:
If How often do you drink each of the following? = Dairy milk [Never]
Or How often do you drink each of the following? = Dairy milk [Rarely]

Do you have a medical reason for not drinking dairy milk? (e.g., kidney disease, lactose intolerance)

- ○ Yes
- ○ No

Display This Question:
If How often do you drink each of the following? = Dairy milk [Never]
Or How often do you drink each of the following? = Dairy milk [Rarely]

Do you have a personal or political reason for not drinking dairy milk? (e.g., taste/flavor, environmental concerns)

- ○ Yes
- ○ No

Page Break

Some people worry that the use of "milk" to describe plant-based dairy alternatives (e.g., Soy Milk, Almond Milk) is confusing to consumers. Do you agree or disagree that this is confusing to consumers?

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

End of Block: Random Assignment - Juice

Start of Block: Covariates

Page Break

To what extent do you agree with each of the following?

Plant-based dairy alternatives should be an important part of my diet.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

Plant-based dairy alternatives are good for a person's health.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

Dairy-based milk should be an important part of my diet.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

Dairy-based milk is good for a person's health.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

Page Break

To what extent are you responsible for the grocery shopping for your residence (i.e., for others living at your place, not just you)?

- ○ It completely true to say that I am the person most responsible for grocery shopping at my residence.
- ○ It is mostly true to say that I am the person most responsible for grocery shopping at my residence.
- ○ It is slightly true to say that I am the person most responsible for grocery shopping at my residence.
- ○ It is not at all true to say that I am the person most responsible for grocery shopping at my residence.

How often do you shop for your own food at a grocery store?

- ○ More than once a week
- ○ Once a week
- ○ A few times a month
- ○ Once a month
- ○ Every few months
- ○ Less than every few months

Display This Question:
If How often do you shop for your own food at a grocery store? != Less than every few months

When you do shop at the grocery story, how often are you buying groceries for other people?

- ○ All or almost all of the time
- ○ Most of the time
- ○ Some of the time
- ○ Never or almost never

End of Block: Covariates

Start of Block: Demographics

Page Break

Please tell us a little about yourself.

What year were you born?

_____

What is your gender?

- ○ Male
- ○ Female
- ○ Other or prefer not to say

What is your ethnic origin?

- ○ White
- ○ Black
- ○ Asian
- ○ Hispanic
- ○ American Indian or Alaska Native
- ○ Native Hawaiian or Pacific Islander
- ○ Other

Page Break

End of Block: Demographics

Start of Block: Suspicion probe

Page Break

You are now done with the survey.

Before finishing, however, it will help us if you will tell us your thoughts about this study. In particular, do you have any thoughts on what we are studying and why? Any thoughts you have about this study will be helpful to us.

In your own words, what do you think we are studying and why?

_____
_____
_____
_____
_____

Page Break

End of Block: Suspicion probe

Start of Block: Debrief

Got Milk (or Juice)?

Thank you for participating in this study.

You were asked to rate your attitudes on dairy milk, fruit and vegetable juices and on plant-based alternatives to milk. We realize that these ratings might not be the most exciting topics for many who complete our survey but there is an important reason why we would ask you to participate in our study. This study speaks to the consequences of labeling plant-based alternatives to dairy milk as examples of “milk” (e.g., soy milk) or as juice (e.g., “soy juice”). Although this choice of label might seem incidental, it is the focus of considerable attention in the agricultural industry – even driving some litigation.

The Food and Drug Administration (FDA) specifically defines milk as “the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows” (CFR 131.110(a)). Dairy companies and distributors have argued that companies selling plant-based beverages have inappropriately coopted the term “milk” to sell their products (e.g., soy milk, rice milk, hemp milk, almond milk). In so doing, they argue, companies are (1) confusing consumers and (2) benefiting inappropriately from the dairy industry’s marketing of dairy milk. They are requesting the government enforce the FDA labeling standard.

This issue has and will likely continue to be pursued through the courts, with the dairy industry arguing that companies selling plant-based liquids are benefiting in market share by using misleading advertisements. Some evidence suggests a degree of confusion does in fact exist. Research by the International Food Information Council suggests that, although about 75% of Americans recognize that soy and almond milk are non-dairy, close to 20% of shoppers have some degree of confusion over whether plant-based “milks” contain dairy milk.

The current project sought to examine this question in greater detail by asking (1) is there any marketing benefit to simply labeling plant-based beverages as "milk" as opposed to (the more accurate term of) "juice" and (2) is the size of this effect predicted by preference for dairy milk over fruit and vegetable juices? We addressed these two questions by first measuring your attitudes towards dairy milk and your attitudes towards fruit/vegetable juices. We do this for you and all participants in this study. Then, you were randomly assigned either to rate your attitudes towards plant-based “milk” beverages (e.g., soy and almond milk) or to plant-based “juice” alternatives (e.g., soy and almond juice).

We predict that ratings of plant-based products will be higher for the “milk” as opposed to “juice” labeling, which would argue in favor of concerns expressed by the dairy industry. Moreover, we predict that liking for plant-based “milks” will be predicted by degree of liking for dairy milk (more than liking for fruit/vegetable juices), whereas liking for plant-based “juices” will be predicted by degree of liking for fruit/vegetable juices (more than liking for dairy milk). This finding would support dairy industry claims that companies selling plant-based beverages are benefiting from efforts by the dairy industry to promote their own product (milk).

Of course, these predictions are simply that – predictions. We do not know if our hypotheses will be supported. However, your answers to these questions will help us test our predictions to see if there is evidence we were right or wrong.

If you have additional questions, feel free to contact the student investigator in this project, Sharon Wagner (sharon.wagner@tamu.edu). She is a graduate student in the Department of

Agricultural Leadership, Education, and Communication, here at Texas A&M University.

End of Block: Debrief

APPENDIX B

INSTRUMENT FOR EXPERIMENT 2

Survey Flow

Block: IRB consent (2 Questions)

BlockRandomizer: 1 - Evenly Present Elements

Block: Random Assignment - Milk (8 Questions)
Standard: Random Assignment - Plant (8 Questions)
Standard: Random Assignment - Control (8 Questions)

Standard: Demographics (5 Questions)
Standard: Milk Attitudes & Norms (10 Questions)
Standard: Milk Attributes (10 Questions)
Standard: Milk Consumption (9 Questions)
Standard: Plant Attitudes & Norms (10 Questions)
Standard: Attributes - Plant (22 Questions)
Standard: Plant Consumption (9 Questions)
Standard: Attention Check (1 Question)
Standard: Suspicion Probe (2 Questions)
Standard: Debrief (0 Questions)

EmbeddedData
idValue will be set from Panel or URL.

Page Break

Start of Block: IRB consent

Page Break

Title of Research Study: Beverage Ads and Attitudes
Investigator: Tracy Rutherford **Protocol Director:** Sharon Wagner
Funded/Supported By: This research is funded/supported by Texas A&M University

Why are you being invited to take part in a research study? You are invited to participate in this study because we are trying to learn more about consumer perceptions. You were selected as a possible participant in this study because Millennial and Gen Z consumers comprise nearly half of the U.S. population. Your preferences have great impact on the economy. You must be between 18 years and 35 years of age (inclusive) to participate.

Why is this research being done? The survey is designed to collect consumer attitudes about beverage marketing.
How long will the research last? It should take you less than 30 minutes to complete to complete the survey.
What happens if I say "Yes, I want to be in this research"? If you decide to participate, please click the "I Agree" button and you will be taken to the survey.
What happens if I do not want to be in this research? Your participation in this study is voluntary. You can decide not to participate in this research and it will not be held against you. You can leave the study at any time.
Is there any way being in this study could harm me? There are no sensitive questions in this survey that should cause discomfort. However, you can skip any question you do not wish to answer, or exit the survey at any point.
What happens to the information collected for the research? You may view the survey host's confidentiality policy at https://www.qualtrics.com/terms-of-service. Your ID will be stored separately from your survey data, and is only being collected for credit purposes. All information will be kept on a password protected computer and is only accessible by the research team. The results of the research study may be published but no one will be able to identify you.
What else do I need to know? If you agree to take part in this research study, you will receive 1 credit of extra credit.
Who can I talk to? Please feel free to ask questions regarding this study. You may contact Sharon Wagner, protocol director, at (979) 458-2304 or sharon.wagner@tamu.edu. You may contact Dr. Tracy Rutherford, principal investigator, at (540) 231-8187 or trutherford@vt.edu if you have additional questions or concerns. You may also contact the Human Research Protection Program at Texas A&M University (which is a group of people who review the research to protect your rights) by phone at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu for:

- additional help with any questions about the research
- voicing concerns or complaints about the research
- obtaining answers to questions about your rights as a research participant
- concerns in the event the research staff could not be reached
- the desire to talk to someone other than the research staff

If you want a copy of this consent for your records, you can print it from the screen.

If you wish to participate, please click the "**Next**" button and you will be taken to the survey.
If you do not wish to participate in this study, please select **X** in the corner of your browser

TAMU IRB2019-1050, Exempt 11/27/2019, Expiration 11/27/2022

Page Break

In a moment, we will show you an advertisement that has previously aired on network television. Then we will then ask you some questions about your reactions to it.

End of Block: IRB consent

Start of Block: Random Assignment - Milk

Please watch the following video carefully.

[MILK COMMERCIAL]

The next set of questions ask you about your thoughts on the effectiveness of this advertisement.

Page Break

How much do you agree or disagree with the following statements about the ad you just watched?

I think consumers will like the characters in the ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will relate to the storyline in the ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will believe the information presented in the ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will be likely to purchase the product after seeing this ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will be more persuaded by the information in the ad than by the entertainment factor.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

End of Block: Random Assignment - Milk

Start of Block: Random Assignment - Plant

Please watch the following video carefully.

[SOY MILK COMMERCIAL]

The next set of questions ask you about your thoughts on the effectiveness of this advertisement.

Page Break

How much do you agree or disagree with the following statements about the ad you just watched?

I think consumers will like the characters in the ad.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

I think consumers will relate to the storyline in the ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will believe the information presented in the ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will be likely to purchase the product after seeing this ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will be more persuaded by the information in the ad than by the entertainment factor.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

End of Block: Random Assignment - Plant

Start of Block: Random Assignment - Control

Please watch the following video carefully.

[REFRIGERATOR COMMERCIAL]

The next set of questions ask you about your thoughts on the effectiveness of this advertisement.

Page Break

How much do you agree or disagree with the following statements about the ad you just watched?

I think consumers will like the characters in the ad.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

I think consumers will relate to the storyline in the ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will believe the information presented in the ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will be likely to purchase the product after seeing this ad.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

I think consumers will be more persuaded by the information in the ad than by the entertainment factor.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

End of Block: Random Assignment - Control

Start of Block: Demographics

Page Break

To better understand your answers, it would be helpful for us to know a little bit about you.

Page Break

How would describe the area have you lived in for most of your life?

- Urban area
- Suburban area
- Rural area

What is your gender?

- Male
- Female
- Other or prefer not to answer

What year were you born?

Select Year

▼ 2002 ... Other

What is your ethnic origin?

- White
- Black
- Asian
- Hispanic
- American Indian or Alaska Native
- Native Hawaiian or Pacific Islander
- Other or prefer not to answer

Page Break

End of Block: Demographics

Start of Block: Milk Attitudes & Norms

In these next questions, when we refer to milk we mean dairy milk -- from a cow.

In general, when you think about drinking milk, how positive or negative is your reaction?

- Extremely negative
- Moderately negative
- Slightly negative
- Neither positive nor negative
- Slightly positive
- Moderately positive
- Extremely positive

In general, how much do you like or dislike drinking milk?

- ○ Dislike a great deal
- ○ Dislike a moderate amount
- ○ Dislike a little
- ○ Neither like nor dislike
- ○ Like a little
- ○ Like a moderate amount
- ○ Like a great deal

In general, how favorable or unfavorable is your view towards drinking milk?

- ○ Extremely unfavorable
- ○ Moderately unfavorable
- ○ Slightly unfavorable
- ○ Neither favorable nor unfavorable
- ○ Slightly favorable
- ○ Moderately favorable
- ○ Extremely favorable

Page Break

How favorable or unfavorable is your view towards pouring milk over breakfast cereal and eating it?

- ○ Extremely unfavorable
- ○ Moderately unfavorable
- ○ Slightly unfavorable
- ○ Neither favorable nor unfavorable
- ○ Slightly favorable
- ○ Moderately favorable
- ○ Extremely favorable

How favorable or unfavorable is your view towards serving milk to others?

- ○ Extremely unfavorable
- ○ Moderately unfavorable
- ○ Slightly unfavorable
- ○ Neither favorable nor unfavorable
- ○ Slightly favorable
- ○ Moderately favorable
- ○ Extremely favorable

Page Break

To what extent do you agree with each of the following?

The people in my life whose opinions I value think milk is good for a person's health.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

The people in my life whose opinions I value think milk should be an important part of my diet.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

The people in my life whose opinions I value would encourage me to drink milk.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

End of Block: Milk Attitudes & Norms

Start of Block: Milk Attributes

How much do you agree with the following statements about milk?

Milk is a good source of protein.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Milk is healthy.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Milk is expensive.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Milk is a good source of calcium.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Milk tastes good.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Page Break

Milk contains fat.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Milk contains chemicals, such as food additives, which may be harmful to me.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Milk is nutritious.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Milk contains hormones, which may be harmful to me.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

End of Block: Milk Attributes

Start of Block: Milk Consumption

We would also like to know if you ever drink milk. If you do not (for medical or personal reasons), it would be helpful for us to know this fact.

Do you, or would you ever, drink milk?

- Yes, I sometime do drink milk or I might drink it if it was available.
- No, under no circumstance do I or would I drink milk.

Display This Question:

If Do you, or would you ever, drink milk? = Yes, I sometime do drink milk or I might drink it if it was available.

If you were to drink milk, what type(s) of milk are you most likely to choose?

- [ ] Whole milk
- [ ] Low fat milk
- [ ] Fat free (skim) milk
- [ ] Lactose free milk
- [ ] A2 milk
- [ ] Other

Display This Question:

If If you were to drink milk, what type(s) of milk are you most likely to choose? = Other

What type of “other” milk would you be most likely to choose?

_____

Display This Question:

If Do you, or would you ever, drink milk? = Yes, I sometime do drink milk or I might drink it if it was available.

How often do you drink milk?

- ○ Rarely
- ○ Monthly
- ○ Weekly
- ○ Daily

Display This Question:

If Do you, or would you ever, drink milk? = No, under no circumstance do I or would I drink milk.

Do you have a medical reason for not drinking milk? (such as kidney disease, lactose intolerance)

- ○ Yes
- ○ No

Display This Question:

If Do you, or would you ever, drink milk? = No, under no circumstance do I or would I drink milk.

Do you have a religious reason for not drinking milk?

- Yes
- No

Display This Question:

If Do you, or would you ever, drink milk? = No, under no circumstance do I or would I drink milk.

Do you have a personal or political reason for not drinking milk? (such as taste/flavor, environmental concerns)

- Yes
- No

How likely or unlikely is it that you will purchase milk in the near future?

- Extremely unlikely
- Moderately unlikely
- Slightly unlikely
- Neither likely nor unlikely
- Slightly likely
- Moderately likely
- Extremely likely

Page Break

End of Block: Milk Consumption

Start of Block: Plant Attitudes & Norms

These next questions ask your opinions on plant-based dairy alternative beverages (such as soy milk and almondmilk).

In general, when you think about drinking plant-based dairy alternative beverages, how positive or negative is your reaction?

- ○ Extremely negative
- ○ Moderately negative
- ○ Slightly negative
- ○ Neither positive nor negative
- ○ Slightly positive
- ○ Moderately positive
- ○ Extremely positive

In general, how much do you like or dislike drinking plant-based dairy alternative beverages?

- ○ Dislike a great deal
- ○ Dislike a moderate amount
- ○ Dislike a little
- ○ Neither like nor dislike
- ○ Like a little
- ○ Like a moderate amount
- ○ Like a great deal

In general, how favorable or unfavorable is your view towards drinking plant-based dairy alternative beverages?

- ○ Extremely unfavorable
- ○ Moderately unfavorable
- ○ Slightly unfavorable
- ○ Neither favorable nor unfavorable
- ○ Slightly favorable
- ○ Moderately favorable
- ○ Extremely favorable

Page Break

How favorable or unfavorable is your view towards pouring plant-based dairy alternative beverages over breakfast cereal and eating it?

- ○ Extremely unfavorable
- ○ Moderately unfavorable
- ○ Slightly unfavorable
- ○ Neither favorable nor unfavorable
- ○ Slightly favorable
- ○ Moderately favorable
- ○ Extremely favorable

How favorable or unfavorable is your view towards serving plant-based dairy alternative beverages to others?

- ○ Extremely unfavorable
- ○ Moderately unfavorable
- ○ Slightly unfavorable
- ○ Neither favorable nor unfavorable
- ○ Slightly favorable
- ○ Moderately favorable
- ○ Extremely favorable

Page Break

To what extent do you agree with each of the following?

The people in my life whose opinions I value think plant-based dairy alternative beverages are good for a person's health.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

The people in my life whose opinions I value think plant-based dairy alternative beverages should be an important part of my diet.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

The people in my life whose opinions I value would encourage me to drink plant-based dairy alternative beverages.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

End of Block: Plant Attitudes & Norms

Start of Block: Attributes - Plant

How much do you agree with the following statements about plant-based dairy alternative beverages?

Soy milk is delicious.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Soy milk is a good source of protein.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Soy milk is a good source of calcium.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Soy milk is a good source of vitamins.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Soy milk is a good source of iron.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Page Break

Soy milk is too expensive.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Soy milk is unnatural.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Soy milk contains chemicals, such as food additives.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Soy milk contains hormones.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Soy milk is not safe to drink.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

How much do you agree with the following statements about almond milk?

Almond milk is a delicious.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Almond milk is a good source of protein.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Almond milk is a good source of calcium.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Almond milk is a good source of vitamins.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Almond milk is a good source of iron.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Page Break

Almond milk is too expensive.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Almond milk is unnatural.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Almond milk contains chemicals, such as food additives.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Almond milk contains hormones.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Almond milk is not safe to drink.

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Page Break

End of Block: Attributes - Plant

Start of Block: Plant Consumption

We would also like to know if you ever drink plant-based dairy alternative beverages, such as soy milk or almondmilk. If you do not (for medical or personal reasons), it would be helpful for us to know this fact.

Do you, or would you ever, drink plant-based dairy alternative beverages?

- Yes, I sometime do drink plant-based dairy alternative beverages or I might drink one if it was available.
- No, under no circumstance do I or would I drink plant-based dairy alternative beverages.

Display This Question:

If Do you, or would you ever, drink plant-based dairy alternative beverages ? = Yes, I sometime do drink plant-based dairy alternative beverages or I might drink one if it was available.

If you were to drink plant-based dairy alternative beverages, what type of beverage are you most likely to choose?

- ☐ Soy
- ☐ Almond
- ☐ Rice
- ☐ Hemp
- ☐ Oat
- ☐ Coconut
- ☐ Other

Display This Question:

If If you were to drink plant-based dairy alternative beverages, what type of beverage are you most... = Other

What type of “other” beverage would you be most likely to choose?

_____

Display This Question:

If Do you, or would you ever, drink plant-based dairy alternative beverages ? = Yes, I sometime do drink plant-based dairy alternative beverages or I might drink one if it was available.

How often do you drink plant-based dairy alternative beverages?

- ○ Rarely
- ○ Monthly
- ○ Weekly
- ○ Daily

Display This Question:

If Do you, or would you ever, drink plant-based dairy alternative beverages ? = No, under no circumstance do I or would I drink plant-based dairy alternative beverages.

Do you have a medical reason for not drinking plant-based dairy alternative beverages? (such as an allergy)

- Yes
- No

Display This Question:

If Do you, or would you ever, drink plant-based dairy alternative beverages ? = No, under no circumstance do I or would I drink plant-based dairy alternative beverages.

Do you have a religious reason for not drinking plant-based dairy alternative beverages?

- Yes
- No

Display This Question:

If Do you, or would you ever, drink plant-based dairy alternative beverages ? = No, under no circumstance do I or would I drink plant-based dairy alternative beverages.

Do you have a personal or political reason for not drinking plant-based dairy alternative beverages? (such as taste/flavor, environmental concerns)

- Yes
- No

How likely or unlikely is it that you will purchase plant-based dairy alternative beverages in the near future?

- Extremely unlikely
- Moderately unlikely
- Slightly unlikely
- Neither likely nor unlikely
- Slightly likely
- Moderately likely
- Extremely likely

Page Break

End of Block: Plant Consumption

Start of Block: Attention Check

The purpose of this question is to ensure that you are completing this questionnaire with intention. Please demonstrate that you have read and understood this question by not making any selection below. All options should remain blank.

- [ ] With meals
- [ ] Between meals
- [ ] Both with and between meals

Page Break

End of Block: Attention Check

Start of Block: Suspicion Probe

Some people worry that the use of “milk” to describe plant-based dairy alternative beverages (such as Silk soy milk, Almond Breeze almondmilk) is confusing to consumers.

Do you agree or disagree that the use of "milk" is confusing to consumers?

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Page Break

You are now done with the survey.

Do you have any thoughts on what we are studying? Any thoughts you have about this study will be helpful to us.

_____
_____
_____
_____

Page Break

End of Block: Suspicion Probe

Start of Block: Debrief

Page Break

End of Block: Debrief