

DISSERTATION

THE IMPACT OF FRONT-OF-PACK NUTRITION CLAIMS ON URBAN NEPALI
CONSUMERS' FOOD CHOICE PROCESSES

Submitted by

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ABSTRACT

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Background. Obesity is a growing health problem worldwide among children and adults, including in many low and middle income countries which are undergoing a nutrition transition. One such country is Nepal, with the highest prevalence of obesity occurring in urban regions and among people of higher socio-economic status (SES). Past research on nutrition transition suggests that an obesogenic food environment contributes to this problem. One aspect of food choice is the influence of marketing on food packaging, including front-of-package nutrition claims (FOP NCs). FOP NCs on food can be both beneficial and confusing for consumers. In one sense, FOP NCs can help consumers more easily identify healthful foods. However, heuristic processing may lead consumers to unduly attribute overall healthfulness to unhealthy food products bearing a FOP NC. Measuring the effects of FOP NCs is challenging because people are poor at judging the impact of environmental cues (e.g., product packaging) on their attitudes and behavior, and consumer factors specific to urban Nepalis may moderate the influence of FOP NCs.

Objective. This study specifically addressed the following research questions: What effects do FOP NCs have on consumers' purchase intentions and attitudes towards food products, specifically healthfulness, appeal, tastiness, quality of manufacturing, and naturalness of ingredients? How might consumer factors moderate these effects? How do Nepali consumers

perceive the trustworthiness and influence of FOP NCs, and what do they report to be their top shopping priorities?

Design. This study utilized a convergent parallel mixed-methods design. An experimental field survey was conducted in two phases. The first phase of this survey measured the impacts of FOP NCs on Nepali consumers' purchase intentions and attitudes towards food products without overtly drawing their attention to the FOP NCs. The second phase measured participants' receptivity by asking them to describe their attitudes towards one FOP NC, and their shopping priorities, broadly speaking.

Participants/setting. Participants were 239 adult shoppers in the Nepali capital Kathmandu ($M_{\text{age}} = 32.89$; $SD = 11.07$). Fifty nine percent were women, 43% reported having one child or more age 12 or younger. Participants were recruited as they exited one of three locations of a *high-income country*-style grocery store (i.e., *Bhat Bhateni*).

Main outcome measures. Participants responded to food product images by rating their purchase intention and seven product attitudes on a 7-point Likert scale. They were also asked to rate one FOP NC on trustworthiness and influence, and then were asked to explain their rating. Finally, they were asked to report their two most important shopping priorities.

Results. Regression analyses showed that FOP NCs had inconsistent influence on product attitudes and purchase intention. Consumer factors did not moderate this relationship. Thematic analysis of open-ended questions found various reasons for trust and skepticism in FOP NCs. FOP NCs were largely described as useful, in spite of their lack of influence on decision-making processes in an externally valid test. Nearly 90% of reported shopping priorities did not appear to motivate the use of FOP NCs.

Conclusions. FOP NC labels did not show a strong or consistent influence on urban Nepali consumers. Therefore, FOP NCs are not likely to be a strong contributor to the nutrition transition that has been occurring in Nepal during recent years. Other influences on dietary decision-making across the life-course should be investigated.

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CHAPTER 1: INTRODUCTION

The goal of this study was to learn whether or not front-of-pack nutrition claims (FOP NCs)—a type of health claim message—are related to more or less healthful food selections by urban Nepali consumers, who are increasingly at risk for obesity.

Nutrition Transition

There has been a troubling increase of non-communicable chronic diseases in the 20th and 21st centuries linked to changing lifestyles, including diet (Popkin, 1998). Obesity—the condition of excess body fat—comes about in part due to diet and lifestyle, and has been linked to numerous health ailments, such as high blood pressure, osteoarthritis and gallbladder disease (Must et al., 1999). In the United States (US), rates of obesity among adults more than doubled between the years 1971 and 2000 (Flegal, Carroll, Ogden, & Johnson, 2002). During that same span of years, the increase in obesity rates for children was more than twice the increase for adult rates (Ogden, Flegal, Carroll, & Johnson, 2002). Again, diet is a primary contributor to obesity and its associated health problems. In the US, people over-consume foods that are high in obesogenic nutrients, such as calories, saturated fat, sodium, and others (Dall et al., 2009).

Obesity is not solely a blight on the U.S. and other developed, high-income countries, but is also a growing health problem in low and middle-income countries (LMICs; Mamun & Finlay, 2015). LMICs have historically dealt more with the problem of under-nutrition among their populations, and the recent phenomenon of rates of under-nutrition being met and surpassed by rates of over-nutrition has been coined by some as *nutrition transition* (Popkin, Adair, & Ng, 2012). In the poorest developing countries, rates of obesity and overweight tend to be higher among people of higher socio-economic status (SES; Monteiro, Moura, Conde, & Popkin, 2004),

and there is currently debate about the extent to which obesity and overweight actually affect the poorer populations within LMICs (Stringhini & Bovet, 2013; Subramanian, Corsi, Subramanyam, & Smith, 2013).

Several mechanisms that could be driving the nutrition transition have been explored. For example, an increase in SES could impact obesity rates vis a vis dietary changes like increased consumption of foods that were formerly cost-prohibited such as prepackaged food and animal fats (Stuckler, McKee, Ebrahim, & Basu, 2012). Alternatively, increasing SES could be associated with higher-wage, more sedentary jobs, and this change in lifestyle then results in increased obesity (Balarajan & Villamor, 2009). Other researchers have noted that increased obesity in urban regions of LMICs could be due to a globalization of the food environment, referring both to the increased importation and exportation of foods in most countries of the world, as well as the proliferation of supermarket chains that provide increased availability of foods with refined carbohydrates and added sugars and fats (Hawkes, 2006). The increased presence and use of supermarkets supports a turn towards the distribution of imported, processed foods with long shelf-lives and reduces shopping in traditional food outlets like public street- or wet-markets (Gorton, Sauer, & Supatponkul, 2011; Stuckler et al., 2012). In addition to increasing imports from multinational food manufacturers, highly processed foods are now able to be produced within LMICs due to foreign investment and wider availability of modern food production technologies (Popkin et al., 2012).

Nutrition Transition in Nepal

Nepal is a developing country that has been specifically categorized as *low-income* by the Economic Research Service (housed within the United States Department of Agriculture) in a report on international food consumption patterns, meaning that Nepal has a real per capita

income less than 15 percent of the US (Muhammad, Seale Jr, Meade, & Regmi, 2011). This suggests that in Nepal, according to the findings of Monteiro et al. (2004), people of high SES should also have the highest rates of obesity; this is because in the poorest countries it is the people of high SES who experience the highest rates of obesity, while in middle-income countries, obesity rates are higher among low SES people.¹ In Nepal, rates of overweight and obesity among women of reproductive age have increased in rural and urban zones between the years 1996-2011 (Balarajan & Villamor, 2009; Kinnunen & Neupane, 2013); rates have grown more in rural zones (from 1.7 to 11.8%), while urban zones have witnessed the highest overall rates (around 27%). These studies have also identified positive correlations between age, wealth, and urban residence with overweight. Interestingly, Balarajan and Villamor (2009) found that in 2006 rates of underweight had only modest reductions in comparison to the larger increase of overweight/obesity rates, suggesting that over-nutrition and under-nutrition represent orthogonally-related social problems.

The connection between overweight/obesity and urbanization in Nepal has been noted elsewhere (Vaidya, Shakya, & Krettek, 2010). Urbanization in Nepal is motivated by economic pressures (Vaidya et al., 2010) and insecurity due to armed-conflict (Basnet, 2011; Crawford et al., 2008). As in other LMICs, urbanization in Nepal is characterized by changes in levels of physical activity, as well as dietary transitions away from locally grown foods in rural settings towards prepackaged foods bought in markets. Moffat and Finnis (2010) have observed an overall reduction of dietary diversity among Nepali children moving from rural to urban Nepal, which can lead to both conditions of under-nutrition as well as an overconsumption of nutrient-poor, high-calorie foods.

¹ Monteiro and colleagues (2004) have noted that the precise mechanisms of this moderated relationship are still not well understood.

The food environment changes are occurring not just for rural Nepalis moving to urban zones, but also for Nepalis already residing in urban zones. Nepal's largest city, Kathmandu, has witnessed the growth of a cultural and economic middle class which has emphasized education, modernization, and participation in the consumer economy (Liechty, 2008). People of this social stratum are more likely to have the financial means and the interest in buying modern, processed foods that are available in developed-country style shopping outlets.

In sum, more Nepalis, especially those living in the urban center of the Kathmandu valley, are experiencing a nutrition transition, which is likely related to increases of overweight/obese in the country. This trend is commensurate with other LMICs, and can be tied to diet and physical activity lifestyles that more and more resemble those found in developed, high-income countries. Given that this study aims to investigate influences on diet, I examine some theoretical frameworks that have sought to organize the investigation of the processes involved in choosing and consuming foods.

Food Choice, Broadly Speaking

The *nutrition transition* that is occurring in many LMICs and which contributes to health problems among those populations is not the result of just one change, but rather a pattern of changes that is occurring at multiple levels of analysis (e.g., the changing biochemical composition of modern foods, distribution chains, and the ecological and individual changes that influence which foods people decide to eat, etc.). While these multidimensional influences on food choice² are quickly noticed by academics from developed, high-income countries who observe them occurring in foreign and changing contexts (like in LMICs undergoing nutrition transitions), these influences are also at work (albeit less obviously) among the populations of

² Sobal, Bisogni, and Jastran (2014) indicate that *food choice* is a term that succeeds in occupying a middle-ground between the various perspectives which have been used to conceptualize how people come to eat the foods that they eat.

developed, high-income nations as well. Put simply, we all have culture, and we all have eating culture.

Food choice models. Theories of food choice are very complex. Some are based in anthropological approaches, such as the Cornell Food Choice Research Group's *Food Choice Process Model* (Connors, Bisogni, Sobal, & Devine, 2001; Furst, Connors, Bisogni, Sobal, & Falk, 1996; Sobal & Bisogni, 2009). In these authors' framework, food choice is the outcome of *influences* (e.g. ideals, food context, social framework, *personal factors*, and *resources*) that impact an individual's *personal system* where values are negotiated (e.g. cost, health, quality and convenience, purchasing strategies, etc.) and strategies are used. This model creates a comprehensive explanatory picture of how experiences and idiosyncrasies result in particular food choices. A study by Glanz, Basil, Maibach, Goldberg, and Snyder (1998) could be said to focus on the personal factors of this model; it investigated which particular value negotiations are most influential on people's preferences³, and whether or not they varied by the influences of personal factors like demographics or lifestyle.

A different team of authors, Booth et al. (2001), provided another framework based on an ecological approach which they used to identify opportunities for behavioral interventions. This perspective differs from the Food Choice Process Model in its ecological focus, specifically describing the influence resultant from the *environment* and *public policy*. In the Food Choice Process Model, these effects would have been subsumed within the *life course* as invisible shapers of a person's experience. And this makes sense; the model was derived from participant interviews, and individuals often lack awareness of the impacts of systemic constraints that are

³ Making value negotiations is a psychological process undertaken by an individual. Some researchers study the characteristics and qualities of foods themselves that are evaluated in this process.

brought about by environmental and policy structures. While these two models differ in perspective, they are both similar in the breadth of their scope.

Doucerein and Fellows (2012) conducted a review of the neuroscience literature on the subject of food choices. They highlighted the most common investigation measures and approaches used in this perspective, and how they differed from those of other perspectives. For instance, they noted that neuroscientists are mostly interested in the actual eating episode and tend to document the food consumed via weighing in the lab or record-keeping by the participants. Marketing, too, is another disciplinary perspective that tries to account for human consumer behavior with an aim of using that understanding to further business aims. As such, studies of the marketing perspective tend to focus on events leading up to and including the purchasing event. These two perspectives are more restricted in focus than the prior models. Confronted with so many competing conceptualizations of food choice, Sobal and colleagues (2014) make the interpretation that these various perspectives may never be able to be integrated due to fundamental differences, but that their concurrent existence and utilization by science can be beneficial.

The scope of food choice in this study. It is important to explicitly locate the scope of this study within the context of knowledge about the influences on human eating behavior. Again, this study seeks to investigate the effect of health claims found on food packages among urban Nepali consumers. My use of an experimental survey to measure how an environmental stimulus might influence a purchasing decision for a food (that will be consumed on a later occasion) is what Sobal et al. (2014) would call the *psychological level* of analysis, or what in the Food Choice Process Model would be described as the *health value* in negotiation with other values within the *personal system*. Doucerein and Fellows (2012) would point out that the food

preference decision precedes the actual eating episode; it is temporally removed from the food consumption episode but is also fundamentally related to it.

The reasons for making explicit the location of the present investigation in the various fields of study are two-fold. First, it is a way to understand sources of variance that my investigation does not measure or even necessarily acknowledge. Doucerain and Fellows (2012) have criticized the food-related decision-making research literature for having too narrow of a focus on the point of decision with less focus on preceding experiences, decisions or systems-variables that also sway down-stream decisions, either by making some alternatives more attractive, or by shaping the field of available choices through a process of circumscription. It is important to keep these sources of variance in the overall food choice system in perspective so as to better understand and appreciate the effect-sizes of the stimuli that we might witness.⁴

Second, within the scope that I have described (i.e., the moment of selecting a food among a set of alternatives), Nepali consumers might appear very similar to consumers in other countries, in terms of coming to a grocery supermarket, selecting foods from store shelves, making purchases, and then eventually eating the food. However, in other levels of the aforementioned frameworks (e.g., childhood experiences, cultural contexts, local staple foods, etc.), Nepali consumers might be very different from consumers from developed, high-income countries.

⁴ In fact, dietary influences like feeding practices during childhood, food availability, and food values are much more powerful determinants of an individual's diet (than, for example, the information presented on the packages of various food options) since these factors may circumscribe and completely rule out the consideration of food options later in life. Interventions at these levels, such as agricultural training and infant nutrition trainings (like those undertaken by non-governmental organizations and other aid organizations) are promising, but their efficacy is not easily evaluated and treatment fidelity can be hard to maintain (Berti, Krusevec, & FitzGerald, 2004; Bhutta et al., 2008). In contrast, interventions (like modified food packages) at the scale of a mass-produced and -distributed food product might result in small individual effects, but their implementation is inexpensive and uniform across all consumers, thus imbuing this research with value.

Food practices and characteristics of the Nepali consumer. Typical food practices in Nepal have changed greatly since Nepal first reopened its borders in 1951. Liechty has described how food preparation and consumption had historically taken place in the home, with women taking the primary responsibility for feeding the household (2005). The alternative of restaurants and street vendors of food began to emerge in Kathmandu in the 1960's and primarily served expatriates. Nepalis of higher caste avoided the establishments due to the perceived vulgarity. In recent decades, however, restaurants have come to be an acceptable venue for dining for Nepalis of all castes, so long as they have the financial means.

Generally speaking, the staple of the Nepali diet is a rice and lentil stew dish known as *daal bhat*, which is eaten once per day or more. Fruits and vegetables are prepared fresh, while the latter are also seasoned and cooked, or pickled. Flat bread made from flour called *roti* is commonly served (Moffat & Finnis, 2010). More expensive items such as cheese and meat are eaten, but served less frequently and reserved for special occasions (Moffat & Finnis, 2010). Teas are common beverages, and rice-based alcohols are brewed in the home and local restaurants (Liechty, 2005; Moffat & Finnis, 2010).

Packaged foods are relatively new. Nepali consumers are less familiar with packaged foods bought in grocery stores as opposed to fresh foods bought in street- or wet-markets (relative to consumers in developed, high-income countries), and as an extension of this, less familiar with marketers' messaging on these food packages. Smith (2013) conducted a study on the dietary changes occurring in the Kathmandu valley of Nepal and notes that foods from developed, high-income countries have only been introduced in the past twenty years. Taking a *bio-cultural* approach, she found that high-income-country-food adoption rates among women in urban Kathmandu were still at only 25% of her sample, and all women still consumed rice daily.

Their likelihood of adopting high-income-country foods was variable based on the social strata to which they belonged, specifically, it was greater among women who were younger, better educated, had a higher income and fewer children, and had membership in a traditionally higher caste. These data begin to tell a story about what eating habits are common among urban Nepali women, and what kinds of specific backgrounds are required to break historical eating patterns.

Nepali consumers have distinct education about nutrition. Another way that Nepali consumers (especially those in rural zones) might differ from their counterparts in developed, high-income countries is the type of nutrition education that they have received. Nepal is a country that is the recipient of much food and nutrition aid due to the high rates of under-nutrition, especially in rural areas. The government of Nepal and international non-governmental organizations (INGOs) have implemented a variety of strategies to combat under-nutrition. Examples include vitamin supplementation campaigns (Fiedler, 2000), nutrition education and behavior change initiatives (Cunningham & Kadiyala, 2013; Government of Nepal National Planning Commission, 2012; McNulty et al., 2013), and promotion of "nutrition-sensitive agriculture" (USAID, 2013). Public information campaigns, as a part of these initiatives, may have created a context in which Nepalis have developed specific food choice strategies (Sobal & Bisogni, 2009) around the vitamins and minerals that were the focus of these campaigns. A result of this could be that the emphasized nutrients (e.g., vitamin A) are more salient to consumers than fat and calorie contents which are more salient in developed, high-income countries where under-nutrition is not a wide-spread problem. Of course, these ideas would be mere addendums to the pre-existing food beliefs in Nepal, some of which were described in a report by Adhikari (2010).

Markets treat Nepali consumers differently. Yet another way that Nepali consumers' situation might differ from that of consumers in developed, high-income countries is the way in which the food market interacts with them. In a literature review of health claim labeling practices within European countries, Lähteenmäki (2013) observed the following interaction between food producers and consumers:

The interest among food manufacturers can be fueled both by the pressure from the public sector to produce "healthier" options and by increased consumer attention to healthy eating. Using health as an important quality criterion in a product assortment may further be exploited as an indication of socially responsible corporate behaviour that looks beyond profit making. Health claims in products try to respond to consumers' interest in health by conveying messages about product-specific benefits that potentially add value to products (p. 196).

This observation portrays food manufacturers as being responsive to consumer attitudes and preferences about products and the company's image. This stance of responsiveness towards consumers is indicative of a *marketing orientation* in the marketplace; in contrast, a *production-orientation* in the marketplace is one where the attitudes and preferences of the consumers are not well-researched or attended to (Perreault Jr, Cannon, & McCarthy, 2011). Instead, suppliers make products available to retailers that are based on factors like surplus. One dynamic that can influence whether or not suppliers in a market are marketing- or production-oriented is whether or not it is a *central* or *peripheral* market. Central markets are those of great importance and priority to companies due to their size and sales potential. Again, this contrasts with a peripheral market, where the size and sales potential is smaller, and so less customer satisfaction efforts are made (e.g., consumer needs are identified and addressed through segmentation).

There is evidence to suggest that the food manufactures that serve the peripheral marketplace of Nepal take a production-orientation. Figure 1.1 shows a food aisle of Nepal's largest food retailer *Bhat-Bhateni*, whose company website states that it has over 750 domestic and international suppliers. In the photo, the shelves are overflowing with imported products,

which could suggest a low demand for them from the local Nepali shoppers.⁵ Nepal receives many imports from India (e.g., food, gasoline, entertainment such as television and music, etc.), and these imports are often not targeted for the Nepali market. Indian television programs are broadcast in Nepal in their original Hindi language, and food products are labeled in English. This constitutes another distinction of Nepali consumers from developed, high-income countries: they face the challenge of being exposed to marketing and products that were not originally intended for them. Instead, the approach of companies selling in this market seems to be that the original strategies created for India are close enough to have success in the Nepali marketplace.

Sheth (2011) has lauded, in part, this approach to doing marketing in emerging markets. He describes how the aforementioned *marketing orientation* (Kohli & Jaworski, 1990) stipulates that marketing efforts can have success when consumer groups are studied and catered to. He posits that key characteristics of emerging markets, such as the central role of unbranded products, makes marketing orientation frivolous, since consumers are as-of-yet uninitiated into the consumer marketplace. He suggests that companies do as they have been doing in Nepal—simply focusing on *market development*—and counting on consumers to become accustomed to the conditions. These goals are not incompatible with the production-orientation.

Taking all of this background into consideration, this study turns a spotlight towards food manufacturers' marketing practices that likely contribute to the nutrition transition in Nepal.

Health Claims

Promises and pitfalls. The food marketplace in Nepal—as in other LMICs—is increasingly resembling that of developed, high-income countries, and along with this transition, marketing and advertising practices of the developed, high-income countries are being adopted

⁵ It might also suggest supply chain inefficiencies or lack of storage in the store. Unfortunately, I was unable to locate published research to explain these aisle conditions.



Figure 1.1. A shopping aisle inside of the central *Bhat-Bhateni* location.

(Popkin et al., 2012; Witkowski, 2007). According to the Advertising Association of Nepal, ad agencies have transformed from minimally-staffed and unreliable outfits into professional organizations that take advantage of the growth in Nepal, over recent decades, of radio, newspapers, television, and internet availability (Bijaya, 2016). This study focuses on health claims that are provided on product packaging, specifically the front of the pack.

Health claims are statements that are meant to link foods with a desired state of health in the minds of consumers (Williams, 2005). Much of the health claim research literature uses a categorization scheme—used by the European Union (EU)—that defines three types of health

claims (Williams, 2005): *nutrition claims*, which describe the actual nutrient composition of the food product; *functional claims*, which specify the benefits of nutrients that are present in the food product; finally, *disease risk reduction claims*, which describe the ways that the food or specific content of the food produces increased health outcomes or reduced disease outcomes. In the U.S. these claims are regulated by the Nutrition Labeling and Education Act (Silverglade, 1996) and in the EU by the European Commission Regulation 1924/2006 (as cited in Wills, Storcksdieck genannt Bonsmann, Kolka, & Grunert, 2012). General regulations for food labeling exist in Nepal (e.g., requiring the labeling of ingredients and expiration dates), as well as the requirement of the 1966 Food Act that, “food products cannot be sold through misleading activities” (as cited in Khalid, 2014). Health claims are not explicitly regulated in Nepal.

Written information about a food’s healthfulness is important because—unlike other food characteristics such as tastiness, shelf-life, or being filling—healthfulness cannot be gauged through immediate experience with the product, and thus can be considered a credence attribute (Darby & Karni, 1973). As explained by Van Herpen and Van Trijp (2011), one role of health claims and other health labeling is to allow consumers to convert the indiscernible credence attribute into a more actionable search attribute (Verbeke, 2005).

On their face, health claims may appear to do a public service by making more healthful foods and beverages more readily identifiable to consumers. However, health claims can also have a more deleterious effect, paradoxically leading consumers to choose less healthful foods. Historically, health claims have sometimes been used to create the image of healthfulness for an objectively unhealthy food product, which could result in a less healthful diet even among people who wish to eat healthfully, such as overconsuming a food that they would normally eat in moderation (Wansink & Chandon, 2006). The precise mechanism by which this erroneous

image creation takes place has been the topic of cognitive psychology research, and is explored below.

Health claims differ from mandated nutrition information in that they typically do not provide exhaustive information about the product's nutrient profile, but rather they emphasize key nutritional features that are meant to appeal to consumers. Several experimental studies have tested these two sources of information on packaging as discrete variables (Ford, Hastak, Mitra, & Ringold, 1996; Keller et al., 1997; Mitra, Hastak, Ford, & Ringold, 1999). In fact, in the US, government regulations which mandate more complete nutrition information on food packages arose in response to irregular health claim practices in the food industry (Garretson & Burton, 2000; Petrucci, 1996). Because of their marketing function, many health claims appear on the front of the pack; in contrast, mandated nutrition information is usually less visually appealing to consumers and is typically found on the back or side of the pack. Now-a-days, government regulations are designed to strike a balance between consumer information and protection, and businesses' need to promote their products (van Trijp & van der Lans, 2007).

Cognitive psychological perspectives. When health claims are recognized and categorized as marketing rather than government-mandated public-service nutrition labeling, their aim can be understood as not expressly to inform but rather to persuade. Psychological literature has explored the mechanisms through which health claims influence consumers to like, purchase, and consume the food products that they are used to promote. Kardes, Posavac, and Cronley (2004) reviewed the cognitive psychological literature about cognitive processes that come into play when consumers are faced with making a purchase decision when information about a product or competing products is unknown. They put forward a 2 x 2 x 2 model (Induction vs. Deduction x Stimulus-Based vs. Memory-Based x Singular vs. Comparative

Judgment), and this judgment taxonomy is useful for determining the mental process that consumers will undertake when they encounter incomplete information about a product. In the case of health claims, the unknown information is the healthfulness of a food product. The fact that this information is unknown or at least hard to discover for the average consumer is supported in two ways. First, as noted by Verbeke (2005), the healthfulness of a food is a credence attribute that is not self-evident and must be determined through some means other than experience such as a nutrition label. However, and towards the second point, studies have shown that comprehension of nutrition labeling is inversely correlated to the amount of information presented (thus, comprehensive labels are less-often understood), and that consumers have a difficult time interpreting nutrition labels that are descriptive rather than evaluative (Kunkel & McKinley, 2007). Additionally, consumers frequently do not use nutrition labels, and objective measures of use (e.g., eye-tracking technology) indicate lower usage than subjective self-assessments (Cowburn & Stockley, 2005; Graham & Jeffery, 2011).

When viewed through the framework of Kardes et al. (2004), health claims can be thought to require *inductive* and *memory-based* judgments. According to the authors, these types of judgments “involve the use of specific cues (price, warranty,...) to draw general conclusions about the benefits that are difficult to assess directly (e.g., quality, reliability, utility),” (2004; pg. 231). Consumers will engage in the use of heuristics to link health claim cues to the general benefit of *healthfulness* via belief storage in memory such as associative networks or storage bins (Wyer & Albarracín, 2005). The automatic inference-making based on the interpretation of one or a few cues is known as heuristic processing, and it is paramount for daily operations and species survival since it allows for greater cognitive efficiency by taking difficult cognitive formulations and making them simpler (Kahneman, 2011).

While using heuristic processing affords many benefits, doing so is also prone to error. In the context of health claims, for example, a package of sugary gummy snacks bearing the health claim *fat free* is at the same time factual and misleading. On one hand, the product does not contain any fat, and on the other hand the product does not contain many nutrients that would make it healthful to eat and is primarily comprised of added sugars, another unhealthy nutrient. The result is that the label *fat free* may lead people to make an incorrect induction that the food is generally healthful, and this specific heuristic is known as the *halo effect* (Ford et al., 1996; Grunert, Scholderer, & Rogeaux, 2011; Nisbett & Wilson, 1977a; Wansink, Sonka, & Hasler, 2004).

Integral to heuristic processing are dual process models, which—as described by Cohen and Babey (2012) in their review of literature about contextual influences on eating behaviors—are important for elucidating how contextual food cues such as health claim labels can influence ultimate decisions at different levels of consciousness. An important finding of dual processing research is that effortful, conscious decisions constitute a minority of our day-to-day decisions, relative to automatic, unconscious decisions (Bargh & Chartrand, 1999), and this finding has been observed in a consumer context (Bargh, 2002) and for food- and eating-based decisions as well (Wansink & Sobal, 2007). The Elaboration Likelihood Model (ELM) (Petty & Wegener, 1999) also states that unless an individual possesses sufficient motivation and ability to engage in effortful processing, then heuristic, peripheral processing is typically used. What is important to note about these automatic decisions based on unconscious responses to environmental cues is that people generally lack insight into them and will often deny the impacts of the environmental cues, even when confronted with contradictory evidence (Nisbett & Wilson, 1977b; Wansink &

Sobal, 2007) and may spontaneously construct alternative explanations for their behavior (Wilson & Nisbett, 1978).

Apart from our brains making unconscious shortcuts, Wansink and Chandon (2006) have pointed out that health claims can lead to unhealthy food choices via more effortful processing. In their study, they report evidence suggesting that health claims about reduced fat and calories lead to less experiences of guilt about purchasing and consuming a food product. In this case, not only did the health claim lead to the purchase of the food product, but also increased serving-size consumption of the product once purchased. The end result was an unintended net increase of fat and calories.

Comprehensive health claim frameworks. Psychological research has described the underlying cognitive principles that guide consumer/health claim interactions. However, there are specific factors that modify the ultimate effect of health claims on consumers' thoughts, attitudes and behaviors. Lähteenmäki (2013), Williams (2005), and Wills and colleagues (2012) have reviewed and identified key findings in the health claim literature. These include variables related to claim factors (having to do with the wording, framing, type of claims, and the specific ingredient or benefit being claimed) and product factors (such as its taste/sensory attributes and the food category's existing image of healthfulness), as well as consumer factors (such as personal relevance, motivation, knowledge, etc.). Wills and colleagues (2012) have offered a conceptual framework for these factors, showing how they influence specific consumer outcomes, such as understanding and attitude towards the claims, attitudes towards the products, as well as purchase intentions and behaviors for products. See Figure 1.2.

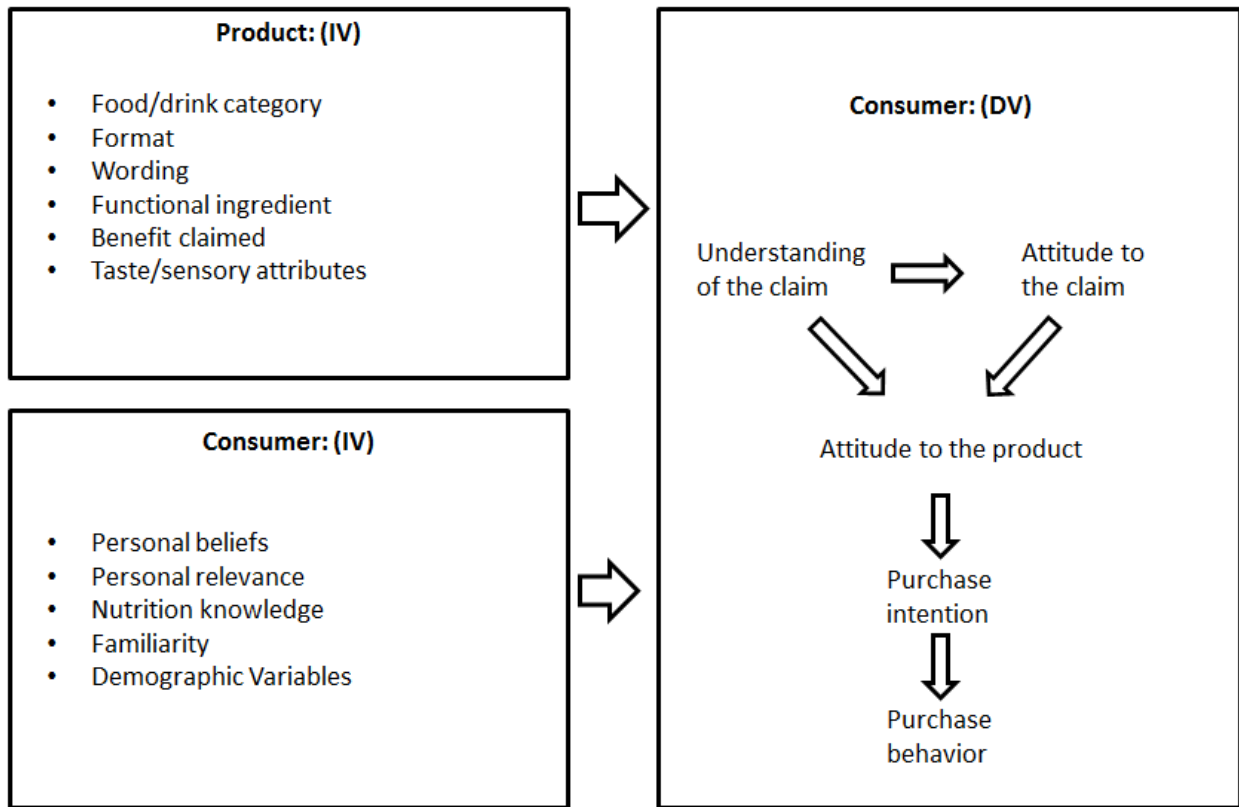


Figure 1.2. “Conceptual framework on how health claims affect consumers.” adapted from Wills et al., 2012.

Factors from the existing model. Studies about health claims were reviewed by Lähteenmäki (2013); Williams (2005), and Wills and colleagues (2012). The findings that are relevant to the present study are listed below.

Product variables. These variables include features of both the product itself and the health claims found on the packaging.

Food/drink category. Health claims are most favorably perceived when the combination of the food/drink category and the functional ingredient seem to be a natural pairing (e.g., yogurt and protein). One consequence of this is people have tended to have a more favorable perception of health claims on food products that are already perceived to be healthful, compared to foods that are not already perceived to be healthful (e.g., chewing gum; Wills et al., 2012;

Lähteenmäki, et al., 2013). However, the specific persuasive impact of different product/nutrient pairings has been shown to vary between countries (Saba et al., 2010).

Health claim format. Studies comparing the efficacy of nutrition claims, functional claims, and disease risk reduction claims have been conducted, and some differed in whether or not the specific functional ingredient was mentioned. In sum, reported findings are sometimes in conflict, with no format clearly preferred over another (Wills et al., 2012). In one study, between-country differences were more sizeable than differences caused by the claim format (van Trijp & van der Lans, 2007).

Wording. In general, less complex and shorter messages (e.g., nutrition claims) are preferred by one class of consumers over more complex and lengthy messages, since they are easier to understand (Williams, 2005). Specifically, a more complex message refers to disease risk reduction claims, which involves explaining the cause and effect dynamic between a nutrient and a disease or disease prevention (Wills et al., 2012). However, there is also another class of consumer that prefers longer, more detailed health claim descriptions, and this distinction among consumers is based on the consumer's familiarity, described below under consumer factors. One compromise between having short and long claim messages that was identified is to provide a short health claim on the front of the package, with a longer explanation on the back of the package (Wills et al., 2012).

Beyond the complexity and length of health claim messages, some consumer groups have shown increased skepticism at the use of qualifying words on claims, such as “could” or “may”, but other consumer groups had negative reactions to absolute, unqualified claims (Williams, 2005).

Functional ingredient and benefit claimed. Familiarity with the functional ingredient and the claimed health benefit increases liking and acceptance for the claim (Wills et al., 2012). This factor is related to the consumer factor of *nutrition knowledge* (since something that is unknown is also unfamiliar) and has been shown to vary across countries (van Trijp & van der Lans, 2007). As noted in the section about food choice models, this may have specific influences on the effects of health claims in Nepal due to government and INGO education campaigns around specific nutrients.

Taste/sensory attributes of the product. Studies show a lack of willingness to compromise taste for healthfulness (Lähteenmäki, 2013; Lyly, Roininen, Honkapää, Poutanen, & Lähteenmäki, 2007; Verbeke, 2005). An exception could be a very health-conscious person.

Consumer factors.

Personal health relevance. People are more affected by health claims that are relevant to a health condition that they have or a loved one has. Specifically, the health claim literature reports that participants are more willing to use products with health claims when the claims refer to topics that are personally relevant to their own health situation (Dean et al., 2012; Lähteenmäki, 2013; Wills et al., 2012). For example, a study by Wong et al. (2013) found that participants who suffer from hypertension rate products bearing low sodium messages as having greater healthfulness and reported a higher purchase intention than participants who do not suffer from hypertension. This makes sense in part under the motivation/goal-directed attention processes discussed below in the section about extending the existing model.

Familiarity with claims. Studies have shown that within experiments participants are more likely to have positive views of health claims and the products that bear them when they have been exposed to health claims in the actual marketplace of their country (Wills et al., 2012).

Additionally, in one cross-country study consumers with greater marketplace exposure were more likely to prefer longer, more detailed claims than consumers with little or no actual marketplace exposure to those claims (Grunert et al., 2009). These studies were primarily conducted in developed-world contexts.

Nutrition knowledge. This consumer factor interacts with the *functional ingredient* product factor described above. Also, since health claims should be considered as memory-based inductions according to the framework proposed by Kardes and colleagues (2004), consumer knowledge about nutrition information (located in memory) is essential for health claims to have the predicted effect.

Demographic variables. Reviews of the literature have pointed out that consumers of older age and being a woman in the developed, high-income context were more likely to prefer food products with health claims as opposed to younger consumers who are men (Lähteenmäki, 2013; Wills et al., 2012). The mechanism for this difference may be that consumers with these demographic characteristics are more likely to have health as a salient motivation (i.e., be more *health conscious*).

Extending the existing model. The existing health claim literature is rich with findings and seems to provide a robust foundation for future research. However, studies have shown cross-country differences for consumers' use and interpretation of health claims (Dean et al., 2012; Saba et al., 2010; van Trijp & van der Lans, 2007; Van Wezemael, Caputo, Nayga, Chryssochoidis, & Verbeke, 2014). For example, Van Wezemael and colleagues (2014) have observed that various health claim wording formats and food pairings are more or less impactful depending on the population in question. Additionally, between-country comparisons in health claim experiments have recorded differences in levels of trust/skepticism towards the claims (van

Trijp & van der Lans, 2007). Given these differences, a lack of empirical data specifically from Nepali consumers means that it is unclear how Nepalis interpret health claims, even though much is known about other developed-world populations. Evidence from Nepal is needed before drawing generalizations from prior research.

While the model proposed by Wills et al., (2012) provides a point of entry for this inquiry, it does not address every factor shown to impact consumers as they interact with food packaging labels on their course towards making a food purchase decision. Some of these overlooked factors are especially relevant in the context of the Nepali consumer and marketplace. Another deficiency about this model is that it does not fully consider the unique personal and cultural contextual factors among Nepalis, which establish upstream influences on their food choice.

Missing from the framework are independent variables such as the product's country-of-origin, the consumer's language skills, ethnocentricity, familiarity with packaged foods, and motivation, which can impact dependent variables such as attitudes toward the claim and attention to the claim, a necessary prerequisite for understanding the claim. These factors should also be considered when attempting to identify the effects of health claims in Nepal. See Figure 1.3 for an expanded version of Wills and colleagues' (2012) model.

Language skills. One important factor in Nepal that is certain to influence the impact of health claims is whether or not there is a match between the language skills of consumers (specifically reading), and the language in which the health claim is written. Nepal does have an official language (Nepali) that is the mother tongue of 48% of the country's population according to a 2001 census (as reported in Yadava, 2007). Despite Nepali's dominance, a multitude of languages are spoken among its various ethnic groups. The number of spoken languages has

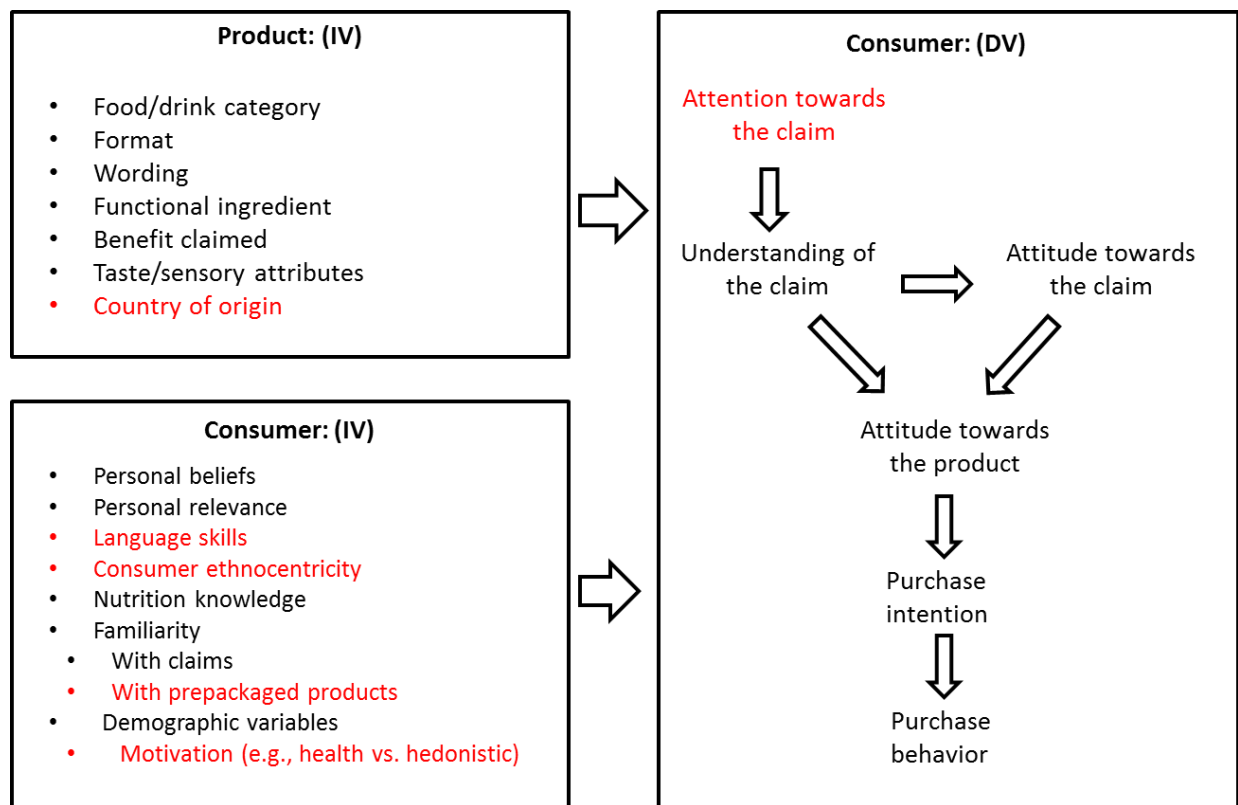


Figure 1.3. “Conceptual framework on how health claims affect consumers.” adapted from Wills et al., 2012 and extended by the author. Author’s contributions are in red.

fluctuated greatly across the past six national censuses, with a low of 17 and a high of 92, and this variation is perhaps due to growing awareness in some ethnic groups of their own within-group diversity (Yadava, 2007). Thus, packages labeled in the Nepali language may not be readable for many Nepali consumers. In addition, multinational corporations often do not localize the branding and labeling of their products for such a small market as Nepal due to its being a peripheral market⁶, and so imported products often are labeled in English. Again, this fact reduces the amount of consumers who might be able to understand the health claims on food packages, which should reduce their overall impact.

⁶ Nepal only has 27 million inhabitants, and households spending on average \$60 USD on foods per month (Biehl et al., 2015)

Packaged product familiarity. I have already referenced literature which has demonstrated that populations who are less familiar with health claims in their normal shopping environment were less accepting of them in experimental studies, compared to populations who had already developed familiarity with health claims over years in their own normal shopping environment. As noted by Sheth (2011), consumers in emerging markets experience a great deal of variance in the products and services that are typical for them. Thus, the consumer's familiarity with health claims is not the only concern, but rather the consumer's familiarity with packaged foods themselves. When the traditional food product format has been an unbranded, bulk food, then it might be that the relative novelty of packaged foods among Nepalis of older age or lower SES could have some interference effect on the impact of health claims, a specific feature of the product. Among Nepali consumers who are more familiar with packaged food products (i.e., younger and of higher SES), however, this effect would likely be less.

Country-of-origin effects and consumer ethnocentrism. These factors can be considered as a product factor and a consumer factor, respectively, with the latter moderating the former (Kinra, 2006). *Country-of-origin* (COO) is an extrinsic product cue (Cordell, 1992), and *COO effects* are the resultant impacts on consumer decision processes and behavior. Research has suggested that consumers may be biased towards products based on judgments of the country-of-origin of a product when they have not had direct experience with it (Kinra, 2006) or if other intrinsic cues are not easily discernible (Elliott & Cameron, 1994). Some countries may benefit from a reputation regarding a specific class of products (e.g., Italian leather goods) while other countries may be categorized as being advanced/developed countries, producing products that are superior in a more global sense. In contrast, countries that are still developing may have a reputation for producing inferior products (Elliott & Cameron, 1994).

Preference for products based on COO is complicated by two factors. The first is the fact that consumers might not be able to reliably recognize the COO of a particular product or brand. (Samiee, Shimp, & Sharma, 2005). This could be due in part to general ignorance of the consumers, but it could also be the result of the fragmentation of the production process across different countries. For example, the design of a product originates in one country, but the components are assembled in another after having been manufactured in a third with raw materials procured from various other countries (Kinra, 2006), the result of which could be that a product can carry associations with several countries. A second, already-mentioned factor is the effect of consumer ethnocentrism, which is a preference for products made in one's own country. Both of these factors complicate the causal relationship between a product's COO and consumers' attitudes towards the product. I posit that to the extent that negative attitudes toward a product and a COO are also intertwined with the company that makes the product, then any health claims put forward by that company on the product will be viewed with negative attitudes (e.g., dislike, skepticism, and lack of perceived utility).

In Nepal, there is a general lack of confidence in governing institutions (Askvik, Jamil, & Dhakal, 2011). One result of this is that Nepali consumers may experience the opposite effect of ethnocentricity—that is, they may be biased *against* products which originate in Nepal, evaluating them more negatively than products from other countries.

Attention and motivation. Attention to the physical health claims was an overlooked aspect of the three previous literature reviews, despite the fact that it has been extensively studied in relation to nutrition content labels (Bialkova & van Trijp, 2011; Graham & Jeffery, 2011; Van Herpen & Van Trijp, 2011; Visschers, Hess, & Siegrist, 2010) and is included in most consumer behavior models (Bialkova & van Trijp, 2011). Attention is fundamental to the influence of

health claims since it mediates between cognitive processes that impact decision-making and exposure to environmental stimuli such as health claims.

Effects of motivation. Bialkova and van Trijp (2011) have noted that attention to features of packaging is the result of both stimulus-driven processes (that is, we attend more to stimuli that stand out in our visual field) and goal-directed processes (that is, we pay attention to information that we are seeking out). The fact that goal-directed processes drive attention means that the motivation of the consumer can influence the attention of the consumer. Some research has described consumers' food shopping motivations as being for either taste-oriented (hedonistic) or health-oriented (Visschers et al., 2010). Studies have shown that participants were more likely to pay attention to nutrition information labels when given a health motivation rather than a hedonistic motivation (Bialkova & van Trijp, 2011; Van Herpen & Van Trijp, 2011; Visschers et al., 2010).

At first glance, the idea of a health motivation may seem contrived; after all, studies have shown that consumers are generally unwilling to compromise taste for health when choosing foods (Lyly et al., 2007; Verbeke, 2005). However, a study conducted by Visschers et al. (2010) presented some interesting results. In their experiment, university student participants were asked to recommend a cereal purchase for either a preschool or for their peer group's university cafeteria. The authors indicate that they intended the preschool condition to be a proxy for a health motivation, and they did indeed find that the participants made different food choices in line with their hypotheses (i.e., making healthier choices for children than their peers). Given this rationale, it could stand to reason that parents of young children may be more likely to take on a health motivation when shopping if their parenthood status is made salient. As noted in an earlier section, it could also be that demographic variables such as being a woman and older age

that are associated with greater effects from health claims could be related to those groups having a higher health motivation, which could result in greater notice of the health claims themselves.

Measuring attention. Some experimental studies (Grunert et al., 2009; Lähteenmäki et al., 2010; van Trijp & van der Lans, 2007; Verbeke, Scholderer, & Lähteenmäki, 2009; Wong et al., 2013) have sought to isolate participants' attitudes towards health claims. Directly measuring attitudes towards a claim via self-report is sub-optimal for two reasons: multiple studies have concluded that people are inaccurate when reporting their own mental and perceptual processes (as summarized by Bargh, 1994), and it assumes attention towards claims in real life. Both of these limitations are discussed below.

People's insight into their own mental processes is limited (Nisbett & Wilson, 1977), and this could include how they perceive the effects of environmental stimuli (e.g., product packaging) on their attitudes and behavior. Given this, alternative measurement approaches (e.g., observing physiological outcomes such as eye movements or brain activity) should be explored when possible.

The second attention-related limitation with measuring attitudes towards the claim using self-report is that the presence of the claim is made overt by discussing it, and in doing this participants' attention might be drawn to the claim in a way that it would not be naturally. We should not assume that consumers are usually aware of and are attending to FOP health claims, given evidence from eye-tracking studies that monitor participants during food selection tasks on a computer monitor, or during mock or real grocery store settings have demonstrated that participants' do not spend much time looking at FOP nutrition information (Graham, Heidrick, & Hodgins, 2015; Graham & Jeffery, 2011). Therefore, experimental studies that make the presence

of a claim overt via its measurement approach risk creating a scenario that is not externally valid—they would not hold true in a real-life shopping scenario.

In conclusion, an experimental paradigm that measures the effect of stimuli without the overt awareness of the participants' results in a more externally valid measure than those that do not and serves as a useful complement to participant self-report.

Purpose of Study and Research Questions

Obesity is increasing in Nepal, with the highest rates occurring in urban regions and among people of higher SES (Balarajan & Villamor, 2009; Monteiro et al., 2004; Vaidya et al., 2010). Past research on nutrition transition suggests that an obesogenic food environment contributes to this problem (Gorton et al., 2011; Hawkes, 2006; Popkin et al., 2012), one aspect of which is food marketing. This study examines the marketing strategy of *health claims* in particular, specifically *front-of-pack nutrition claims* (FOP NCs). FOP NCs have emerged as a marketing technique on processed foods' packages in Nepal, but a lack of research in this market means it is unclear how FOP NCs are interpreted and understood by Nepali consumers. It is also unclear how FOP NCs impact Nepali consumers' attitudes towards food products and their purchasing intentions and behaviors. The purpose of this study is to learn whether or not FOP NCs are related to increased selection of less-healthy packaged snack foods, and by extension to the growing prevalence of obesity among urban Nepalis.

This exploratory, mixed-methods field experiment investigates FOP NC influences among Nepali consumers, and its research questions are based on previous findings observed among other consumer populations worldwide. I have structured this study using the language of *research questions* rather than *predictive, directional hypotheses* because of evidence showing discordant behaviors between other populations, as well as ample evidence suggesting that

Nepali consumers might think and behave differently than other populations. Using a two-phase experimental survey, I set about to probe several aspects of Wills and colleagues' (2012) modified framework discussed above. Specifically, I asked **RQ1**: how do FOP NCs influence urban Nepali consumers' attitudes towards food products, and subsequently behavior intentions towards the snack products that bear them? Secondly, I asked **RQ2**: are FOP NCs rendered more or less effective by consumer factors that have acted as moderators in past studies (i.e., age, sex, education, and being the parent of a young child), or which can be theoretically reasoned to be potential moderators (i.e., ability to understand FOP NC language)? Most product and claim factors were not systematically investigated, with the exception of COO. In **RQ3**, I asked does COO—along with consumer ethnocentricity—weigh on consumer attitudes and purchase intentions towards the products themselves and possibly the FOP NCs featured on the products?

The influence of FOP NCs was measured in the first phase of the experiment, where knowledge of the researchers' interest in the effects of FOP NCs was withheld from the participants. In the second phase of the survey, the participants' attention was directed to the FOP NCs and they were asked to introspect about their thoughts and feelings. In this phase my goal was to ask **RQ4**: what are urban Nepali consumers' self-reported perceptions of FOP NCs' trustworthiness and influence, as well as **RQ5**: what are the shopping priorities that are most important to them when making food shopping decisions?

This present study builds on previous research by structuring the experiment in a more externally valid way with an under-studied population compared to other studies. Specifically, internet-based surveys are a popular research medium for those conducting health claim research presently, but in Nepal regular electricity and internet outages complicate using the internet as a data collection method. For this study, urban Nepali consumers were recruited at grocery stores

where they shop, and it focused specifically on those Nepali consumers who were most likely to naturally encounter FOP NC marketing.

Another research method that is problematic is the overt measurement of attitudes towards FOP NCs, which could create demand characteristics among participants, attract attention that may not have otherwise been given to the claim, or increase likelihood of elaboration, which would trigger increased central processing of the FOP NC compared to a typical real-world shopping task (Orquin & Scholderer, 2015). The study format avoided these complications in two ways. First, I avoided making the FOP NCs overt by not asking participants to comment on their attitudes towards the claims in the first phase of the experiment. Rather, I measured participants' attitudes toward the products in the first phase of the survey, and only asked them to comment about specific attitudes towards a claim in the second phase of the survey. Second, I used real snack products that are available in the Nepali marketplace in order to avoid showing participants peculiar stimuli that may have resulted in participant suspicion and demand characteristics, an approach adopted by Orquin and Scholderer (2015) for studying the Danish population.

All of these strategies—a recruitment strategy tailored to Nepal, avoiding artificially directing attention, and minimizing demand characteristics through use of familiar stimuli—resulted in a study that contributes in an externally valid way to the extant, laboratory-based literature.

CHAPTER 2: METHOD

Participants and Recruitment

We surveyed 239 adult shoppers ($M_{\text{age}} = 32.89$; $SD = 11.07$) in the Nepali capital Kathmandu. Fifty nine percent were women, 43% reported having one child or more at or under the age of 12. Thirty eight percent reported they were primarily responsible for shopping for food for the household and 72.3% had lived in Kathmandu for at least 10 years. Eighty seven percent reported they could read English, which was the language of all front-of-pack nutrition claims (FOP NCs), and 76.6% had completed at least 12 years of education.

Participants were intercepted at three different shopping locations of the well-known “super-store,” *Bhat-Bhateni*, in the Kathmandu Valley. *Bhat-Bhateni* is a developed-country-style, multi-floor center that sells clothing, housewares, electronics, jewelry, sporting goods, etc. The ground floor is dedicated to the sales of packaged foods, fresh produce, cooking supplies, alcohol, and hygiene and cleaning products. One location was the central franchise location in Tangal, 1.5 km from the government center, Dilli Bazaar; 79 participants were surveyed there. The other locations were located in Chabahil near the World Heritage Site Boudanath, and in Krishna Galli, located within 2 km of Patan Durbar Square. 80 participants were surveyed at each of those locations.

We recruited participants as they exited the stores since these consumers would be more likely to have familiarity with prepackaged foods—and thus with FOP NCs—than would rural and urban Nepali consumers who possibly shop exclusively in street markets or *kirana pasal* (corner stores). Additionally, we targeted urban Nepali consumers because nutrition claims are often written in English (especially claims on imported product packages), and urban Nepali

consumers are more likely to have English language education living in Kathmandu than in more remote areas of Nepal.

Three hundred and three consumers were approached to participate in the study and 239 (79%) agreed to complete the interview. Surveys were administered orally, in Nepali, by local research assistants serving as survey administrators. Interviews lasted between 12-15 minutes, on average. No compensation was provided to participants for their time. This study was approved by the Colorado State University Institutional Review Board (ID 003-14H) on January 9, 2014.

Procedures

Participants were approached by Nepali survey administrators (SAs) in an external pedestrian area on the grounds of the three aforementioned *Bhat-Bhateni* locations. Permission to approach customers was sought and given by store managers prior to beginning data collection. SAs described the study and asked if participants would like to participate. If they agreed, additional information was given, and then informed consent was provided verbally. A signature was not requested or obtained from participants since no identifying information was obtained from them. See Appendix C for the English-language versions of the recruitment and verbal consent script. At the conclusion of the survey, a business card was given to each participant for debriefing that listed the Nepal mobile phone number of the first author on one side, and on the other side the message “For information about your rights as a participant you can contact the Colorado State University Institution Review Board Coordinator at [email address]”.

Participants were asked to respond to stimuli in two phases. In the first phase, participants were shown four printed images of snack products bound in a binder. Participants

were asked to hold the binder while the SA recorded the responses on a clipboard. Each stimulus image was either in the experimental condition and displayed an FOP NC, or in the control condition and did not present an FOP NC. The images were counter-balanced so each participant saw two experimental stimuli and two control stimuli. While viewing each image, evaluation items were administered orally by the surveyor in Nepali.

In the second phase of the survey, the SA directed the attention of the participant to the FOP NC that was featured on the final product image. SAs then queried the participant about their understanding of the FOP NC and their attitudes towards it. Finally, the binder was put away and the SA concluded by asking the participant some demographic questions.

This survey was susceptible to several risks that could have affected the quality of the data collected. Those risks were related to the design of the survey and the recruitment and data collection conditions. Those risks—and their solutions—are described below.

First, survey responses were at risk for being contaminated by the participants having prior knowledge of the experimental survey's purpose, or if they observed a previous administration, they might realize that the stimuli conditions were changing. This was a possibility because surveys were administered in an enclosed area where consumers tend to loiter or eat food sold by street vendors. Potential participants could have been observing others complete the survey while they waited. This risk was identified early on in the study design, and so SAs—who worked in pairs—were trained to be strategic in their recruitment strategy. For example, they were instructed to move about the area, rather than moving down a line of chairs where subsequent participants would have been likely to observe prior survey administrations. They were directed not to survey multiple family members, or if they did, the SA team would survey both members concurrently.

A second risk was that the participants might not have been able to read the FOP NCs due to the fact that they are were written in English, and not all Nepali people read English. It was theorized that the presence of an FOP NC could have an unconscious influence on Nepali consumers even if they were not able to read the content of the words if it were to influence them through the peripheral path of persuasion, as theorized in ELM (Petty & Wegener, 1999). However, the difference in the path of influence meant that language ability should be recorded and controlled for. Asking about participants' language ability at the beginning of the survey would risk drawing their attention to the SAs' interest in the FOP NCs. Instead, SAs waited until phase two of the survey to ask each participant if they were able to read the FOP NC toward which we were directing their attention, stating that it was written in English.

Third, it was anticipated that if no significant differences were found between the control and experimental group, then it would be useful to be able to rule out a type 2 error (i.e., a false negative, brought about perhaps by a lack of power)? In this case, the indicated solution was to collect open-ended, qualitative data for each product in order to gauge their self-reported ideas about the FOP NC messages. It was this concern that ultimately led to the mixed-methods study design.

Stimuli and Measures

Food product image stimuli. Stimuli in this study were photographs of four snack food products which, in their original form, featured some kind of FOP NC. The products varied in the number and type of statements shown on FOP NCs. Each FOP NC was written in English, which is common in the marketplace due to the 1970 *Food Rules* regulations of the Nepali government requiring such English-language labeling (Khalid, 2014). See Table 2.1 for a description of the products and their respective FOP NCs.

No functional or disease risk reduction claims were shown, only nutrition content claims. The claims described the presence of vitamins and minerals (e.g., *includes 100% RDA vitamin C*) or a reduced amount of a nutrient that should be consumed in moderation (e.g., *low fat*). For three of the four stimulus products, the experimental condition presented the FOP NC as it originally appeared on the packaging, and the control condition was a digitally modified version of the photograph in which the FOP NC text was completely removed. In a fourth case the original package featured a mascot where the character, via a speech bubble, utters three phrases, “No Spice, Not Fried, Low Fat”. In the experimental condition, the text was altered to only read “Low Fat”, and in the control condition it read “No Spice”.

FOP NCs in this study were tested as a dichotomous variable: either a claim is present or it is not (*FOP NC*; read “FOP NC presence”). Though differences among products and FOP NCs existed which were not systematically varied, the goal of the study was not to investigate the relative effectiveness of the unique presentations of FOP NCs.

Research on health claims has shown that consumers’ reactions to claims vary depending on the specific claim factors (e.g., wording, framing, type of claims, and the specific ingredient or benefit being claimed) and product factors (e.g., taste/sensory attributes and the food category’s existing image of healthfulness; Lähteenmäki, 2013; Wills et al., 2012). Including only nutrient claims in this study, rather than other types of health claims (i.e., benefit claims or disease-risk reduction claims; Williams, 2005) helped to maintain stimulus uniformity across products. Another such step included controlling for the food category of the products, which is important because there have been differences in health claim effectiveness on consumers depending on whether or not the claims made sense for a category of food product (e.g., yogurt compared to chewing gum or raw meat; Lähteenmäki, 2013; Lähteenmäki, et al., 2010). In this

study, all of the food product stimuli were types of less-healthy snack foods and sugar-sweetened drinks and did not include staple foods, cooking ingredients or foods with healthy images.

However, while these steps were taken, there were still substantive differences across the stimulus products. For example, the number of nutrition claims varied across all four products. Additionally, while three of the products had FOP NCs describing the absence or low amount of nutrients that should not be over-consumed, one product (i.e., fruit juice) had an FOP NC describing the abundance of vitamins. Consumers in Nepal may have a more positive reaction to FOP NCs about vitamins because prior studies have shown differences in liking for the functional ingredients depending on how familiar they were to the population (e.g., fats vs. flavonoids; Wills et al., 2012), and in Nepal there is a history of public health education campaigns that have focused on vitamins (Fiedler, 2000; Government of Nepal National Planning Commission, 2012)

According to Hastak and Mazis's (2011) taxonomy of misleading claims, all of the FOP NCs used in this study could be considered to have *interattribute misleadingness* (i.e., a product with *low fat* implies healthy amounts of other product attributes) or *intraattribute misleadingness* (i.e., a product with *low fat* implies that products of the same food category have higher amounts of fat). See Appendix A for the images of all four stimuli in both the experimental and control conditions. See Figure 2.1 for an image of the four products prior to any digital altering.

Stimuli selection process and rationale. The experimental approach adopted for this study took a different focus than previous, related studies. The two most similar studies were

Table 2.1. Details about food products and FOP NCs used as stimuli.

| Food category | Brand | Company | Country of Origin | Experimental Claim | Control Claim |
|---------------------|---------------------|------------------------------------|--|---|--|
| Cheeseballs | Kwik's Cheese Balls | Chaudhary Group | Nepal | <ul style="list-style-type: none"> ▪ Low Fat | <ul style="list-style-type: none"> ▪ No Spice |
| Fruit Juice | Real Fruit Power | Dabur Nepal PVT. LTD. | Company has offices in Nepal and India, but product is manufactured in Nepal | <ul style="list-style-type: none"> ▪ >100% RDA of Vitamin C ▪ 38% RDA of Vitamin A | [none] |
| Biscuit/cookie | Parle Marie | Parle Antarctic Biscuit, PVT. LTD. | Company headquartered in India, but product manufactured in Nepal | <ul style="list-style-type: none"> ▪ Low Fat ▪ Low Sugar ▪ Trans Fat Free | [none] |
| Fried noodle snacks | Bikano Aloo Bhujia | Bikanervala | India | <ul style="list-style-type: none"> ▪ Zero Cholesterol ▪ Zero Trans Fat ▪ Gluten Free ▪ MSG Free | [none] |

Lähteenmäki et al. (2010) and Wong et al. (2013), both of which collected data online rather than in the field.

In my experiment, I chose to use products that already existed in the marketplace. This decision had both benefits and drawbacks. One drawback was that there were several differences across product stimuli. For example, each FOP NC was unique to each product, and so the effects of *FOP NC* were never tested across products. This means that it is impossible to compare the specific influence of claim factors such as ingredients or number of claims, because between-product variance in product attitudes or purchase intention could also be attributable to product factors such as category (e.g., fruit juice vs. cheeseballs). One benefit of these



Figure 2.1. The four snack food products used to make the survey stimuli. Products from left to right are Biscuits (cookies; in front), Bhujia (fried noodle snack), Fruit juice and Cheeseballs.

differences, however, is that we were able to test a variety of presentations in this never-before-studied consumer population.

Another drawback was an increased risk of branding effect (preference for or against a product based on strong attitudes formed from past experiences or messaging rather than the interpretation of the present stimuli, including *FOP NC*). In order to mitigate this drawback, I pilot tested several products found in the Kathmandu marketplace and attempted to include those about which people did not have a strong attitude. My rationale for this approach is based in Fazio's (1990) MODE model, which asserts that strong attitudes can easily be retrieved from long-term memory storage, while weak attitudes cannot be retrieved and thus are created spontaneously in the moment. Because the weak attitudes are created in the moment based on immediate cues, they are more likely to be swayed by environmental influences, and thus the *FOP NC* is more likely to have an effect (Ajzen & Fishbein, 2005).

One exception to the weak-attitude-selection-strategy was the decision to include “Real Juice” brand fruit juice, which suffered from a scandal in recent years of having bugs found in the juice (or perhaps using expired ingredients—both versions of the story were reported to the author by locals). Many people participating in piloting could remember this scandal. However, due to the product’s ubiquity in Nepal, its classification as a sugar-sweetened beverage, and its marketing strategy (wide use of FOP NCs), it was deemed justified to include it in the study.

One observation about biscuits (cookies) is that it was difficult finding a brand of biscuit that featured FOP NCs on the packaging, but that did not also have a brand name that was suggestive of health (e.g., *Digestive*). The use of brand names to induce halo effects was acknowledged by one study, which used brand name as an “implied health claim” manipulation (Orquin & Scholderer, 2015). Biscuit brands’ marketing strategies seemed to fall into one of two categories: decadent biscuits that are very flavorful but are not nutrient-dense (e.g., *Oreos*) or more healthful biscuits. For the biscuit used in this study, we were able to locate a brand of cookie that seemed to fall in the healthful category, but that was not also marketed/branded with the expressed purpose of being healthful.

Noodles were a top candidate food for inclusion in the study, but ultimately were excluded because the packaging of the two biggest brands (i.e., *Wai wai* and *Mayos*) had substantial portions of the front of pack covered with hard health claims (i.e., objectively verifiable) and soft health claims (i.e., not objectively verifiable, for example, *So healthy*; see Williams, 2005 for a discussion of hard vs. soft claims). See Figure 2.2 for an example of the noodle package.

There were benefits to choosing food products that already existed in the Nepali packaged food market. First, participants were likely familiar with the category of food product,

if not the specific brand. Second, it also allowed me to be able to present professionally designed product images, which was useful for keeping the packaging feature that I was most



Figure 2.2. Wai wai noodles, front of pack.

interested in (i.e., FOP NCs) discrete, thereby avoiding demand characteristics among participants. Participants were not aware that two versions of each product existed.

Measures. Data were collected in response to product stimuli using the two-phase experimental survey, and Wills and colleagues' extended model (2012; see Figure 1.3) was used as the theoretical basis. In phase one, Wills and colleagues' dependent-variable constructs (i.e., product attitudes and purchase intentions) were operationalized for the study using single, Likert-style items. In phase two of the survey, understanding of the FOP NC and attitudes towards the FOP NC were probed using single rating items and open-ended questions. Demographic items were also included, some of which served as covariates. A description of the variables and the corresponding items from phase one and two of the survey are found below, followed by an explanation of the translation process. The complete survey can be found in Appendix B.

Variables. *Purchase intention (PI)* for the food product was chosen as the primary outcome construct/variable. It was measured with one 7-point Likert-style response item. This construct is of interest since, in the Theory of Planned Behavior (Ajzen, 1985; Ajzen & Fishbein,

1980), intention to do a behavior directly precedes carrying out a behavior, which was in this case purchasing a food. Presumably, the purchase of a food precedes eating that food.

Attitudes towards the product are constructs that—like *PI*—are consequent of *FOP NC*, and at the same time were theorized by Wills and colleagues to mediate the effect of *FOP NC* on *PI*.

These attitude variables were: *children like it*, *adults like it*, *healthful for children*, *healthful for adults*, *made with natural ingredients*, *quality manufactured*, and *tasty*, and were each measured with single 7-point Likert-style response items.

Covariates were chosen based off of participant factors that have been shown to contribute to explained-variance in product attitudes and *PI* among other populations (i.e., *previous use*), or because they were suspected or shown to moderate the effectiveness of *FOP NC*. These potential moderators were: the ability to *understand the FOP NC* language, *age*, *sex*, *parenthood status*, and *education*. *Education* was not mentioned in health claim reviews as being predictive of health claim use, but it has been found to be a predictor of nutrition label use, a task related to health claims (Cowburn & Stockley, 2005; Drichoutis, Lazaridis, Nayga Jr, Kapsokafalou, & Chrysochoidis, 2008; Satia, Galanko, & Neuhouser, 2005). *Age*, *sex* and *parenthood status* are broadly thought to moderate the efficacy of *FOP NC* due to differences in health motivation (i.e., it would be higher among women, older adults, and parents). The ability to *understand the FOP NC* language and *education* should moderate the influence of *FOP NC* on consumers since they are necessary for comprehension of the *FOP NC*s. To test these potential moderators, interaction terms were created between the covariates and *FOP NC*. A moderation relationship between *FOP NC* and *previous use* of the product category was not investigated since there was no theoretical basis for doing so. However, *previous use* was included as a

control variable since prior behavior is a strong predictor of future behavior (Ouellette & Wood, 1998; Verplanken & Orbell, 2003).

In phase two of the study, SAs pointed directly to the FOP NC and asked respondents about their comprehension of the written claims (i.e., *Can you read it? It is written in English. and What does it mean?*)⁷. Next, respondents were asked to rate the perceived trust and influence of each FOP NC on a 7-point Likert scale item and then to explain why they gave that rating. Those questions were *How true is this message? Please rate it.* and *How much does this influence whether or not you buy a product? Please rate it.* Next, respondents were asked to report on what they believe drives their purchasing decisions (i.e., *What is one important factor for whether or not to buy a food product? What is another important factor for whether or not you buy a food product?*). Finally, respondents answered demographic questions. See Appendix B for the full English-language version of the survey.

Measure development. Previous research examined a variety of product attitudes in the course of investigating the influence of health claims. To discern which product attitudes to measure in this study, I looked to the study by Lähteenmäki and colleagues (2010). This study identified and measured intrinsic (appealing, tasty, healthful, natural) food cues, which are characteristics of the product that are used to evaluate the product's overall appeal. Each food cue represents a discrete domain, and therefore should be tested individually, rather than as a scale measure. In addition, these product evaluation items were prefaced with a control statement that was adapted from Wong and colleagues' study (2013). The original item read, "*assume that this product costs the same as others like it,*" and adapted it for my survey to read, "*don't think about/ignore the cost.*" Regarding phase two of the survey, the studies by van Trijp

⁷ Participants' interpretations of the FOP NCs are not included in this analysis, since many responses are simple paraphrases; these responses were primarily used to code a covariate "ability to understand FOP NC language" for phase one of the survey.

and van der Lans (2007) and Wong and colleagues (2013) led me to consider different variations of open-ended questions that could be asked about label understanding.

Cultural and linguistic translation of the measure. The article by Kohrt and colleagues (2011) served as a guide to critique different parts of the survey, from the visual appearance of the Likert point-scale, to whether or not the constructs that I wanted to ask about were local or developed-country constructs. In this case, this meant determining if Lähteenmäki and colleagues' (2010) intrinsic food cues (healthful, tasty, natural) had directly equivalent meanings in Nepal. What I found through pilot testing with key informants (local SAs and Nepali language instructors) was that *natural* as a stand-alone term did not make clear sense in Nepali. Instead, I received feedback that *made with natural ingredients*—an iteration of the idea—was much clearer in Nepali. Second, through pilot testing people's reactions to stimuli, I learned that the product's origin (e.g., Nepal vs. India) was salient to Nepali consumers because it stood as a marker of the quality of its manufacturing process. Food made in India was anecdotally reported to be more hygienic, better packaged, and crunchier/fresher. Due to this finding, I added *quality* as an intrinsic food cue to Lähteenmäki and colleagues' other food cues. Later, *quality* was transformed into the more specific *quality manufactured*.

Aside from the conceptual equivalency of the items, the linguistic fit of the survey format was assessed. This happened during the forward-translation, back-translation, and harmonization processes (Wild et al., 2005), which were facilitated by the first author and executed by a Nepali research assistant and a Nepali language teacher/author. To aid in his contribution to this process, the first author engaged in 20 hours of Nepali language study.

In the translation of the instrument from English to Nepali, a Likert point-scale rating system was maintained, and a wedge graphic was added to each visual stimulus to assist

participants with understanding the gradually increasing gradient (see Appendix A). Another issue was that the anchors of the Likert point-scale (i.e., *not at all* to *extremely*) had to change slightly depending on the structure of the question, because Nepali requires that these anchors include a verb, whereas English does not. Therefore, the items containing the phrase “*is liked by...*” required a different verb in the anchors than the statements about general adjective descriptions of the product (e.g., *healthful*, *tasty*). The possible confusion that anchoring different items with different verbs may have caused among participants was alleviated by the verbal administration of the survey.

Data Analysis

This study adopted a mixed methods approach known as a *convergent parallel design* (Creswell & Plano Clark, 2011). In this approach, both qualitative and quantitative data are collected concurrently, analyzed separately, and then brought together so that they may both contribute to the interpretation and final conclusion of the research study. Within this dissertation document, these analyses are divided among three chapters. The first and second Results chapters (*Manuscript One* and *Manuscript Two*, respectively) contain publication-ready manuscripts, whose Results sections collectively communicate the results of this study, but whose Background, Method, and Discussion sections are redundant with other chapters in this document. The third Results chapter, entitled *Additional Analyses*, describes analyses that are outlined in this methods section but for which there was not enough space to include in one of the two manuscripts to be submitted for publication. The organization and description of the analyses are detailed below. Here I enumerate research questions (RQs) taking into account the entire breadth of the study. Within Manuscripts One and Two, the RQ enumerations may vary.

Manuscript One. This manuscript presents the investigation of two central RQs. I asked **RQ1:** do FOP NCs influence attitudes towards snack food products, and subsequently behavior intentions towards the food products that bear them?; and, **RQ2:** Are FOP NCs rendered more or less effective by consumer factors? In the Discussion section, results of the thematic analyses described in Manuscript Two are integrated with the immediate quantitative findings for the purpose of deeper meaning-making. This integration of results provides a full representation of the *convergent parallel design* (Creswell & Plano Clark, 2011). The following sub-sections contain a more detailed description of the analytical approaches to RQ1 and RQ2.

Research Question 1. The first research question focuses on the effects of *FOP NC* on Nepali consumers' attitudes and purchase intentions towards the products bearing the FOP NCs. A mediation model was indicated because purchasing intentions are *downstream* of the product attitudes in Wills and colleagues' (2012) model. Additionally, in the Theory of Planned Behavior (Ajzen, 1985; Ajzen & Fishbein, 2005), attitudes towards behaviors are antecedent to purchase intentions, which immediately precedes a behavior being carried out. See Figure 2.3 for the theoretical model being tested. In this model, $Y=PI$, $X=FOP\ NC$, $M=Product\ attitudes$ (i.e., *children like it, adults like it, healthful for children, healthful for adults, made with natural ingredients, quality manufactured, tasty*), Covariates (C; not pictured) = *previous use* of the product category in the past four weeks, ability to *understand FOP NC* language, *age, sex, and education*.

Past research with other consumer populations has shown that different food product/functional ingredient combinations have different impacts on claim and product evaluations. Because no research on the effect of FOP NCs has yet been done in Nepal, these idiosyncratic preferences are unknown. Therefore, each snack food product will be tested

separately rather than all of them in aggregate. This approach of using four snack food products was not adopted in order to conduct between-products comparison, but simply to take a broader view of the market in which Nepali consumers are making purchases.

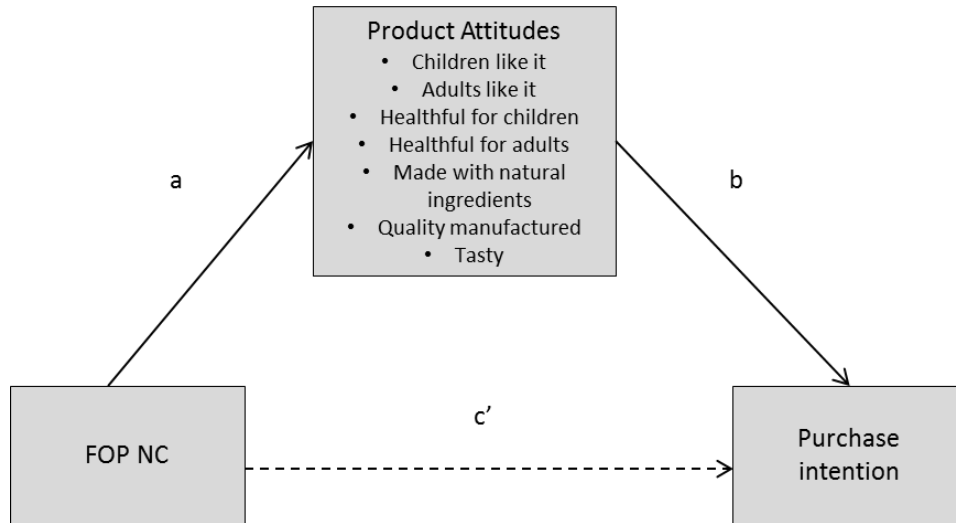


Figure 2.3. Conceptual model for associations between the *FOP NC* (X) and *purchase intention* (Y) towards the product which are direct (c') or mediated through the attitudes toward the products (M) bearing the FOP NCs (ab). Covariates are not pictured.

Research Question 2. The second research question takes the model from RQ1 as a starting point (Y, X, M, and C remain the same), but also tests for the presence of a moderation effect of specific participant characteristics using a conditional process model (Hayes, 2013). This is done by adding interaction terms (e.g., *FOP NC x age*) to the statistical model. Specifically, these potential moderators were *the ability to understand FOP NC language, age, sex, and education*. See Figure 2.4. *Parenthood status* was excluded from this analysis for reasons discussed later, but is discussed in the Additional Results chapter.

Integrating findings. As prescribed by the convergent parallel design, at the conclusion of this manuscript the quantitative findings presented in Manuscript One is examined in light of the qualitative results from RQ4 and RQ5 reported in Manuscript Two.

Scenarios in which insights from qualitative findings would be useful are cases of a non-significant result or an inconsistent statistical result in the mediation or conditional process models. In these cases, the self-reported experiences and attitudes could help to shed some light

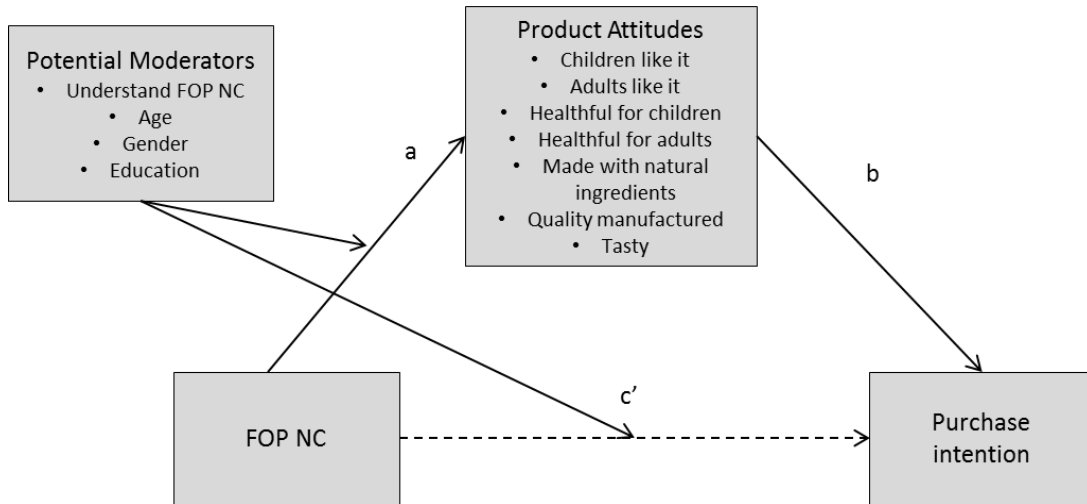


Figure 2.4. Conceptual Model for the potential moderating influence of consumer factors on the direct effect of FOP NC on purchase intentions towards the product (c') and on product attitudes mediated through the attitudes toward the products bearing the FOP NCs (ab).

on participants' decision-making process. Their reports might suggest a type two error for the quantitative analyses (false negative). Alternatively, the reports might suggest that FOP NCs function distinctly among urban Nepali consumer population, compared to consumers from previous studies on whom this model is based.

Manuscript Two. In Manuscript Two we ask, **RQ4:** what are urban Nepali consumers' self-reported perceptions of FOP NCs' trustworthiness and influence on snack food purchase decisions? as well as **RQ5:** what are urban Nepali consumers' shopping priorities when making food purchasing decisions? These attitudes and priorities are important to understand because if FOP NCs are viewed as untrustworthy or useless then consumers will not make use of them. Similarly, if FOP NCs are viewed by consumers as irrelevant to their shopping priorities, then again the consumers will not use them.

Data analysis procedures used to answer these questions primarily utilized the open-ended response data that were collected in the second phase of the survey, when participants' attention was directed to the FOP NCs and participants were asked to introspect about their thoughts and feelings. One important contrast between phase one and phase two of the survey is that while each participant reported product attitudes and *PI* for each of the four products, they only reported their introspected thoughts and feelings about one of the four FOP NCs (whichever was the final product stimulus to be shown, which was counter-balanced); therefore, data were collected from only one quarter of the participants for each specific FOP NC.

Research Question 4. This research question focuses on describing the effects of FOP NCs that the participants were able to introspect. Specifically, these were: a) how much do Nepali consumers report trusting in FOP NCs?; and b), how much do Nepali consumers report that FOP NCs influence their snack food purchasing decisions? Responses to these questions took two forms: a 7-point Likert scale rating response and an open-ended response to explain why they had given that rating.

The open-ended response items explaining the ratings about the trustworthiness and perceived influence on purchasing decisions of FOP NCs were analyzed by a three-person team (all US-born) using a constant-comparative thematic analysis (Braun & Clarke, 2006; Fram, 2013). Although many qualitative analyses are situated in a constructionist/interpretivist paradigm, the epistemology of the thematic analysis is based in a post-positivist paradigm⁸, as it is a part of a broader study that is firmly post-positivist (Willis, 2007). inductive analytic approach was indicated because we were not able to locate earlier research for this population that outlines the most salient thoughts around the topic of FOP NCs. The specific analysis

⁸ In this paradigm, the researcher—while striving to have awareness of his/her biases—seeks to discover objective truths (Willis, 2007).

procedure was to first immerse ourselves in the data and then begin grouping similar responses into themes to form a tentative coding scheme. From there, we executed an iterative process in which we applied the coding scheme to sub-sections of the data set and then modified it for fit with each pass until we had created a coding scheme that achieved a best fit for the complete dataset. Upon finalizing the coding scheme, two coders independently applied the finalized version of the coding scheme to all of the participants' responses. Afterward, the two coders met and reached consensus on their coding application by discussing any discrepancies. Based on the application of the coding structure, we were able to report on the frequencies of each of the codes by counting their occurrences in my dataset, what Onwuegbuzie and Leech (2004) called *quantatization*, where the “*what becomes how much*”.

Responses to the rating items were also reported. When reporting each theme, the mean score and standard deviation for the rating items are reported for the sub-set of respondents whose responses were coded with the given theme. T-tests comparing the mean rating scores for clusters of themes were also conducted in order to test if the ratings would support the themes. Themes were grouped according to those that would logically garner higher or lower trust or perceived influence ratings, and differences were predicted to exist.

Research Question 5. This research question focuses on describing what do Nepali consumers report to be their top shopping priorities? Data were collected using the following two questions: *What is one important factor for whether or not to buy a food product? What is another important factor for whether or not you buy a food product?* The analytical approach of the three-person team changed slightly from the previous research question. After the coding teams' initial stage of immersing themselves in the data, the lead coder observed similarities between the responses and the *food choice values* (FCV) taxonomy presented in the Cornell

Food Choice Research Group's *Food Choice Process Model* (Connors et al., 2001; Furst et al., 1996; Sobal & Bisogni, 2009). This model was based on semi-structured interviews conducted with grocery shoppers in central New York state, U.S.A. about various food choice issues. This taxonomy seemed appropriate for our questions about purchasing-decision influences since "FCVs are often posited to be the proximal influence on food choice conveying the effects of more distal determinants." (Lyerly & Reeve, 2015; p. 47). FCVs have also been acknowledged to vary by cultural and economic context (Sobal & Bisogni, 2009), and so we expected that we may find novel responses within our Nepali consumer-generated dataset. Therefore, we used the FCVs as an a priori coding scheme and then expanded the scheme using the iterative constant-comparative thematic analysis. After concluding this phase, consensus coding and quantatization was undertaken just as in RQ4.

Additional results. The third results chapter, entitled *Additional Results*, describes analyses that are outlined in this methods section, but which were not included in the two manuscripts due to space restrictions. Specifically, in a continuation of RQ2, the chapter describes the rationale for excluding the covariate and potential moderator *parenthood status* from this analysis due to missing data complications. The chapter also describes how the conditional process model might have looked if parent status had been included. That model also includes a *post-hoc* analysis of an *FOP NC x Previous Use* interaction term for the effect of *FOP NC* on *PI*.

This chapter also discusses **RQ3**: does country-of-origin (COO)—along with consumer ethnocentricity—weigh on the attitudes and purchase intentions towards the products themselves and possibly the FOP NCs? This RQ is investigated in the light of quantitative and qualitative

findings but was not included in the publication manuscripts because the design of the study did not allow for testing it in a sound way.

Finally, the Additional Results chapter discusses whether or not the quantitative ratings of *FOP NC trustworthiness* and *perceived influence* might be predictive of *PI*, and whether or not another 7-point Likert rating of *liking of product company* is predictive of *PI*. The methodology of these analyses is described in greater detail inside the results chapter, and this is due to the fact that issue of methodology is the primary reason the analyses are not strong enough to be submitted for publication. In a way, the methodology is the result to be scrutinized.

CHAPTER 3: RESULTS MANUSCRIPT 1

Synopsis

Background. Obesity is a growing health problem worldwide among children and adults, including in many low and middle income countries which are undergoing a nutrition transition. One such country is Nepal, with the highest prevalence of obesity occurring in urban regions and among people of higher SES. Past research on nutrition transition suggests that an obesogenic food environment contributes to this problem. One aspect of food choice is the influence of marketing on food packaging, including front-of-package nutrition claims (FOP NCs). FOP NCs on food can be both beneficial and confusing for consumers. In one sense, FOP NCs can help consumers more easily identify healthful foods. However, heuristic processing may lead consumers to unduly attribute overall healthfulness to unhealthful food products bearing a FOP NC. Measuring the effects of FOP NCs is challenging because people are poor at judging the impact of environmental cues (e.g., product packaging) on their attitudes and behavior, and consumer factors specific to urban Nepalis may moderate the influence of FOP NCs.

Objective. This study specifically addressed the following research questions: What effects do FOP NCs have on consumers' purchase intentions and attitudes towards snack food products, specifically healthfulness, appeal, tastiness, quality of manufacturing, and naturalness of ingredients? How might consumer factors moderate these effects? How do Nepali consumers perceive the trustworthiness and influence of FOP NCs, and what do they report to be their top shopping priorities?

Design. This study utilized a convergent, parallel mixed-methods design. An experimental field survey was conducted in two phases. In the first phase of this survey measured the impacts of

FOP NCs on Nepali consumers' purchase intentions and attitudes towards snack food products without overtly drawing their attention to the FOP NCs. The second phase measured participants' receptivity by asking them to describe their attitudes towards one FOP NC, and their shopping priorities, broadly speaking.

Participants/setting. Participants were 239 adult shoppers in the Nepali capital Kathmandu ($M_{\text{age}} = 32.89$; $SD = 11.07$). Fifty nine percent were women, 43% reported having one child or more at or under the age of 12. They were recruited as they exited one of three locations of a *high-income country*-style grocery store (i.e., *Bhat Bhateni*).

Main outcome measures. Participants responded to product images by rating their purchase intention and seven product attitudes on a 7-point Likert scale. They were also asked to rate one FOP NC on trustworthiness and influence, and then were asked to explain their rating. Finally, they were asked to report their two most important shopping priorities.

Results. Regression analyses show that FOP NCs had inconsistent influence on product attitudes and purchase intention. Consumer factors did not moderate this relationship.

Thematic analysis found various reasons for trust and skepticism in FOP NCs. FOP NCs were largely described as useful, in spite of their lack of influence on decision-making processes in an externally valid test. Nearly 90% of reported shopping priorities did not appear to motivate the use of FOP NCs.

Conclusions. FOP NC labels did not show a strong or consistent influence on urban Nepali consumers. Therefore, FOP NCs are not likely to be a strong contributor to the nutrition transition that has been occurring in Nepal during recent years. Other influences on dietary decision-making across the life-course should be investigated.

Introduction

Obesity is increasing in Nepal, with the highest rates occurring in urban regions and among people of higher SES (Balarajan & Villamor, 2009; Monteiro et al., 2004; Vaidya et al., 2010). Past research on nutrition transition suggests that an obesogenic food environment contributes to this problem (Gorton et al., 2011; Hawkes, 2006; Popkin et al., 2012), one aspect of which is food marketing. This study examines how attitudes and intentions related to food choice are potentially impacted by the marketing strategy of *health claims*, specifically *front-of-pack nutrition claims* (FOP NCs).

Background

What are health claims and FOP NCs? Health claims are statements that are meant to link foods with a desired state of health in the minds of consumers (Williams, 2005). According to the categorization scheme adopted by the European Union, one sub-type of health claims is *nutrition claims*, which describe the actual nutrient composition of the food product.

Health claims differ from mandated nutrition information in that they typically do not provide exhaustive information about the product's nutrient profile, but rather they emphasize key nutritional features that are meant to appeal to consumers. Several experimental studies have recognized this and tested these two sources of information on packaging as discrete variables (Ford et al., 1996; Keller et al., 1997; Mitra et al., 1999). Because of their marketing function, many health claims appear on front-of-pack (FOP); in contrast, mandated nutrition information is usually less visually appealing to consumers, and is typically found on the back- or side- of-pack. Presently, government regulations are designed to strike a balance between consumer information and protection, and businesses' need to promote their products (van Trijp & van der Lans, 2007). In the U.S. health claims are regulated by the Nutrition Labeling and

Education Act (Silverglade, 1996) and in Europe by the European Commission Regulation 1924/2006 (as cited in Wills, Storcksdieck genannt Bonsmann, Kolka, & Grunert, 2012) ¹³.

Health claims are not explicitly regulated by the Nepali legal code (Khalid, 2014).

Why might health claims be a problem? Written information about a food's healthfulness is important because—unlike other food characteristics such as tastiness, shelf-life, or being filling—healthfulness cannot be gauged through immediate experience with the product, and thus can be considered a credence attribute (Darby & Karni, 1973). As explained by Van Herpen and Van Trijp (2011), one role of health claims and other health labeling is to allow consumers to convert the indiscernible credence attribute into a more actionable search attribute (Verbeke, 2005).

On their face, health claims may appear to do a public service by making more healthful foods and beverages more readily identifiable to consumers. However, health claims can also have a more deleterious effect, paradoxically leading consumers to choose less healthful foods. Historically, health claims have sometimes been used to create the image of healthfulness for an objectively unhealthy food product (e.g., processed snacks), which could result in a less healthful diet even among people who wish to eat healthfully (Wansink & Chandon, 2006).

This erroneous image creation takes place because health claims require *inductive* and *memory-based* judgments (Kardes et al., 2004) which “involve the use of specific cues...to draw general conclusions about the benefits that are difficult to assess directly (e.g., quality, reliability, utility),” (2004; pg. 231). Consumers will engage in the use of heuristics to link health claim cues to the general benefit of *healthfulness* via belief storage in memory such as associative networks or storage bins (Wyer & Albarracín, 2005). The automatic inference-making based on the interpretation of one or a few cues is known as heuristic processing.

Conscious or unconscious influence? Integral to heuristic processing are dual process models, which are important for elucidating how health claim labels can influence ultimate decisions at different levels of consciousness (Cohen & Babey, 2012). An important finding of dual processing research is that effortful, conscious decisions constitute a minority of our day-to-day decisions, relative to automatic, unconscious decisions (Bargh & Chartrand, 1999), and this finding has been observed in a consumer context (Bargh, 2002), and for food- and eating-based decisions as well (Wansink & Sobal, 2007). The Elaboration Likelihood Model (ELM; Petty & Wegner, 1999) also states that unless an individual possesses sufficient motivation and ability to engage in effortful processing, then heuristic, peripheral processing is typically used. What is important to note about these automatic decisions based on unconscious responses to environmental cues is that people generally lack insight into them and will often deny the impacts of the environmental cues, even when confronted with contradictory evidence (Nisbett & Wilson, 1977b; Wansink & Sobal, 2007) and may spontaneously construct alternative explanations for their behavior (Wilson & Nisbett, 1978). Based on these findings, it can be concluded that consumers may be influenced by health claims even when they are not consciously aware of it.

Past research findings on health claims. Lähteenmäki (2013); Williams (2005), and Wills and colleagues (2012) have reviewed and identified key findings in the health claim literature. These reviews have described how factors related to consumer decision-making (i.e., understanding of and attitudes towards health claims, attitudes towards products, and purchase intentions) are influenced by complex interactions among claim factors (i.e., wording, framing, type of claims, and the specific ingredient or benefit being claimed) and product factors (like its taste/sensory attributes and the food category's existing image of healthfulness), as well as

consumer factors such as personal relevance, motivation, knowledge, and demographic categories. Wills and colleagues (2012) have offered a conceptual framework for these factors, showing how they influence specific consumer outcomes, such as understanding of and attitude towards the claims, attitudes towards the products, as well as purchase intentions and behaviors for products. See Figure 3.1. These reviews summarize studies that were conducted largely in Europe and North America.

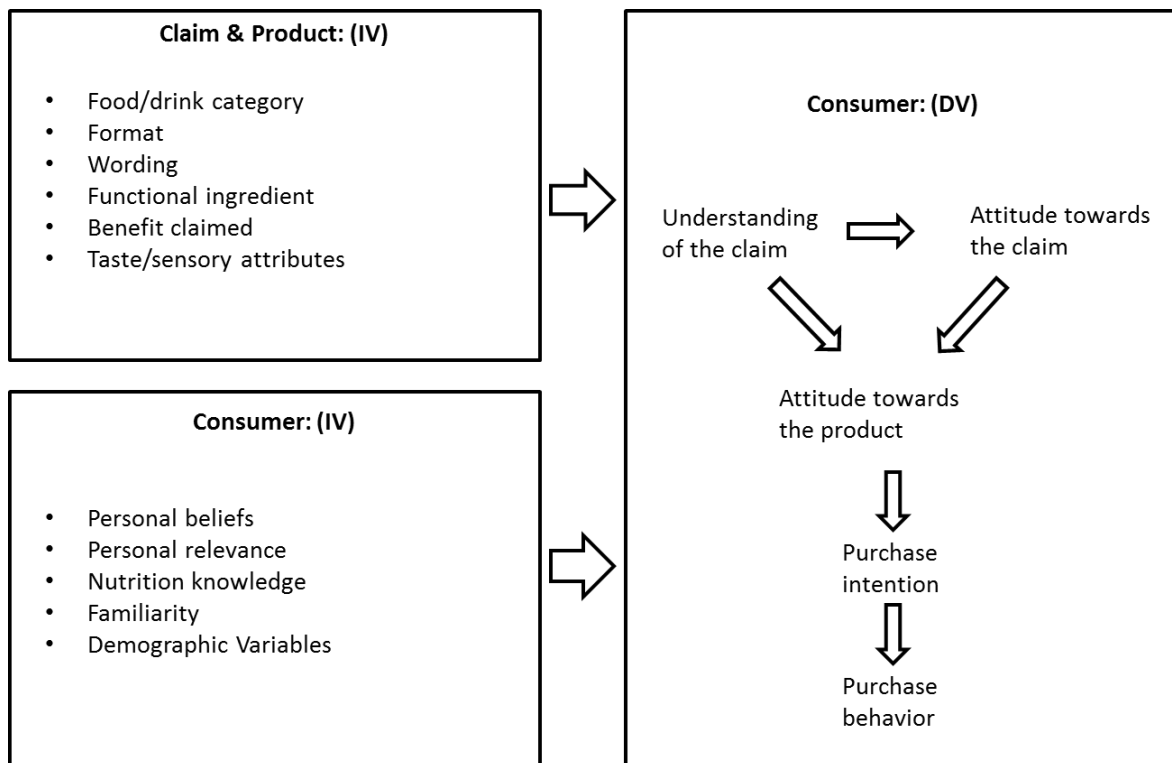


Figure 3.1. “Conceptual framework on how health claims affect consumers.” adapted from Wills et al., 2012.

Attention and health claims. Attention was an overlooked aspect of the three previous literature reviews, despite the fact that it has been extensively studied in relation to nutrition content labels (Bialkova & van Trijp, 2011; Graham & Jeffery, 2011; Van Herpen & Van Trijp, 2011; Visschers et al., 2010) and is included in most consumer behavior models (Bialkova & van Trijp, 2011). Attention is fundamental to the influence of health claims since it mediates

between exposure to environmental cues or stimuli (such as health claims) and cognitive processes that impact decision-making.

Bialkova and van Trijp (2011) have noted that attention to features of packaging is the result of both stimulus-driven processes (that is, we attend more to stimuli that stand out in our visual field) and goal-directed processes (that is, we pay attention to information that we are seeking out). The fact that goal-directed processes drive attention means that the motivation of the consumer can influence the attention of the consumer. Some research has described consumers' food shopping motivations as being for either taste-oriented (hedonistic) or health-oriented (Visschers et al., 2010). Studies have shown that participants were more likely to pay attention to nutrition information labels when given a health motivation rather than a hedonistic motivation (Bialkova & van Trijp, 2011; Van Herpen & Van Trijp, 2011; Visschers et al., 2010). This increased effect of health claims based on health motivation could explain why demographic variables such as being a woman and older age are associated with greater effects from health claims—those groups could have a higher health motivation, which would result in more noticing of the health claims themselves.

Generalizing health claim research. Two issues emerge that warrant caution against applying the findings of extant health claim research literature to new consumer populations, such as urban shoppers in Nepal. One is the generalizability of lab-based studies to naturalistic shopping situations, and the other is the diversity of findings across consumer populations.

Many of the findings detailed in the preceding reviews are drawn from experimental studies which have sought to isolate participants' attitudes towards health claims (Grunert et al., 2009; Lähteenmäki et al., 2010; van Trijp & van der Lans, 2007; Verbeke et al., 2009; Wong et al., 2013). Directly measuring attitudes towards a claim via self-report is sub-optimal for two

reasons: studies have concluded that people are inaccurate when reporting about their own mental and perceptual processes (as summarized by Bargh, 1994), and it assumes that people pay attention to claims in real life. Both of these limitations are discussed below.

People's insight into their own mental processes is limited (Nisbett & Wilson, 1977), and this could include how they perceive the effects of environmental cues (e.g., product packaging) on their attitudes and behavior. This phenomenon is directly related to the dual processing models detailed above. Given this, alternative measurement approaches should be explored when possible.

The second attention-related limitation related to measuring attitudes towards the claim using self-report is that the presence of the claim is made overt by discussing it, and in doing this the participant's attention might be drawn to the claim in a way that it would not be naturally. We should not assume that consumers are usually aware of and are attending to FOP health claims, given evidence from eye-tracking studies that monitor participants during food selection tasks on a computer monitor, or during mock or real grocery store settings have demonstrated that participants do not spend much time looking at FOP nutrition information (Graham et al., 2015; Graham & Jeffery, 2011). Therefore, experimental studies that make the presence of a claim overt via its measurement approach risk creating a scenario that is not externally valid—they would not hold true in a real-life shopping scenario (Orquin & Scholderer, 2015).

The second issue that warrants caution against applying prior health claim literature to new consumer populations is that studies have shown cross-country differences for consumers' use and interpretation of health claims (Dean et al., 2012; Saba et al., 2010; van Trijp & van der Lans, 2007; Van Wezemael et al., 2014). For example, Van Wezemael and colleagues (2014) observed that various health claim wording formats and food pairings are more or less impactful

depending on the population in question. Additionally, between-country comparisons in health claim experiments have recorded differences in levels of trust/skepticism (van Trijp & van der Lans, 2007). Given these differences, conclusions about how Nepalis interpret or are influenced by health claims cannot be drawn with confidence without empirical data specifically from Nepali.

Scope and Purpose of the Study

Scope of the study. This study is the first investigation of the effects of front-of-pack nutrition claims (FOP NCs)—a specific type of health claim—on urban Nepali consumers, who are in the midst of a nutrition transition. The priority for this study was external validity—determining how FOP NCs were actually influencing Nepali consumers—over laboratory-based, systematic controls. Central to this priority was measuring the effects of FOP NCs through covert means (specifically in the first phase of data collection). That is to say, the study avoided explicitly drawing participants' attention to the FOP NC. Adopting this approach produced several benefits to the study. First, participants were not asked to self-report the influence of environmental cues; such reports are often incorrect. Second, health-motivations have been shown to increase attention to FOP NCs, and so our design was now able to detect whether or not demographic variables thought to be associated with health motivation would moderate the relationship between FOP NC presence and food purchasing antecedents. Third, in naturalistic settings where time constraints often exist, consumers tend to overlook food package labeling (Van Herpen & Van Trijp, 2011), and if this is the case, FOP NCs will be shown to be ineffective.

This study focuses on a narrow scope of Wills and colleagues' model (2012). Product/claim factors were controlled when possible, but some features were not controlled for

and vary. Several demographic variables were measured, but several other consumer factors were not. The experimental phase one of the survey looked at product attitudes and purchase intention, while phase two of the survey examined understanding of FOP NC and attitudes towards FOP NC. See Figure 3.2.

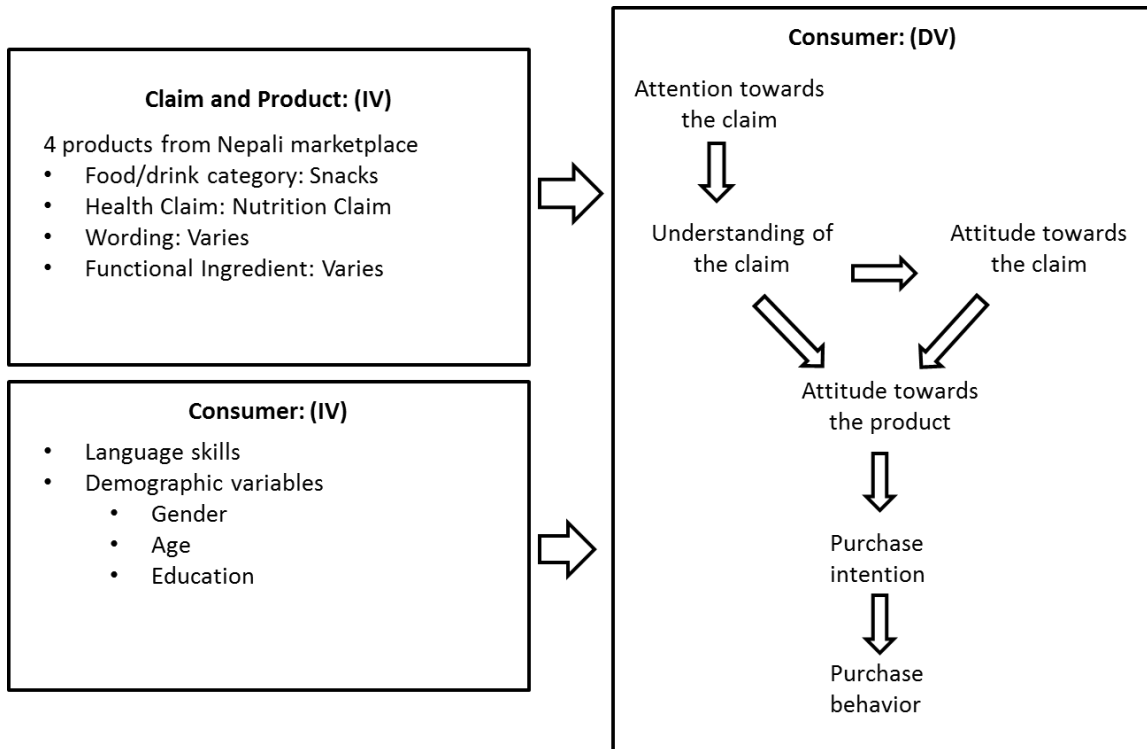


Figure 3.2. Study design model.

Purpose of the study and research questions. The purpose of this study is to learn whether or not FOP NCs are related to more or less healthful snack food selections by urban Nepali consumers, who are increasingly at risk for obesity. We conducted a convergent parallel mixed-methods study, utilizing a two-phase experimental survey that collected both quantitative and qualitative data. This manuscript details the quantitative investigation of FOP NC influences among Nepali consumers, which probes several aspects of Wills and colleagues' (2012) modified framework, as presented in Figure 3.2. Specifically, we asked **RQ1:** do FOP NCs

influence attitudes towards snack food products, and subsequently purchase intentions towards the snack food products that bear them? Secondly, we asked **RQ2**: are the effects of FOP NCs on product attitudes and purchase intentions rendered more or less effective by consumer factors (i.e., ability to understand FOP NC language, age, sex, and education)?

In the first phase of an experimental survey, urban Nepali shoppers evaluated a product by viewing an image of the product package that either featured an FOP NC or did not. This approach provided a clandestine way to measure the effects of FOP NCs without drawing respondents' attention to the presence or absence of FOP NCs. The analyses of these data are the focus of this manuscript. In the second phase of the survey we directed respondents to focus on the FOP NCs and solicited introspective, self-reported data. Using rating scale and open-ended response items, we asked participants "What are the shopping priorities that are most important to you when making food shopping decisions?", as well as , "What are your self-reported perceptions of FOP NCs' influence and trustworthiness?" A complete description of this analysis is presented elsewhere (A D; Ogle, Morgan, Rosenblatt, & Graham, 2016), and the results of that analysis are considered in reference to the present study's findings in the Discussion of this manuscript.

Methods

Participants

We surveyed 239 adult shoppers in the Nepali capital Kathmandu ($M_{\text{age}} = 32.89$; $SD = 11.07$). Fifty nine percent were women, 43% reported having one child or more at or under the age of 12. Thirty eight percent reported that they were primarily responsible for shopping for food for the household and 72.3% had lived in Kathmandu for at least 10 years. Nearly 77%

completed at least 12 years of education, and 87% reported that they could read English, which was the language of all FOP NCs.

We recruited participants as they exited one of three locations of a *high-income country*-style grocery store (i.e., *Bhat Bhateni*). We targeted urban Nepali consumers because they are more likely to have English language education living in Kathmandu than in more remote areas of Nepal, and nutrition claims are often written in English (especially claims on imported product packages).

Three hundred and three consumers were approached to participate in the study and 239 (79%) agreed to complete the interview. Surveys were administered orally, in Nepali, by local survey administrators (SA). Interviews lasted between 12-15 minutes, on average. No compensation was provided to participants for their time. This study was approved by the CSU IRB (ID 003-14H) on January 9, 2014.

Procedures

SAs described the study and asked if participants would like to participate. If they agreed, then informed consent was collected. Participants were asked to respond to stimuli in two phases. In the first phase, participants were shown four printed images of products bound in a binder. Participants were asked to hold the binder while the SA recorded the responses on a clipboard. Each stimulus image was either in the experimental condition and presented a FOP NC, or in the control condition and did not present a FOP NC. The images were counter-balanced so each participant saw two experimental stimuli and two control stimuli. While viewing each image, evaluation items were administered orally by the SA in Nepali.

In the second phase of the survey, the SA directed the attention of the participant to the FOP NC that was featured on the final product image. SAs then queried the participant about

her/his understanding of the FOP NC and their attitudes towards it. Finally, the binder was put away and the SA concluded by asking the participant some demographic questions.

Measures and Stimuli

Food product image stimuli. Stimuli in this study were photographs of four snack food products which, in their original form, featured some kind of FOP NC. The products varied in the number and type of FOP NC shown. No functional or disease risk reduction claims were shown, only nutrition content claims. For three of the four stimulus products, the experimental condition presented the FOP NC as it originally appeared on the packaging, and the control condition was a digitally modified version of the photograph in which the FOP NC text was completely removed. In a fourth case the original package featured a mascot where the character, via a speech bubble, utters three phrases, “No Spice, Not Fried, Low Fat”. In the experimental condition, the text was altered to only read “Low Fat”, and in the control condition it read “No Spice”.

See Figures 3.3 and 3.4 for the images of all four stimuli in both the experimental and control conditions. The text of the FOP NCs for each product was as follows: *a. LOW FAT; b. >100% RDA of Vitamin C*, 38% RDA of Vitamin A*⁹; c. LOW FAT, LOW SUGAR, TRANSFAT FREE; d. ZERO CHOLESTEROL, ZERO TRANS FAT, GLUTEN FREE, MSG FREE.*

According to Hastak and Mazis’s (2011) taxonomy of misleading claims, all of the FOP NCs in this study could be considered to have *interattribute misleadingness* (i.e., a product with *low fat* implies healthful amounts of other product attributes) or *intraattribute misleadingness* (i.e., a product with *low fat* implies that products of the same food category have higher amounts of fat).

⁹ Note that the asterisk made reference to the serving size on a side panel, but participants were not able to see this information since the image only featured



Figure 3.3. Experimental-condition stimuli where FOP NCs are present. Products are a) Cheeseballs, b) Fruit juice, c) Biscuits (cookies), d) Bhujia (fried noodle snack).

Stimuli selection process and rationale. For this study, products were chosen that already existed in the marketplace. This decision had both benefits and drawbacks. One drawback was that there were several differences across product stimuli. For example, each FOP NC was unique to each product, and so FOP NCs were never tested across products. This means that it is impossible to compare the specific influence of claim factors such as ingredient or number of claims, because between-product variance in product attitudes or purchase intention could also be attributable to product factors such as category (e.g., fruit juice vs. cheeseballs).



Figure 3.4. Control-condition stimuli where FOP NCs are absent. Products are a) Cheeseballs, b) Fruit juice, c) Biscuits (cookies), d) Bhujia (fried noodle snack).

One benefit of these differences, however, is that we were able to test a variety of presentations in this never-before-studied consumer population.

Another drawback was an increased risk of branding effect (preference for or against a product based on strong attitudes formed from past experiences or messaging rather than the interpretation of the present stimuli, including the presence or absence of FOP NCs). In order to mitigate this drawback, several products found in the Kathmandu marketplace were pilot tested, and those about which people did not have a strong attitude were identified. The rationale for this approach is based in Fazio's (1990) MODE model, which asserts that strong attitudes can easily be retrieved from long-term memory storage, while weak attitudes cannot be retrieved and thus are created spontaneously in the moment. Because the weak attitudes are created in the

moment based on immediate cues, they are more likely to be swayed by environmental influences, and thus the FOP NCs are more likely to have an effect (Ajzen & Fishbein, 2005).

There were benefits to choosing snack food products that already existed in the Nepali packaged food market. First, participants were likely familiar with the category of food product, if not the specific brand. Second, it also allowed me to be able to present professionally designed product images, which was useful for keeping the packaging feature that I was most interested in (i.e., FOP NCs) discrete, thereby avoiding demand characteristics among participants. Participants were not aware that two versions of each product existed.

Measures. Data were collected in response to product stimuli using the two-phase experimental survey, and Wills and colleagues' extended model (2012; Figure 3.2) from was used as the theoretical basis. In phase one, Wills and colleagues' dependent-variable constructs (i.e., product attitudes and purchase intentions) were operationalized for the study using single, Likert-style items. In phase two of the survey, understanding of the FOP NC and attitudes towards the FOP NC were probed using single rating items and open-ended questions. Demographic items were also included, some of which served as covariates. A description of the variables and the corresponding items from phase one and two of the survey are found below, followed by an explanation of the translation process. The complete survey can be found in Appendix B.

Variables. FOP NCs in this study were tested as a dichotomous variable: either a claim is present or it is not (*FOP NC*; read "FOP NC presence"). Purchase intention (*PI*) of the snack food product was chosen as the primary outcome construct/variable. It was measured with one 7-point Likert-style response item.

Attitudes towards the product are constructs that—like *PI*—are consequent of the *FOP NC*, and at the same time were theorized by Wills and colleagues to mediate the effect of *FOP NC* on *PI*. These variables were *children like it, adults like it, healthful for children, healthful for adults, made with natural ingredients, quality manufactured, and tasty*. These were taken in part from Lähteenmäki and colleagues (2010) and were measured with single 7-point Likert-style response items. In addition, these product attitude items were prefaced with a control statement that was adapted from Wong and colleagues' study (2013). The original item read, assume that *this product costs the same as others like it*, and adapted it for my survey to read, *don't think about/ignore the cost*.

Covariates were chosen based off of participant factors that have been shown to contribute to explained-variance in product attitudes and *PI* among other populations (i.e., *previous use*), or because they were suspected or shown to moderate the effectiveness of *FOP NC*. These potential moderators were: the ability to *understand the FOP NC* language, *age, sex, and education*. *Education* was not mentioned in health claim reviews as being predictive of health claim use, but it has been found to be a predictor of nutrition label use, a task related to health claims (Cowburn & Stockley, 2005; Drichoutis et al., 2008; Satia et al., 2005). *Age* and *sex* are broadly thought to moderate the efficacy of *FOP NC* due to differences in health motivation (i.e., it would be higher among women and older adults). The ability to *understand the FOP NC* language and *education* should moderate the influence of *FOP NC* on consumers since they are necessary for comprehension of the *FOP NC*s. To test these potential moderators, interaction terms were created between the covariates and *FOP NC*. A moderation relationship between *FOP NC* and *previous use* of the product category was not investigated since there was no theoretical basis for doing so. However, *previous use* was included as a control variable since

prior behavior is a strong predictor of future behavior (Ouellette & Wood, 1998; Verplanken & Orbell, 2003).

The measures used in phase two of the survey are outlined in A D; Ogle et al. (2016). Demographic questions at the end of the survey asked about age, sex, children, education, occupation, and geographical origin.

Cultural and linguistic translation of the measure. The article by Kohrt and colleagues (2011) served as a guide to critique different parts of the survey, from the visual appearance of the Likert point-scale, to whether or not the constructs that I wanted to ask about were local or developed-country constructs. In this case, this meant determining if Lähteenmäki and colleagues' (2010) intrinsic food cues (healthful, tasty, natural) had directly equivalent meanings in Nepal. What was found through pilot testing with key informants (local SAs and Nepali language instructors) was that *natural* as a stand-alone term did not make clear sense in Nepali. Instead, feedback indicated that *made with natural ingredients*—an iteration of the idea—was much clearer in Nepali. Aside from the conceptual equivalency of the items, the linguistic fit of the survey format was assessed. This happened during the forward-translation, back-translation, and harmonization processes (Wild et al., 2005), which were facilitated by the first author and executed by a Nepali research assistant and a Nepali language teacher/author.

Data analyses

Following the *convergent parallel design* (Creswell & Plano Clark, 2011), the qualitative and quantitative data were collected concurrently, analyzed separately, and then brought together so that they could both contribute to the interpretation and final conclusion of the research study. The qualitative analyses have been described elsewhere (A D; Ogle et al., 2016), but their implications for the quantitative analyses presented here are considered in the discussion section.

Statistical data analyses were conducted using SPSS (IBM Corp, 2013) and the macro PROCESS (Hayes, 2013).

Missing data. More than 20% of cases had at least one missing value, but overall missing data were less than 1% of all values. Tabachnick and Fidell (2012) have reported that when imputing values with large data sets and less than 5% of values are missing, different approaches to imputation (e.g., mean imputation, multiple imputation) yield similar results. Mean imputation for each product was conducted for scale variables, and categorical variables were deleted case-wise from analyses, resulting in variations of sample size between each product model.

Data analysis procedures. In order to answer RQ1, a mediation model was tested for each product using Hayes' PROCESS macro for SPSS. PROCESS was chosen because it allows the research to directly and simultaneously conduct inferential tests on the *c*- and *b*-paths, the *a*-paths, and the *ab*- indirect path. This is in contrast to Baron and Kenny's (1986) inferior step-wise method, in which researchers base conclusions on a series of statistical tests connected by logical arguments (Hayes, 2013; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Zhao, Lynch, & Chen, 2010). See Figure 3.5 for a conceptual model of the relationships between *FOP NC* and the consequent product attitudes and *PI*.

Tests of the *ab*-path were conducted using a bias-corrected bootstrapping method (10,000 iterations). This does not yield a *p*-value, but 95% confidence intervals that do not straddle 0 can be interpreted as significantly different from zero (Hayes, 2013). To aid interpretation of results, any continuous variables (i.e., product attitudes, *PI*, *age*, and *education*) were standardized prior to model calculation. All other variables (i.e., *FOP NC*, *previous use*, *ability to understand FOP NC language*, and *sex*) were dichotomous and left in their original format.

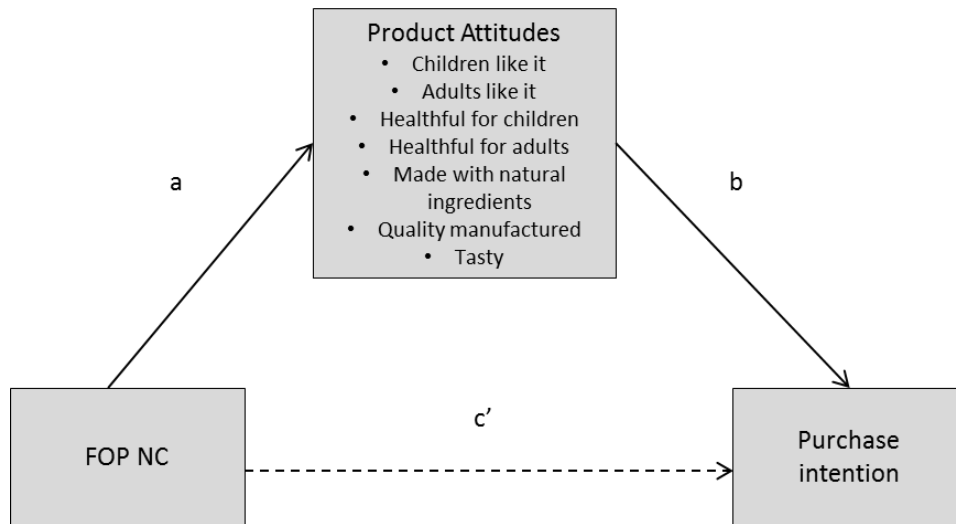


Figure 3.5. Conceptual model for associations between the *FOP NC* (X) and *PI* (Y) towards the product which are direct (c') or mediated through the attitudes toward the products (M) bearing the *FOP NC* (ab). Covariates are not pictured.

In order to conduct moderation analyses for RQ2, interaction terms were created between each of the covariates (*save previous use*) and *FOP NC*. These interaction terms were included in the mediation models of each product from RQ1, thus creating what Hayes has dubbed a *conditional process model* (2013). See Figure 3.6 for a conceptual model.

Results

Initial analyses

The correlation of the mean scores for each variable across all four products is presented in Table 3.1. Collinearity statistics for the predictor variables in each product's model were examined, and the proportion of VIF to Tolerance did not exceed 10. Based on this information, we concluded that multicollinearity did not pose a threat to power in any of the following models.

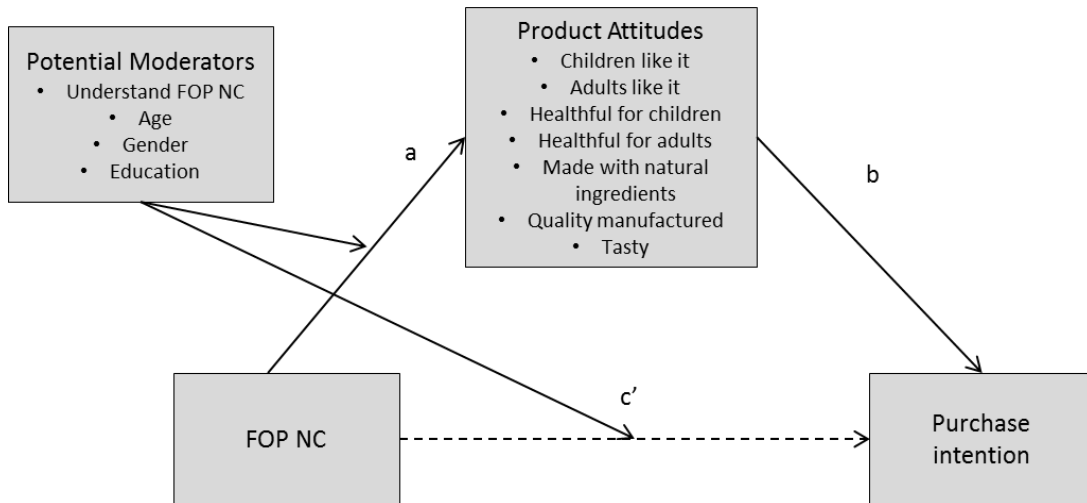


Figure 3.6. Conceptual Model for the potential moderating influence of consumer factors on the direct effect of *FOP NC* on *PI* towards the product (c') and on product attitudes mediated through the attitudes toward the products bearing the *FOP NC* (ab).

Table 3.2 presents the mean scores for each item across the four products, prior to standardization. Between-product comparisons are not in the scope of the investigation, since differences could be attributable to multiple features of the products, including the food category, the country of origin, the claim type, the number of claims, etc.

Research Question 1: What is the Influence of FOP NC on Product Attitudes and PI?

Results from the multiple-mediation model are presented in Figures 3.7 – 3.10. Coefficient estimates and tests of statistical significance were calculated using model 4 of the PROCESS macro for SPSS (Hayes, 2013, 2015). In order to determine the significance of indirect effects, bias-corrected bootstrapping (10,000 iterations) was used rather than a normal theory test (e.g., Sobel test); Confidence intervals (CIs) that did not straddle 0 were identified as statistically significant.

Table 3.1. Correlation between model variables averaged across all four products.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|----------------------------------|-------|------|--------|-------|-------|--------|-------|-------|-------|--------|--------|-----|-------|----|
| 1. Purchase intention | — | | | | | | | | | | | | | |
| 2. FOP NC | .00 | — | | | | | | | | | | | | |
| 3. Children like it | .21** | .02 | — | | | | | | | | | | | |
| 4. Adults like it | .48** | .02 | .34** | — | | | | | | | | | | |
| 5. Healthful for children | .41** | .02 | .33** | .28** | — | | | | | | | | | |
| 6. Healthful for adults | .31** | .00 | .23** | .33** | .69** | — | | | | | | | | |
| 7. Made from natural ingredients | .44** | .00 | .23** | .34** | .56** | .51** | — | | | | | | | |
| 8. Quality manufactured | .53** | .04 | .11 | .44** | .59** | .50** | .77* | — | | | | | | |
| 9. Tasty | .57** | -.02 | .31** | .48** | .25** | .26** | .31** | .42** | — | | | | | |
| 10. Previous use | .43** | -.06 | -.04 | .31** | .15* | .20** | .22** | .33** | .22** | — | | | | |
| 11. Age | -.15* | .04 | .02 | -.06 | -.10 | -.01 | .01 | -.12 | .03 | -.19** | — | | | |
| 12. Sex | -.08 | .06 | -.05 | -.14* | .10 | .03 | .03 | .04 | -.07 | .04 | .11 | — | | |
| 13. Education Understand | -.05 | -.08 | -.20** | .09 | -.10 | -.19** | .03 | .09 | -.06 | .30** | -.27** | .04 | — | |
| 14. FOP NC language | .02 | -.03 | .17** | .03 | -.04 | -.09 | .05 | .10 | -.06 | .23** | -.35** | .07 | .57** | — |

*p < .05, **p < .01

Table 3.2. Unstandardized mean and standard deviation scores for the variables of each product.

| | Cheeseballs | | Fruit Juice | | Biscuits | | Bhujia | |
|-------------------------------|-------------|-----------|-------------|-----------|----------|-----------|----------|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Purchase intention | 4.00 | 2.07 | 5.05 | 1.67 | 4.16 | 1.88 | 3.76 | 1.84 |
| Children like it | 6.25 | 1.08 | 5.71 | 1.28 | 3.90 | 1.40 | 4.08 | 1.53 |
| Adults like it | 4.67 | 1.75 | 5.54 | 1.26 | 4.58 | 1.36 | 5.08 | 1.38 |
| Healthful for children | 2.45 | 1.26 | 3.66 | 1.59 | 4.29 | 1.32 | 2.66 | 1.27 |
| Healthful for adults | 2.69 | 1.38 | 4.07 | 1.50 | 4.74 | 1.28 | 3.41 | 1.41 |
| Made from natural ingredients | 2.76 | 1.33 | 3.66 | 1.49 | 4.33 | 1.41 | 3.43 | 1.39 |
| Quality manufactured | 3.29 | 1.51 | 3.86 | 1.64 | 4.68 | 1.31 | 3.86 | 1.44 |
| Tasty | 5.87 | 1.17 | 5.60 | 1.18 | 4.37 | 1.42 | 5.13 | 1.25 |
| Previous use | 0.75 | 0.44 | 0.91 | 0.29 | 0.85 | 0.36 | 0.64 | 0.48 |

Note. Purchase intention, Children like it, Adults like it, Healthful for children, Healthful for adults, Made from natural ingredients, Quality manufactured, and Tasty were measured using 7-point Likert items, where 7 is the highest endorsement of the product attitude or behavior likelihood. Previous use was measured using a dichotomous item, and so the mean represents the proportion of participants who endorsed having used the product category in the past month.

Post-hoc power analyses (two-tailed, $\alpha = .05$) were conducted using G*Power3 (Faul, Erdfelder, Lang, & Buchner, 2007) for each product's mediation model. Because of differences in sample sizes across products, the power of each model varied slightly. Power analyses indicated excellent power to detect large effects ($d = 0.35$), $1-\beta > .999$, adequate power to detect medium effects ($d = 0.15$) ranging from $1-\beta = .985 - .987$, but insufficient power (.210 – .212) to detect small effects ($d = 0.02$). In his review of the literature at the time, Williams (2005) stated that published anecdotal reports from industry specialists stated a belief that at most one third of consumers were influenced by health messages. In a summary report by Lahteenmaki (2013), the author suggested that health claim effect sizes ranged from small- to medium-sized. Based on this information, the effect size of the experimental condition in this study was expected to be small- to medium-sized.

Model interpretation. The following interpretations are partitioned by product and are presented in the order of number of messages on each FOP NC (from one on the first product to four on the fourth product).

Cheeseballs. *a*-paths: As seen in Figure 3.7, when *FOP NC* is present on the package, the product attitude *healthful for children* decreases by 0.30 z-score, and *children like it* decreases by 0.34. *b*-path: Consumers who have a high product attitude (one standard deviation above the mean) of *adults like it* have a *PI* z-score that is 0.20 higher than consumers who have an average product attitude. Consumers who have a high product attitude of *quality manufactured* have a *PI* z-score that is 0.25 higher than consumers who have an average product attitude, and consumers who have a high product attitude of *tasty* have a *PI* z-score that is 0.33 higher. *FOP NC* had a direct effect on consumers' *PI* of increasing that z-score by 0.25, but the indirect effect of *FOP*

NC through the mediator *healthful for children* reduced the *PI* by 0.04. The total effect of *FOP NC* on *PI* was a net z-score increase of 0.24.

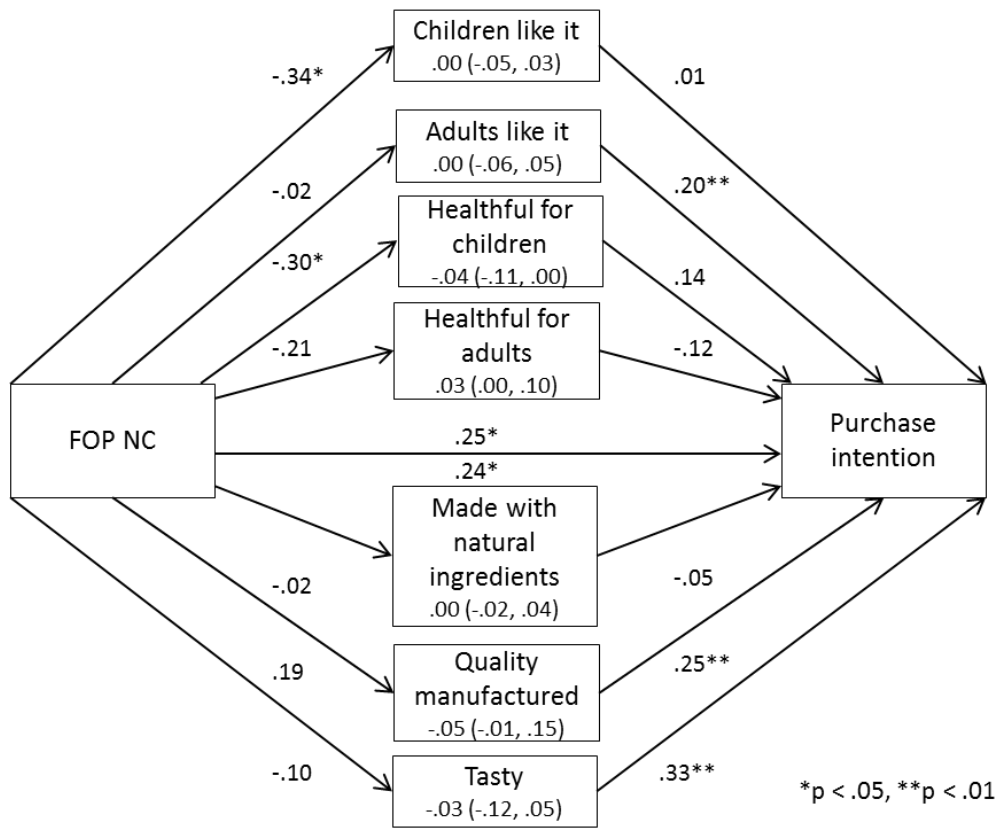


Figure 3.7. Path diagram for multiple mediator model of the effect of *FOP NC* on product attitudes and *PI* towards cheeseballs. Arrows between *FOP NC* and the product attitudes (potential mediators) represent a-paths. Coefficients represent the z-score increase (or decrease) in the product attitude when *FOP NC* condition is present, holding constant the covariates *previous use*, *age*, *sex*, *education*, and *understand FOP NC language*. Arrows between product attitudes (potential mediators) and *PI* represent b-paths. Coefficients represent the z-score increase (or decrease) in *PI* when the product attitude z-score increases by 1, holding constant the same covariates. Coefficient estimates and 95% CI for indirect effects for each product attitudes (potential mediators) are located within each product attitude square. Arrow between *FOP NC* and *PI* represent the direct effect (above the line) and the total effect (below the line). Coefficient estimates of covariate controls are not pictured.

Fruit juice. a-paths: As seen in Figure 3.8, when *FOP NC* is present on the package, the product attitude *healthful for children* increases by 0.29 z-score; no other a-path relationship is present. b-path: Consumers who have a high product attitude (one standard deviation above the mean) of *adults like it* have a *PI* z-score that is 0.14 higher than consumers who have an average

product attitude. Consumers who have a high product attitude of *tasty* have a *PI* z-score that is 0.34 higher than consumers who have an average product attitude. *FOP NC* did not have a statistically significant effect on consumers' *PI*, either directly or indirectly through any of the potential mediators.

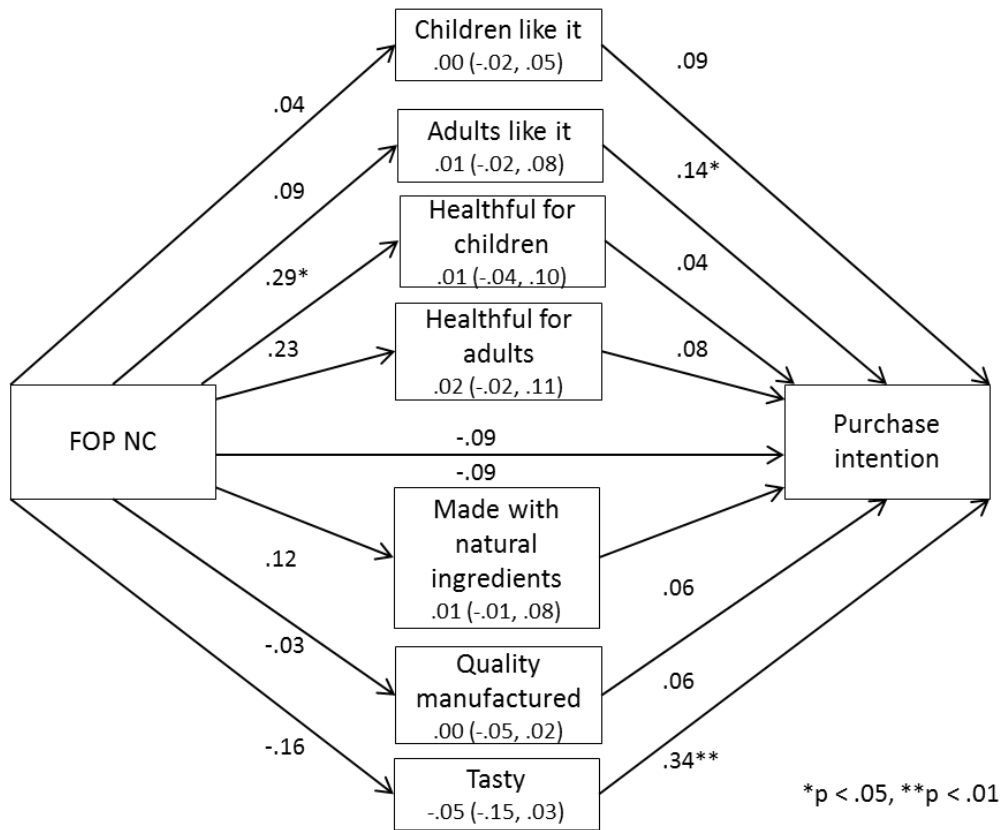


Figure 3.8. Path diagram for multiple mediator model of the effect of *FOP NC* on product attitudes and *PI* towards fruit juice. This figure is organized the same as Figure 3.6.

Biscuits. *a*-paths: As seen in Figure 3.9, when *FOP NC* is present on the package, the product attitude *healthful for children* increases by 0.26 z-score and the product attitude *quality manufactured* increases by 0.30 z-score; no other *a*-path relationship is present. *b*-path: Consumers who have a high product attitude (one standard deviation above the mean) of *children like it* have a *PI* z-score that is 0.11 higher than consumers who have an average product attitude, and consumers who have a high product attitude *adults like it* have a *PI* z-score that is

0.22 higher than consumers who have an average product attitude. Consumers who have a high product attitude of *tasty* have a *PI* z-score that is 0.43 higher than consumers who have an average product attitude. *FOP NC* did not have a statistically significant effect on consumers' *PI*, either directly, or indirectly through any of the potential mediators.

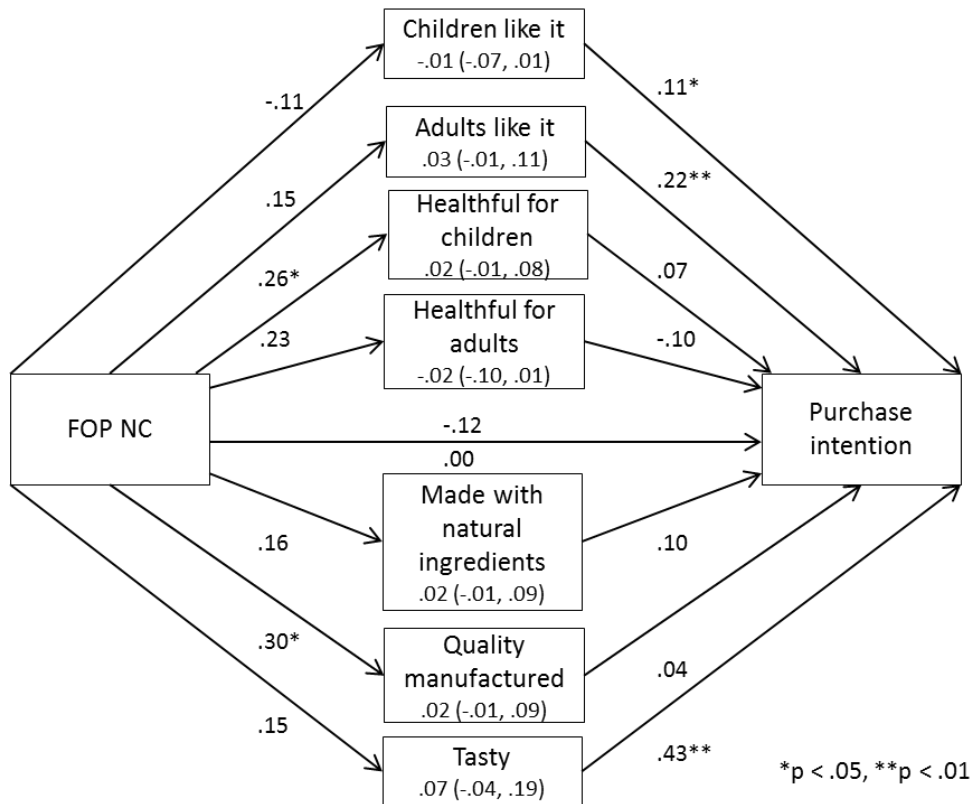


Figure 3.9. Path diagram for multiple mediator model of the effect of *FOP NC* on product attitudes and *PI* towards biscuits. This figure is organized the same as Figure 3.6.

Bhujia. *a*-paths: As seen in Figure 3.10, the presence of the *FOP NC* on the package had no influence on the consumers' attitudes towards the products. *b*-path: Consumers who have a high product attitude (one standard deviation above the mean) of *healthful for children* have a *PI* z-score that is 0.16 higher than consumers who have an average product attitude. Consumers who have a high product attitude of *quality manufactured* have a *PI* z-score that is 0.20 higher than consumers who have an average product attitude, and consumers with high product attitude of *tasty* have a *PI* z-score that is 0.28 higher. *FOP NC* had a direct effect on consumers' *PI* of

decreasing that z-score by 0.22, and while there was no individual mediation relationship that was statistically significant, the overall total effect of *FOP NC* on *PI* was a net z-score decrease of 0.28.

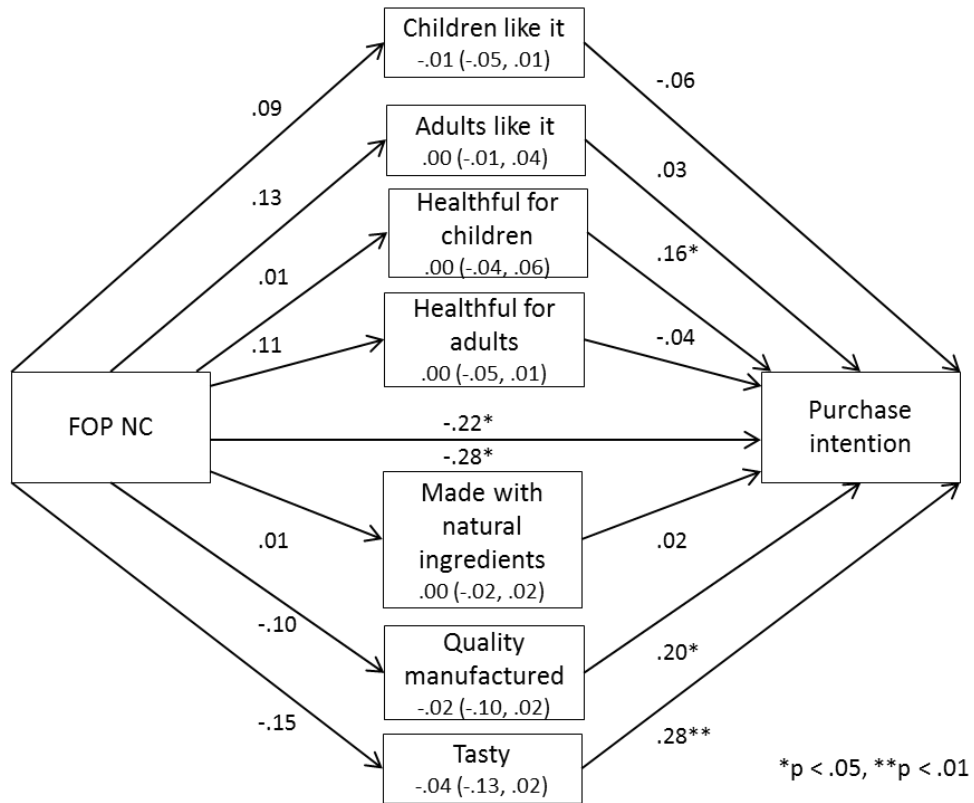


Figure 3.10. Path diagram for multiple mediator model of the effect of *FOP NC* on product attitudes and *PI* towards bhujia. This figure is organized the same as Figure 3.6.

Research Question 2: Do Consumer Factors Moderate Effects of FOP NC?

While the first research question investigated the effect of *FOP NC* on product attitudes and *PI*, the second research question explores whether or not the effects of FOP NCs on product attitudes and purchase intentions are rendered more or less effective by the moderating effect of consumer factors. These variables have already been included in the previous mediation models as covariates and are the ability to *understand FOP NC* language (i.e., English), *age*, *sex*, and *education*.

To answer RQ2, a new set of conditional process models (i.e., models that incorporate both mediation and moderation; model 10; Hayes, 2013) were prepared and analyzed. Table 3.3 presents the beta coefficients (β) and p -values for *FOP NC*, the covariates, and the interaction terms for the four covariates of interest.

Post-hoc power analyses (two-tailed, $\alpha = .05$) were conducted using G*Power3 (Faul et al., 2007) for each products' model. Because of differences in sample sizes across products, the power of each model varied slightly. Power analyses indicated excellent power to detect large effects ($d = 0.35$), $1-\beta > .999$, as well as adequate power to detect medium effects ($d = 0.15$) ranging from $1-\beta = .973 - .975$, but insufficient power (.185 – .183) to detect small effects ($d = 0.02$).

As seen in Table 3.3, the interaction terms *FOP NC x sex* and *FOP NC x education* were not statistically significant across all pathways and all models. The interaction terms *FOP NC x understand FOP NC* and *FOP NC x age* were also usually statistically non-significant, but for some pathways and some products there were some statistically significant findings. Two of the more dramatic effects were that for fruit juice, younger Nepali consumers (specifically, one standard-deviation below average, about 22-years-old) who had seen and understood the FOP NC rated their *PI* as 0.33 standard deviations lower than younger consumers who had not seen the FOP NC, but older Nepali consumers (i.e., about 43-years-olds) who had seen and understood the FOP NC rated their *PI* as 0.24 standard deviations higher than older consumers who had not seen the FOP NC. Among consumers who had seen but did not understand the FOP NC, *PI* ratings fell relative to those who did not see nor understand the FOP NC among both younger (-0.81) and older (-0.25) consumers. Another effect of FOP NC was that, for bhujia, older consumers who saw and understood the FOP NC gave a tasty rating that was -0.15 z-scores

lower than those who did not see the FOP NC, but among younger consumers who saw and understood the FOP NC there was no difference in tasty rating from younger consumers who did not see the FOP NC. Contrast this with older and younger consumers who saw but did not understand the FOP NC; their tasty rating for bhujia was 0.23 and 0.38 higher than older and younger consumers, respectively, both of whom had not seen the FOP NC and would not have understood it. See Table 3.4 for the β s and confidence intervals for groups of all the moderator variables.

Discussion

Summary of findings

Research Question 1. As predicted by Wills and colleagues' model (2012), attitudes towards a product did predict the *PI* for that product. The most robust relationship was for *tasty*, which had a positive relationship with *PI* across all four products. Other effects were seen for the attitudes *adults like it* (three products), *quality manufactured* (two products), *children like it* (one product), and *healthful for children* (one product). The product attitudes *made with natural ingredients* and *healthful for adults* were never predictive of *PI*. These relationships constituted the *b*-paths. The findings that *tasty* and *adults like it* were most frequently predictive of *PI* make sense in light of the literature that shows that for most consumers, hedonistic (taste-oriented) motivations outweigh health motivations when making food selections (Lyly et al., 2007; Verbeke, 2005). Also, since adults constituted the participant sample, it makes sense that higher ratings of adult liking would correspond to their intention to buy the product.

Regarding the influence of *FOP NC* on product attitudes (*a*-paths), these relationships were not so prevalent. The *FOP NC* seemed to influence the product attitude rating for *healthful for children* (three times, twice positive and once negative), *children like it* (one time negative),

Table 3.3. Beta coefficients (β) and p -values for *FOP NC* and covariates in a -path (predicting product attitudes) and b/c' -paths (predicting *PI*).

| Product | Covariate | a -paths | | | | | | b/c' -paths | |
|--------------|--------------------------------|------------------|----------------|------------------------|----------------------|--------------------|----------------------|---------------|---------|
| | | Children like it | Adults like it | Healthful for children | Healthful for adults | Natural Ingredient | Quality Manufactured | Tasty | PI |
| | | β | β | β | β | β | β | β | β |
| Cheese-balls | FOP NC [#] | -0.30 | -0.44 | -0.40 | -0.36 | 0.20 | 0.21 | 0.04 | 0.65 |
| | Previous use [#] | 0.05 | 0.52** | 0.52** | 0.64** | 0.75** | 0.56** | 0.62** | 0.46** |
| | Understand FOP NC [#] | -0.34 | -0.30 | -0.50 | -0.52 | 0.28 | -0.03 | 0.01 | 0.71** |
| | Age [§] | -0.09 | -0.09 | -0.07 | 0.07 | 0.27** | 0.03 | -0.03 | 0.02 |
| | Sex (male) [#] | -0.13 | -0.41* | -0.07 | -0.23 | 0.01 | 0.17 | -0.55** | 0.03 |
| | Education [§] | -0.05 | 0.08 | 0.05 | -0.04 | 0.00 | -0.02 | -0.16 | -0.28** |
| | FOPNC X Understand FOP NC | -0.03 | 0.46 | -0.09 | -0.04 | -0.28 | -0.13 | -0.31 | -0.40 |
| | FOPNC X Age | -0.12 | 0.14 | -0.21 | -0.25 | -0.37* | -0.15 | 0.06 | -0.10 |
| | FOPNC X Sex | -0.03 | 0.04 | 0.41 | 0.41 | 0.02 | 0.20 | 0.31 | -0.11 |
| | FOPNC X Education | -0.06 | 0.08 | -0.22 | -0.17 | 0.04 | 0.20 | 0.22 | -0.03 |
| Fruit Juice | FOP NC [#] | -0.51 | -0.30 | -0.60 | 0.40 | -0.46 | -0.55 | -0.25 | -0.53 |
| | Previous use [#] | 0.19 | 0.60** | 0.51* | 0.49* | 0.25 | 0.53* | 0.30 | 0.84** |
| | Understand FOP NC [#] | -0.44 | -0.31 | -0.79* | 0.27 | -0.55 | -0.44 | -0.02 | -0.63* |
| | Age [§] | 0.14 | 0.02 | -0.25 | 0.04 | -0.28* | -0.27* | -0.06 | -0.32** |
| | Sex (male) [#] | 0.10 | -0.13 | 0.13 | -0.12 | 0.08 | 0.07 | 0.01 | -0.30* |
| | Education [§] | -0.01 | 0.11 | 0.02 | -0.30* | 0.07 | 0.03 | -0.10 | 0.15 |
| | FOPNC X Understand FOP NC | 0.63 | 0.39 | 1.07* | -0.33 | 0.64 | 0.65 | 0.06 | 0.48 |
| | FOPNC X Age | -0.22 | -0.13 | 0.12 | -0.24 | 0.13 | 0.17 | 0.03 | 0.29* |
| | FOPNC X Sex | -0.06 | 0.11 | -0.06 | 0.21 | 0.07 | -0.09 | 0.09 | 0.09 |
| | FOPNC X Education | -0.15 | -0.13 | -0.13 | 0.17 | -0.20 | -0.07 | 0.08 | -0.10 |

| | | | | | | | | | |
|-------------------|--------------------------------|---------|--------|--------|-------|-------|--------|---------|--------|
| Biscuits | FOP NC [#] | -0.14 | 0.56 | 0.23 | 0.65 | 0.33 | 0.52 | 0.15 | -0.25 |
| | Previous use [#] | 0.37 | 0.52** | 0.34 | 0.27 | 0.19 | 0.67** | 0.48** | 0.51** |
| | Understand FOP NC [#] | 0.08 | 0.12 | 0.20 | 0.48 | 0.45 | 0.61 | 0.13 | -0.17 |
| | Age [§] | -0.08 | 0.04 | -0.12 | -0.04 | 0.08 | 0.12 | 0.05 | -0.10 |
| | Sex (male) [#] | -0.08 | 0.10 | 0.22 | 0.23 | -0.05 | -0.14 | 0.11 | -0.03 |
| | Education [§] | -0.01 | -0.10 | -0.09 | -0.19 | -0.10 | 0.01 | -0.19 | -0.12 |
| | FOPNC X | | | | | | | | |
| | Understand FOP NC | -0.13 | -0.34 | -0.12 | -0.51 | -0.24 | -0.44 | -0.04 | 0.22 |
| | FOPNC X Age | 0.16 | 0.02 | -0.05 | 0.02 | -0.04 | -0.06 | 0.00 | 0.05 |
| | FOPNC X Sex | 0.37 | -0.26 | 0.33 | 0.07 | 0.08 | 0.40 | 0.11 | -0.16 |
| FOPNC X Education | -0.10 | 0.10 | 0.01 | 0.07 | 0.08 | -0.02 | 0.16 | 0.10 | |
| Bhujia | FOP NC [#] | 1.19** | 0.37 | 0.68 | 0.13 | 0.37 | 0.52 | 1.04* | -0.54 |
| | Previous use [#] | 0.22 | 0.73** | 0.25 | 0.34* | 0.30* | 0.58** | 0.61** | 0.67* |
| | Understand FOP NC [#] | 0.57 | 0.25 | 0.47 | 0.24 | 0.49 | 0.64* | 0.69* | -0.22 |
| | Age [§] | 0.11 | 0.12 | 0.19* | 0.12 | 0.23* | 0.11 | 0.17** | -0.18* |
| | Sex (male) [#] | 0.01 | 0.02 | 0.22 | 0.20 | 0.05 | 0.05 | -0.07 | -0.02 |
| | Education [§] | -0.30** | 0.05 | -0.16 | -0.14 | 0.10 | 0.07 | 0.07 | -0.10 |
| | FOPNC X | | | | | | | | |
| | Understand FOP NC | -1.22* | -0.10 | -0.69 | 0.03 | -0.39 | -0.68 | -1.31** | 0.29 |
| | FOPNC X Age | -0.19 | -0.14 | -0.34* | -0.20 | -0.12 | -0.23 | -0.26 | 0.08 |
| | FOPNC X Sex | -0.12 | -0.35 | -0.18 | -0.15 | -0.05 | -0.06 | -0.12 | 0.16 |
| FOPNC X Education | 0.14 | -0.24 | -0.04 | -0.15 | -0.22 | -0.27 | -0.08 | -0.05 | |

* p < .05, ** p < .01.

[#] These variables are dichotomous, and so the beta coefficient represents the z-score change in the outcome variable when this variable is present.

[§] These variables are standardized, so the beta coefficient represents the z-score change in the outcome variable when this variable's value is one standard deviation above the sample mean.

Table 3.4. The moderating influence of covariates *age* and *understand FOP NC* on the effects of *FOP NC* on product attitudes and the direct and indirect effects of *FOP NC* on *PI*. No interaction terms involving other covariates were statistically significant.

| Product | Pathway | Age group | Understand FOP NC | | Do not Understand FOP NC | |
|-------------|---|------------------|-------------------|----------------|--------------------------|----------------|
| | | | β | CI 95% (LL,UL) | β | CI 95% (LL,UL) |
| Cheeseballs | Effect of <i>FOP NC</i> on <i>made with natural ingredients</i> | Younger age | -0.02 | (-0.10, 0.04) | -0.03 | (-0.20, 0.09) |
| | | Intermediate age | 0.00 | (-0.03, 0.06) | -0.01 | (-0.13, 0.10) |
| | | Older age | 0.03 | (-0.05, 0.14) | 0.01 | (-0.08, 0.16) |
| Fruit Juice | Effect of <i>FOP NC</i> on <i>healthful for children</i> | Younger age | 0.00 | (-0.09, 0.09) | 0.00 | (-0.18, 0.19) |
| | | Intermediate age | 0.00 | (-0.10, 0.10) | 0.00 | (-0.16, 0.17) |
| | | Older age | 0.00 | (-0.14, 0.13) | 0.00 | (-0.15, 0.15) |
| | Direct effect of <i>FOP NC</i> on <i>PI</i> | Younger age | -0.33 | (-0.65, 0.00) | -0.81 | (-1.60, -0.02) |
| | | Intermediate age | -0.04 | (-.034, 0.25) | -0.53 | (-1.23, 0.17) |
| | | Older age | 0.24 | (-0.19, 0.67) | -0.25 | (-0.94, 0.44) |
| Bhujia | Effect of <i>FOP NC</i> on <i>children like it</i> | Younger age | -0.01 | (-0.06, 0.03) | -0.08 | (-0.30, 0.09) |
| | | Intermediate age | 0.00 | (-0.03, 0.03) | -0.07 | (-0.26, 0.08) |
| | | Older age | 0.01 | (-0.03, 0.07) | -0.06 | (-0.23, 0.07) |
| | Effect of <i>FOP NC</i> on <i>healthful for children</i> | Younger age | 0.05 | (-0.08, 0.06) | 0.17 | (-0.03, 0.45) |
| | | Intermediate age | 0.00 | (-0.05, 0.04) | 0.11 | (-0.05, 0.36) |
| | | Older age | -0.06 | (-0.05, 0.06) | 0.06 | (-0.09, 0.09) |
| | Effect of <i>FOP NC</i> on <i>tasty</i> | Younger age | 0.00 | (-0.13, 0.11) | 0.38 | (0.08, 0.73) |
| | | Intermediate age | -0.07 | (-0.21, 0.03) | 0.30 | (0.04, 0.62) |
| | | Older age | -0.15 | (-0.36, 0.02) | 0.23 | (-0.04, 0.55) |

Note. Shows only product attitude and *PIs* where either the interaction term for *age* or *understand FOP NC* were significant. Younger age = 21.8 years, Intermediate age = 32.9 years, and Older age = 43.2 years. CIs were calculated based on bias-corrected bootstrapping (10,000) procedure in PROCESS.

and *quality manufactured* (one time positive). The product attitudes *healthful for adults*, *adults like it*, *tasty*, and *made with natural ingredients* were not found to be influenced by *FOP NC*.

Interestingly, not all of the statistically significant *a*-path relationships were positive.

Specifically for cheeseballs, when *FOP NC* is present on the package, the product attitude *healthful for children* decreased by 0.30 z-score and *children like it* decreased by 0.34. An alternative interpretation of this result, however, could be that when the control claim is present on the package (i.e., “No spice” instead of “Low fat”), then ratings for these product attitudes are higher. This alternative reading seems valid since cheeseballs were the only product that had a control claim rather the complete absence of a claim.

Examining the influence of *FOP NC* on *PI*, no effect was found at all for fruit juice or biscuits. For cheeseballs, however, *FOP NC* increased *PI* by a z-score of 0.25 (direct effect), and still had a significant total effect (0.24) despite a significant indirect effect through *healthful for children* in the negative direction (-0.04). *FOP NC* on bhujia, in contrast, had a negative direct effect on *PI* (-0.22), and though there were no individually significant indirect effects, the total effect of *FOP NC* reduced *PI* even lower (-0.28).

In total, of the 32 pathways that examined the influence of the *FOP NC* across the four products, seven (21.9%) were statistically significant.

Research Question 2. The results of the primary moderation analysis showed that effectiveness of *FOP NC* never depended on other consumer characteristics such as sex or education, and only occasionally depended on the age of the consumer or whether or not they understood the language of the claim text. In sum, *FOP NC* increased ratings of *PI* for fruit juice among those of older age relative to those of younger age. In contrast, younger age resulted in *FOP NC* increasing ratings of *made with natural ingredients* for cheeseballs and *healthful for*

children for bhujia relative to those of older age. Also, among those who had the ability to *understand the FOP NC* language (i.e., English), *FOP NC* increased ratings of *healthful for children* for fruit juice relative to those who could not understand, and increased ratings of *children like it* and *tasty* for bhujia. When making this interpretation, it is important to note that out of 128 pathways tested, only six were statistically significant. This statistical significance hit rate of 4.7%—in light of these analyses’ alpha level of 0.05—could lead to the fair conclusion that these findings are entirely the result of chance.

Summary of quantitative data analyses. These results suggest that the influence of *FOP NC* is sporadic. When the influence is present, it operates on different product attitudes and *PI* with no clear trend across products. Other times its influence cannot be seen at all. Given that these direct influences of *FOP NC* (*a* and *c*’ pathways) were found 21.9% of the time, we conclude that these findings represent actual effects. However, a total effect of *FOP NC* on *PI* was only identifiable half of the time, and in one of those two instances it actually reduced *PI* of a product relative to a version that did not feature an *FOP NC*. Overall, the pattern of effects that were detected across these four products is likely the result of a combination of weak effects and a lack of statistical power.

Regarding the influence of consumer factors on the impact of *FOP NC*, it is difficult to make a confident statement about its meaning when there is a clear risk that they may be spurious.

Strengths and Limitations

Limitations. One of the limitations of the study was that power would not have been sufficient to detect the effects of *FOP NC* if they were small; a larger sample-size in future studies could remedy this problem. Additionally, the research design did not systematically vary

product and claim factors such as the number of statements on the FOP NCS, the wording of the FOP NCs, and the product bearing the FOP NC. Because of this, it is impossible to discern to which of these factors attitude and *PI* differences between products should be attributed.

One of the strongest predictors of product attitudes and *PI* was the covariate *previous use of product category in the past month*. While studies have demonstrated time and again the predictive power of previous behavior (e.g., Ouellette & Wood, 1998; Verplanken & Orbell, 2003), it is also possible that probing this information contaminated the data collection. To explain, *previous use* was ascertained first in the survey item order, followed by product attitudes and *PI*. It could be that asking about previous use induced participants to identify with their food choice, and then be more inclined to positively evaluate the product in order to avoid cognitive dissonance (i.e., the thought that they are a user of food products that are not liked, not healthful, not quality manufactured, etc.). It may have been preferable to ascertain *previous use* after having participants describe their attitudes and *PI*, although doing so might not have provided an effective remedy given that participants could have learned to expect the question regardless of presentation order. This expectation for the question could have emerged since the entire sequence of questions was asked four consecutive times, once for each product.

Strengths. Some strengths of the study were that it empirically tested several aspects of Wills and colleagues' (2012) model and expanded it in a meaningful way. Specifically, the study did not overtly draw attention to the FOP NCs, which allowed for measuring the effect of consumer factors on moderating the impact of *FOP NC*, which is theorized to happen partially through attention processes. Additionally, avoiding overtly directing the participants' attention makes for a more generalizable study, since in the real world consumers are not compelled to fix their attention on a specific feature of the product packaging. Second, the data collection

approach of this study was tailored to the cultural context. Past studies about health claim influences have utilized internet-based surveys, and while one study of rural Nepalis found that 63% were users of the internet, non-mobile computing device ownership is rare (less than 10%; Zhou, Singh, & Kaushik, 2011), and regular electricity and internet outages further complicate using the internet as a data collection method. For this study, urban Nepali consumers were recruited where they shop and were interviewed in the most common local language. Finally, owing to the overall convergent parallel mixed-methods design, this study's quantitative findings benefit from the clarifying perspective of qualitative data that have been analyzed (see Ogle, 2016 for a detailed description). In the following section the most relevant findings of a thematic analysis of open-ended responses are discussed.

Insights from Qualitative Analysis

Trust and perceived influence. In the second phase of the survey, consumers' attention was directed towards the FOP NC on the fourth product. For this one FOP NC, participants were asked to rate its trustworthiness and perceived influence on 7-point Likert items, and to give an explanation for the ratings. On average, respondents rated FOP NCs as having more influence ($M = 4.98$, $SD = 1.50$) than trustworthiness ($M = 3.76$, $SD = 1.60$), $t(213) = -9.79$, $p < .001$. The rating scales were weak-to-moderately correlated, $r = .31$.

The most commonly expressed reasons consumers gave for not trusting FOP NCs was that FOP NCs were seen as being just another form of marketing, that consumers were unable to verify the accuracy of the claim, or that they had some experiences or knowledge that contradicted the text of the claim; for example, a 25-year-old woman said about the cheeseballs claim, "*Because [the FOP NC] mentions that it is fat free but [the food] makes you fat*". A few people also mentioned that there was a lack of consumer protections in Nepal. Reasons for

trusting FOP NCs were less common. The most popular reason for trusting was having a positive view of the message source, such as the manufacturer; another common reason for trust was the idea that manufacturers were accountable for accurate labeling due to regulations or a need to maintain positive customer relations.

When explaining their rating of perceived influence of FOP NCs, consumers mostly referred to the receiving or using information that was available on the FOP NC, or talked about how that information was relevant to their values of health, diet awareness, or food safety. Other consumers said that FOP NCs were not useful because they do not trust the FOP NCs, or because they preferred other information for decision-making; for example, a 30-year-old woman stated, “[FOP NCs] matter to people who are very conscious. I buy the products looking at the brand name.”

Shopping priorities. Next, consumers were asked to name two important factors for determining whether or not they buy a food. Responses were categorized into ten themes: *sensory perceptions* (e.g., taste), *monetary consideration*, *health and nutrition*, *quality*, *managing relationships*, *safety and hygiene*, *variety*, *familiarity*, *meeting needs*, and *package labeling*. Of these ten priorities, two seemed as though they would be associated with use of the FOP NCs: *health and nutrition*, and *package labeling*. These themes were mentioned 35 (7.1%) and 26 (5.3%) times, respectively, out of the total amount of responses to this item (495). When contrasting the prevalence of these themes to that of other themes such as *quality* ($n=84$; 17.0% of total responses), *sensory perceptions* (i.e., *taste*; $n=82$; 16.6%), *monetary consideration* (i.e., *price*; $n=79$; 16.0%), these FOP NC-relevant shopping priorities appear to be less salient to the consumers in this study.

Convergence of quantitative and qualitative findings

Quantitative findings from the first phase of our study did not detect prevalent or consistent influences of *FOP NC* on product attitudes or *PI*. If consumers are noticing the FOP NCs, they could be discounting them due to several sources of mistrust described by the survey participants. Alternatively, the shopping priorities of *health and nutrition*—or the *food packaging labels* that might describe health and nutrition—might not be as salient or powerful as other motivators of food purchasing decisions (e.g., *quality, taste, cost, and safety and hygiene*), as evidenced by their smaller prevalence. Past research has consistently found the primacy of taste over health motivation in food selection (Lyly et al., 2007; Verbeke, 2005).

Regression analyses did not show prevalent or consistent influences of FOP NCs. Despite this, 54.4% of the sample stated that *FOP NC* influences purchasing decisions via the information that the FOP NCs provided, especially as it is related to consumers' own concerns about health, safety, and the ingredients of the food. This means that although a majority of participants thought that *FOP NC* influenced purchasing decisions, by and large the participants' attitudes and purchase intentions were not influenced by *FOP NC*.

The discrepancy between consumers' self-reported, anticipated response to these stimuli and their actual response was predicted based on existing literature, and this justifies the research design decision to not explicitly direct the participants' attention to the FOP NCs in the first phase of the experimental survey. By first testing the effect of *FOP NC* on product attitudes and *PI* and then following with questions specifically about the FOP NCs, we avoided consciously motivating or unconsciously priming participants to pay more effortful attention to the FOP NCs than they otherwise would have. One result of not testing *FOP NC* explicitly is that consumers' cognitive processing of product images more closely resembled typical real-world shopping

tasks (Orquin & Scholderer, 2015), which occur through the peripheral (low-effort, unconscious) route, rather than the central (effortful, thoughtful) route (Bargh, 2002; Petty & Wegener, 1999). These findings then provide a complement to lab-based studies that mostly provide information about the influence of effortful consideration of health claims.

Implications

While the exact nature of urban Nepali consumers' interactions with FOP NCs on snack food products is unclear, it is evident that these consumers are not falling victim to halo effect heuristics, which could have led them to make erroneous conclusions about the nutrient value of these snack foods. From a consumer advocacy standpoint, this finding is encouraging. If the nutrition transition in Nepal is coming about due to a decrease in diet quality, then the use of FOP NCs does not seem to have a pronounced role in this process.

In some high-income countries such as the U.S. and members of the E.U., there are marketing regulations that define how claims about food nutrition and health effects must be constructed (Silverglade, 1996; Wills et al., 2012). In Nepal, these regulations do not exist. The Nepali government could take steps to adopt health claim marketing regulations, but efforts would likely be better invested in enforcing existing regulations about food safety and hygiene—a more prominent concern among our sample that was uncovered by the thematic analysis (A D; Ogle et al., 2016).

Business implications of this study are that it seems as though the use of FOP NCs on snack food packages is not furthering the business interests of the companies utilizing them, either in bolstering brand image or in increased *PI* among urban Nepali consumers.

CHAPTER 4: RESULTS MANUSCRIPT 2

Synopsis

Background. Obesity is a growing health problem worldwide among children and adults, including in many low and middle income countries which are undergoing a nutrition transition. One such country is Nepal, with the highest prevalence of obesity occurring in urban regions and among people of higher SES. Past research on nutrition transition suggests that an obesogenic food environment contributes to this problem. One aspect of food choice is the influence of food packaging marketing, including front-of-package nutrition claims (FOP NCs). FOP NCs on food can be both beneficial and confusing for consumers. In one sense, FOP NCs can help consumers more easily identify healthful foods. However, heuristic processing may lead consumers to unduly attribute overall healthfulness to unhealthy food products bearing a FOP NC. Measuring attitudes towards FOP NCs is important because they theoretically precede product attitude and purchase intention.

Objective. This study specifically addressed the following research questions: How do Nepali consumers perceive the trustworthiness and influence of FOP NCs, and what do they report to be their top shopping priorities?

Design. Participants' receptivity to FOP NCs was measured by asking them to describe their attitudes towards one FOP NC, and their shopping priorities, broadly speaking.

Participants/setting. Participants were 239 adult shoppers in the Nepali capital Kathmandu ($M_{\text{age}} = 32.89$; $SD = 11.07$). Fifty nine percent were women, 43% reported having one child or more at or under the age of 12. They were recruited as they exited one of three locations of a *high-income country*-style grocery store (i.e., *Bhat Bhateni*).

Main outcome measures. Participants were asked to rate one FOP NC on trustworthiness and influence, and then were asked to explain their rating. They were also asked to report their two most important shopping priorities.

Results. Thematic analysis found various reasons for trust and skepticism in FOP NCs. FOP NCs were largely described as useful. Nearly 90% of reported shopping priorities did not appear to motivate the use of FOP NCs. Several overlapped with shopping priorities identified among the U.S. population (e.g., quality, cost, taste), but others were not (i.e., convenience).

Conclusions. Perceptions of FOP NCs do not rule out their use by Nepali consumers, but reported shopping priorities do not suggest a strong motivation to use them. More data should be collected about the influence of FOP NCs on dietary decision-making.

Introduction

Health claims on food packaging labels signal consumers to notice key nutrients in foods that are important for health. However, incomplete information on health claims sometimes results in consumer confusion and sub-optimal food selection with regards to health. A mixed-methods exploratory study was conducted investigating the influence of one type of health claim—front-of-pack nutrition claims (FOP NCs)—on Nepali consumers' attitudes and intentions related to food choice. This manuscript describes the thematic analysis of the open-ended responses collected in that study, and specifically sought to determine the ways in which urban Nepali consumers are receptive to FOP NCs.

Background

Obesity increasing in LMICs and Nepal. Obesity is a growing health problem in low- and middle-income countries (LMICs; Mamun & Finlay, 2015). LMICs have historically dealt more with the problem of under-nutrition among their populations, and the recent phenomenon

of rates of under-nutrition being met and surpassed by rates of over-nutrition has been coined by some as *nutrition transition* (Popkin et al., 2012). One of these LMICs is Nepal. Nepalis are increasingly experiencing a nutrition transition which is likely related to increases of overweight/obese in the country, especially those of higher SES and those living in the urban center of the Kathmandu valley (Balarajan & Villamor, 2009; Monteiro et al., 2004; Vaidya et al., 2010). This trend is commensurate with other LMICs, and can be tied to diet and physical activity lifestyles that more and more look like those found in developed, high-income countries (Gorton et al., 2011; Hawkes, 2006; Popkin et al., 2012).

Health claims and unhealthful diets. The food marketplace in Nepal—as in other LMICs—is increasingly resembling that of developed, high-income countries, and along with this transition, marketing and advertising practices of the developed, high-income countries are being adopted (Popkin et al., 2012; Witkowski, 2007). According to the Advertising Association of Nepal, ad agencies have transformed from minimally-staffed and unreliable outfits into professional organizations that take advantage of the growth over recent decades, in Nepal, of radio, newspapers, television, and internet availability (Bijaya, 2016). One such marketing practice is health claims. This study focuses on health claims that are displayed on product packaging, specifically the front of the pack.

Health claims are statements directed at consumers which create associations between foods and positive health states (Williams, 2005). Much of the health claim research literature uses a categorization scheme (used by the EU) that defines three types of health claims (Williams, 2005): *nutrition claims*, which describe the actual nutrient composition of the food product; *functional claims*, which specify the benefits of nutrients that are present in the food product; and finally, *disease risk reduction claims*, which describe the ways that the food or

specific content of the food produces increased health outcomes or reduced disease outcomes. While health claims may resemble nutrition information that is typically mandated by regulatory agencies, they are more accurately classified as marketing. This is because health claims' description of nutrition contents is not exhaustive, but rather is selectively chosen to appeal to consumers. Moreover, health claims are often featured more prominently on food packages (e.g., the front-of-pack; FOP) relative to nutrition information, which is typically found on the side or back of the package. Health claims regulations exist in the U.S. (Nutrition Labeling and Education Act; Silverglade, 1996) and in Europe (European Commission Regulation 1924/2006; cited in Wills, Storcksdieck genannt Bonsmann, Kolka, & Grunert, 2012), but no explicit regulations exist in Nepal (Khalid, 2014).

At first glance, health claims appear to benefit consumers by providing guidance on identifying which food products are healthful. However, Wansink and Chandon (2006) provide examples of how health claims might sometimes have the opposite effect, leading them to erroneously buy an objectively unhealthful food while believing that is healthful. This can come about because health claims—which require inductive and memory-based judgments—are interpreted by the brain using *heuristic processing* (Kardes et al., 2004; Wyer & Albarracín, 2005). While using heuristic processing affords many benefits, doing so is also prone to error. In the context of health claims, for example, a package of sugary gummy snacks bearing the health claim *fat free* is at the same time factual and misleading. On one hand, the product does not contain any fat, and on the other hand the product does not contain many nutrients that would make it healthful to eat and is primarily comprised of added sugars, another unhealthful nutrient. The result is that the label *fat free* may lead people to make an incorrect induction that the food is

generally healthful, and this specific heuristic is known as the *halo effect* (Ford et al., 1996; Grunert et al., 2011; Nisbett & Wilson, 1977a; Wansink et al., 2004).

Past research findings on health claims. Thorough literature reviews on the topic of health claims have been conducted by Lähteenmäki (2013); Williams (2005), and Wills and colleagues (2012). The latter group of researchers provided a conceptual framework that demonstrated how various claim, product, and consumer factors influence specific consumer outcomes that are relevant to the food decision-making process. These included understanding of claims, attitude towards the claims, attitudes towards the products, as well as purchase intentions and behaviors for products. See Figure 4.1.

Important in this model is how attitudes towards the product, purchase intention, and eventual purchasing of the product are all preceded by understanding the claim and attitudes towards the claim. According to the model, understanding of and attitudes towards the claim are also, in part, dependent on consumer factors such as personal beliefs, personal relevance, nutrition knowledge, familiarity, and demographic variables—all factors that vary between consumers populations. Past studies have shown differences for consumers' use and interpretation of health claims across countries (Dean et al., 2012; Saba et al., 2010; van Trijp & van der Lans, 2007; Van Wezemael et al., 2014). However, no such studies have been conducted among Nepali consumers. Will they respond to health claims like other consumer populations?

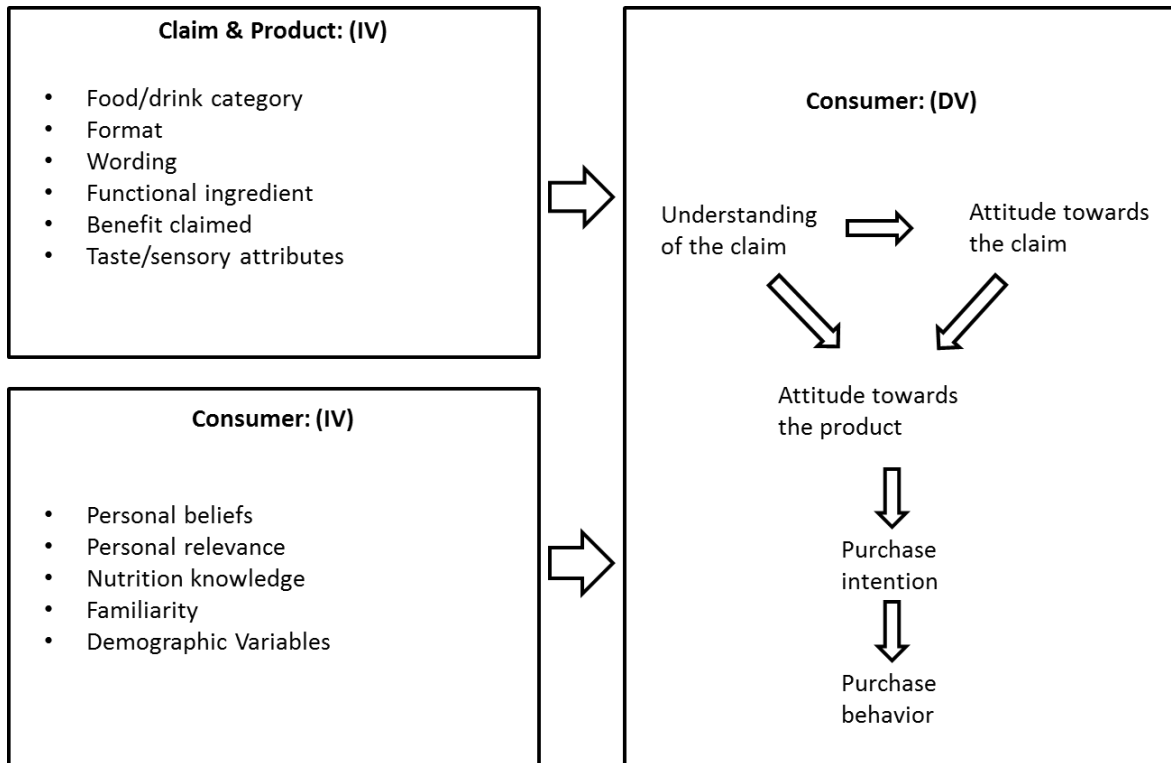


Figure 4.1. “Conceptual framework on how health claims affect consumers.” adapted from Wills et al., 2012.

Nepali consumer factors relevant to health claim interpretation. It is important to note that the decision whether or not to buy a food product is just one moment located within the broader landscape of food choice. One useful model elucidating this broader landscape is the Cornell Food Choice Research Group’s *Food Choice Process Model* (Connors et al., 2001; Furst et al., 1996; Sobal & Bisogni, 2009). In these authors’ framework, food choice is the outcome of *influences* (e.g., ideals, food context, social framework, *personal factors*, and *resources*), that impact an individual’s *personal system* where values are negotiated (e.g. cost, health, quality and convenience, purchasing strategies, etc.) and strategies are used. This model creates a comprehensive explanatory picture of how experiences and idiosyncrasies result in particular food choices.

The reasons for emphasizing this are two-fold. First, it is a way to understand sources of variance that our investigation (focused on the point of purchase) does not measure or even necessarily acknowledge. Doucerain and Fellows (2012) have criticized the food-related decision-making research literature for having too narrow of a focus on the point of decision, and putting less focus on preceding experiences, decisions or systems-variables that also sway downstream decisions, either by making some alternatives more attractive, or by shaping the field of available choices through a process of circumscription.

Second, within the scope that I have described (i.e., the moment of selecting a food among a set of alternatives), Nepali consumers might appear very similar to consumers in other countries, in terms of coming to a grocery supermarket, selecting foods from store shelves, making purchases and then eventually eating the food. However, in other levels of the aforementioned frameworks (e.g., childhood experiences, cultural contexts, local staple foods, etc.), Nepali consumers might be very different from consumers from developed, high-income countries. Below are three specific ways in which Nepalis' influences, personal system, values, or strategies (dubbed *consumer factors* in Figure 4.1) potentially interact with consumers' interpretation and use of FOP NCs.

Nutrition knowledge. Nepali consumers might differ from their counterparts in developed, high-income countries in the type of nutrition education that they have received. Nepal is a country that is the recipient of much food and nutrition aid due to the high rates of under-nutrition, especially in rural areas. The government of Nepal and international non-governmental organizations (INGOs) have implemented a variety of strategies to combat under-nutrition, and among these are public information campaigns (Cunningham & Kadiyala, 2013; Government of Nepal National Planning Commission, 2012; McNulty et al., 2013). These

campaigns may have created a context in which Nepalis have developed specific food choice strategies (Sobal & Bisogni, 2009) around the vitamins and minerals that were the focus of these campaigns. A result of this could be that the emphasized nutrients (e.g., vitamin A) are more salient than fat and calorie contents which are more salient in developed, high-income countries where under-nutrition is not a wide-spread problem. Of course, these ideas would be addendums to the pre-existing food beliefs in Nepal, some of which were described in a report by Adhikari (2010).

Language skills. One important factor in Nepal that is certain to influence the impact of health claims is whether or not there is a match between the language skills of consumers (specifically reading), and the language in which the health claim is written. Although Nepal does have an official language (Nepali), a multitude of languages are spoken among its various ethnic groups. The number of spoken languages has fluctuated greatly across the past six national censuses, with a low of 17 and a high of 92, and this variation is perhaps due to growing awareness in some ethnic groups of their own within-group diversity (Yadava, 2007). Thus, packages labeled in the Nepali language may not be readable for many Nepali consumers. In addition, multinational corporations often do not localize the branding and labeling of their products for such a small market as Nepal due to its being a peripheral market with only 27 million inhabitants, and households spending on average \$60 USD on foods per month (Biehl et al., 2015), and so imported products often are labeled in English. Again, this fact reduces the amount of consumers who might be able to understand the health claims on food packages, which should reduce their overall impact.

Trust in government. In Nepal, there is a general lack of confidence in governing institutions (Askvik et al., 2011) which may include trust in the regulation capacity of the

government. One result of this is that Nepali consumers may have skepticism towards food packaging labels and health claims in particular, especially since that there is no legislation that explicitly regulates their use.

Purpose of Study and Research Questions

A mixed-methods exploratory study was conducted investigating the influence of one type of health claim—front-of-pack nutrition claims (FOP NCs)—on Nepali consumers’ attitudes and intentions related to food choice. The overall purpose of this study was to learn whether or not FOP NCs are related to more or less healthful food selections, and by extension to the changing rates of obesity among urban Nepali consumers. In the first phase of an experimental survey, urban Nepali shoppers evaluated a product by viewing an image of the product package that either bore an FOP NC or did not. This approach provided a clandestine way to measure the effects of FOP NCs on product attitude and purchase intention without drawing respondents’ attention to the presence or absence of FOP NCs. Please see A D; Ogle et al. (2015) for an explanation of the benefits of this approach, as well as a detailed description of the phase one methodology.

The focus of this manuscript is the second phase of the survey. In it, participants’ attention was directed to the FOP NCs and participants were asked to introspect about their understanding of and attitudes towards FOP NCs, as well as their shopping priorities. Using rating scale and open-ended response items, we asked two research questions. **RQ1:** What are urban Nepali consumers’ self-reported perceptions of FOP NCs’ trustworthiness and influence on food-purchase decisions? **RQ2:** What shopping priorities are most important to urban Nepali consumers when making food shopping decisions? These attitudes and priorities are important to understand because in Wills et al.’s model (2012), they precede product attitude and purchase

intention. If FOP NCs are viewed as untrustworthy or useless then consumers will not make use of them. Similarly, if FOP NCs are viewed by consumers as irrelevant to their shopping priorities, then again the consumers will not use them.

One important contrast between phase one and phase two of the survey is that while each participant reported product attitudes and purchase intentions for each of the four products, they only reported their introspected thoughts and feelings about one of the four FOP NCs (whichever was the final product stimulus to be shown, which was counter-balanced); therefore, data were collected from only one quarter of the participants for each specific FOP NC.

These data and analyses stand alone, but they also serve to inform the results of other elements of this mixed-methods study (A D; Ogle et al., 2015), as per its convergent parallel design (Creswell & Plano Clark, 2011).

Methods

Participants and Recruitment

We surveyed 239 adult shoppers ($M_{\text{age}} = 32.89$; $SD = 11.07$) in the Nepali capital Kathmandu. Fifty nine percent were women, 43% reported having one child or more at or under the age of 12. About seventy seven percent had completed at least 12 years of education, and 87% reported that they could read English, which was the language of all FOP NCs. Thirty eight percent reported that they were primarily responsible for shopping for food for the household and 72.3% had lived in Kathmandu for at least 10 years.

Participants were intercepted at three different shopping locations of the well-known “super-store,” *Bhat-Bhateni*, in the Kathmandu Valley. *Bhat-Bhateni* is a developed-country-style, multi-floor center that sells clothing, housewares, electronics, jewelry, sporting goods, etc. Three hundred and three consumers were approached to participate in the study and 239 (79%)

agreed to complete the interview. Surveys were administered orally, in Nepali, by local survey administrators (SAs). Interviews lasted between 12-15 minutes, on average. No compensation was provided to participants for their time.

This study was approved by the Colorado State University IRB (ID 003-14H) on January 9, 2014.

Stimuli and Measures

Respondents were asked questions about images of snack food products printed on paper sheets held in a binder. There were four images total, showing four snack foods that can be found in large grocery stores in Kathmandu¹⁰. In phase one of the survey, respondents answered questions about all four products, some of which featured FOP NCs and some of which did not. In phase two of the survey—which is the focus of this manuscript—the respondents answered questions about just one randomly chosen product and its corresponding FOP NC. The version of the product used for phase two image always featured an FOP NC. Figure 4.2 shows the snack food product images that respondents commented on during phase two. The text of the FOP NCs for each product were: *a. LOW FAT; b. >100% RDA of Vitamin C*, 38% RDA of Vitamin A**¹¹; *c. LOW FAT, LOW SUGAR, TRANSFAT FREE; d. ZERO CHOLESTEROL, ZERO TRANS FAT, GLUTEN FREE, MSG FREE.*

In phase two of the study, SAs pointed directly to the FOP NC and asked respondents directly about their comprehension of the written claims (i.e., *Can you read it? It is written in English. and What does it mean?*)¹². Next, respondents were asked to rate the trust and

¹⁰ See A D; Ogle et al. (2015) for a detailed rationale for how these products were chosen.

¹¹ Note that the asterisk made reference to the serving size on a side panel, but participants were not able to see this information since the image only featured

¹² Participants' interpretations of the FOP NCs are not included in this analysis, since many responses are simple paraphrases; these responses were primarily used to code a covariate "Ability to understand FOP NC language" for phase one of the survey. See A D; Ogle et al. (2015) for more details.

utility/influence of each FOP NC on a 7-point Likert scale item and then to explain why they gave that rating. Those questions were *How true is this message? Please rate it.* and *How much does this influence whether or not you buy a product? Please rate it.* Next, respondents were asked to report on what they believe drives their purchasing decisions (i.e., *What is one important factor for whether or not to buy a food product? What is another important factor for whether or not you buy a food product?*). Finally, respondents answered demographic questions. When creating these items we drew from measures used in studies by van Trijp and van der Lans (2007) and Wong and colleagues (2013).



Figure 4.2. Images of snack food products featuring FOP NCs. Products are a) Cheeseballs, b) Fruit juice, c) Biscuits (cookies), d) Bhujia (fried noodle snack).

Procedures

SAs were five Nepali women who were studying or had completed universities degrees in social sciences and who could read and write in both Nepali and English languages. The

interviewers conducted surveys in Nepali by showing visual stimuli to participants, asking them questions from a written questionnaire, and then recording participant responses using pen and paper. SAs recorded responses to 7-point Likert rating items by circling the corresponding number on the survey form, and recorded respondents' open-ended responses by summarizing them and writing them in English.

The images were counter-balanced so that during the phase one of the survey they were shown in random order. In the first three positions two images randomly featured a product with no FOP NCs and one image featured a product with FOP NC. In the fourth position, the product in the image always featured an FOP NC, so that as the first phase of the study finished, the SA could directly transition into phase two of the survey.

Data Analysis

Research Question 1: How do Nepali consumers perceive FOP NCs? This research question focuses on describing the effects of the FOP NCs that the participants were able to introspect. Specifically, these were: a) how much do Nepali consumers report trusting in FOP NCs?; and b) how much do Nepali consumers report that FOP NCs influence their food purchasing decisions? Responses to these questions took two forms: a 7-point Likert scale rating response and an open-ended response to explain why they had given that rating.

The open-ended response items explaining the ratings about the trustworthiness and perceived influence on purchasing decisions of FOP NCs were analyzed by a three-person team (all US-born) using a constant-comparative thematic analysis (Braun & Clarke, 2006; Fram, 2013). Although many qualitative analyses are situated in a constructionist/interpretivist paradigm, the epistemology of the thematic analysis is based in a post-positivist paradigm, as it is a part of a broader study that is firmly post-positivist (Willis, 2007). An inductive analytic

approach was indicated because we were not able to locate earlier research for this population that outlines the most salient thoughts around the topic of FOP NCs. The specific analysis procedure was to first immerse ourselves in the data and then begin grouping similar responses into themes to form a tentative coding scheme. From there, we executed an iterative process in which we applied the coding scheme to sub-sections of the data set and then modified it for fit with each pass until we had created a coding scheme that achieved a best fit for the complete dataset. Upon finalizing the coding scheme, two coders independently applied the finalized version of the coding scheme to all of the participants' responses. Afterward, the two coders met and reached consensus on their coding application by discussing any discrepancies. Based on the application of the coding structure, we were able to report on the frequencies of each of the codes by counting their occurrences in my dataset, what Onwuegbuzie and Leech (2004) called *quantatization*, where the “*what* becomes *how much*”.

Responses to the rating items were also reported. When reporting each theme, the mean score and standard deviation for the rating items are reported for the sub-set of respondents whose responses were coded with the given theme. T-tests comparing the mean rating scores for clusters of themes were also conducted in order to test if the ratings would support the themes. Themes were grouped according to those that would logically garner higher or lower trust or perceived influence ratings, and differences were predicted to exist.

Research Question 2: What are Nepali consumers' shopping priorities? This research question focuses on describing what Nepali consumers report to be their top shopping priorities. Data were collected using the following two questions: *What is one important factor for whether or not to buy a food product? What is another important factor for whether or not you buy a food product?* The analytical approach of the three-person team changed slightly from the previous

research question. After the coding teams' initial stage of immersing themselves in the data, the lead coder observed similarities between the responses and the *food choice values* (FCV) taxonomy presented in the *Food Choice Process Model* (Connors et al., 2001; Furst et al., 1996; Sobal & Bisogni, 2009). This model was based on semi-structured interviews conducted with grocery shoppers in central New York state, U.S.A. about various food choice issues. This taxonomy seemed appropriate for our questions about purchasing-decision influences since "FCVs are often posited to be the proximal influence on food choice conveying the effects of more distal determinants." (Lyerly & Reeve, 2015; p. 47). FCVs have also been acknowledged to vary by cultural and economic context (Sobal & Bisogni, 2009), and so we expected that we may find novel responses within our Nepali consumer-generated dataset. Therefore, we used the FCVs as an a priori coding scheme and then expanded the scheme using the iterative constant-comparative thematic analysis. After concluding this phase, consensus coding and quantization was undertaken just as in RQ1.

Results

Thematic Analysis

Trust in FOP NCs. Respondents gave ratings in response to the question, *How much do you trust this label? Please rate it.* When asked to give an explanation for those ratings, their answers were typically framed as a reason that they did or did not trust the label, and so our coding scheme maintains this bifurcated structure. Table 4.1 lists the themes that correspond with trust in FOP NCs, their frequency, and the mean and standard deviation of the trust rating on a 7-point Likert item.

The most commonly cited reason for expressing trust in an FOP NC was a positive view of the source. In these answers, the respondent states they trust the label because the company, brand or product is *reputable, high quality, trustworthy* or *good*. Some respondents described

basing FOP NC trust in the constraints that are put upon companies, and these constraints seems to fall into two types. The first type encompasses regulations placed on companies by agencies that would require product packaging accurately represent the contents of the package ($n=4$, 1.7% of respondents). The second type encompasses the constraints of creating positive optics for a company and its brands. Respondents noted companies will try to engender trust and goodwill in customers by being honest in their product labeling ($n=3$, 1.3%).

Another reason given for explaining a trusting view towards FOP NCs was a convergence between the information presented on the FOP NC and the knowledge and personal experiences of the respondent. The correspondence seems to promote belief in the FOP NC. Lastly, some participants expressed an unquestioned trust in the FOP NC that seemed to be based solely on the authority provided to it by being “written” on the package, or alternatively, did not provide any explanation at all for their trust. See Table 4.1 for details.

Table 4.1. Themes among trusting explanations for FOP NC ratings.

| Theme | Frequency* | | Trust rating [#] | | Quote |
|--------------------------------------|------------|--------|---------------------------|-----------|---|
| | <i>n</i> | (%) | <i>M</i> | <i>SD</i> | |
| Positive view of source | 33 | (13.8) | 3.68 | 1.68 | <i>“Good brand. Believable.” (30 yr. old woman)</i> |
| Company constraints | 7 | (2.9) | 3.43 | 1.40 | <i>“There is rules and regulation and company should not have right to write it, it is multinational company”(33 yr. old man)</i> <i>“The well-known company tries to make the product more hygienic” (34 yr. old woman)</i> |
| Convergent knowledge and experiences | 6 | (2.5) | 4.17 | 1.84 | <i>“Good product as experienced...”(21 yr. old woman)</i> |
| Unquestioned trust | 18 | (7.5) | 3.83 | 1.54 | <i>“Taste, own perception...” (32 yr. old man)</i> <i>“Because it is written” (25 yr. old woman)</i> <i>“I have not used it but it writes low fat and I believe on it.” (27 yr. old man)</i> |

* *n* represents the number of participants who responses were categorized under the theme. Percentages represent the number of respondents who mentioned each theme relative to the total number of respondents ($n = 239$).

Mean trust rating scores are from a 7-point scale, with 1 representing the lowest score and 7 representing the highest score.

Respondents described their mistrust for FOP NCs with other kinds of explanations (see Table 4.2). Some regarded the FOP NCs as a pieces of marketing, and according to them, marketing and advertising are not reputable sources of information. While many ($n=34$, 14.2% of respondents) said these messages were “*just product advertisement*” (29-year-old woman) or “*just [said] to sell a product*” (23-year-old woman), another group of respondents went as far as to declare these messages as false or fake ($n=9$, 3.8%).

Some participants talked about their mistrust as being based in an inability to verify what the FOP NC was claiming. For them, the written word of food companies was not to be taken at face value. This could likely be connected to another theme that emerged in the responses: a lack of consumer protections. Respondents noted that food companies can sell bad products with impunity. Some specified that companies are more likely to sell adulterated products in Nepal than in other places because adequate regulations are not in place in that market.

Another explanation for mistrusting FOP NCs that respondents gave was a contradiction between the FOP NC and their own personal knowledge or experiences. Specifically, some responses noted that if foods were healthy as the FOP NC suggested, then they would likely taste differently than they do ($n=5$, 2.1% of respondents), or they would not have as many artificial ingredients and chemicals as they do ($n=19$, 7.9%). Some said that if foods were actually of high quality like the FOP NC suggested, then they would likely cost more ($n=3$, 1.3%). Still others stated that that the information contained in the FOP NC seemed to go against the essence of the food. For example, one participant said of the label on the cheeseballs snack, “*Though it says cholesterol free it is fried in oil. They put so much fat, also.*” (46-year-old woman; $n=20$, 8.4%). Lastly, some talked about prior knowledge such as personal use, anecdotes of others

using it, and to an extent the general reputation of the product ($n=9$, 3.8%). Responses categorized like this are most often mentioned when describing the fruit juice because of widespread stories of contamination and sickness caused by the product.

Table 4.2. Themes among mistrusting explanations for FOP NC ratings.

| Theme | Frequency* | | Trust rating [#] | | Quote |
|---|------------|--------|---------------------------|-----------|--|
| | <i>n</i> | (%) | <i>M</i> | <i>SD</i> | |
| Marketing perception | 42 | (17.6) | 3.44 | 1.62 | <i>"The company use [the FOP NCs] only for the purpose of business"(27 yr. old man)</i> <i>"It's only for advertisement. I don't trust [the FOP NC on this] item (27 yr. old man)</i> |
| Inability to verify | 27 | (11.3) | 3.57 | 1.83 | <i>"I have not used [this product] before so I do not know?" (30 yr. old woman)</i> <i>"You can't really tell, some [FOP NCs] might be true some might not." (30 yr. old woman)</i> |
| Contradictory knowledge and experiences | 53 | (22.2) | 4.24 | 1.51 | <i>"Cheese is expensive. It's just flavors." (30 yr. old woman)</i> <i>"It has more artificial ingredients" (53 yr. old woman)</i> <i>"Because [the FOP NC] mentions that it is fat free but [the food] makes you fat." (25 yr. old woman)</i> |
| Lack of consumer protections | 9 | (3.8) | 4.71 | 1.25 | <i>"We do not have consumer right to claim for in the country like Nepal." (59 yr. old man)</i> <i>"People sell expire products." (30 yr. old man)</i> <i>"There is no proof, no quality control, no authentication." (42 yr. old man)</i> |
| No trust without explanation | 12 | (5.0) | 3.36 | 1.69 | <i>"I do not believe that it is it truly as described in the pictures." (35 yr. old woman)</i> <i>"I do not believe the company includes all ingredients as written in the product." (21 yr. old woman)</i> |

* *n* represents the number of participants who responses were categorized under the theme. Percentages represent the number of respondents who mentioned each theme relative to the total number of respondents ($n = 239$).

[#]Mean trust rating scores are from a 7-point scale, with 1 representing the lowest score and 7 representing the highest score.

Other types of responses were identified in response to the question about FOP NC trust. Nine respondents gave answers that did not fit within our coding scheme (e.g., *It doesn't really matter. It's the same thing*; 32-year-old man). One respondent seemed to have misunderstood the question (e.g., *I do believe it's vegetarian*; 33-year-old woman). In addition, 31 respondents did not give an answer, although only 19.3% of these had indicated that they did not speak English and could not read the FOP NC.

Perceived influence of FOP NCs. Themes were created from participants' responses to the questions, *how much does this [FOP NC] influence whether or not you buy the product? Please rate it, and please explain why.* Table 4.3 lists the themes pertaining to the perceived influence of FOP NCs, along with the mean and standard deviation of the influence rating on a 7-point Likert item, as well as their frequency.

The most frequently noted group of responses described the central utility of FOP NCs: providing information. This was discussed in several ways. Some participants talked about the influence in terms of getting information, either generally ($n=30$, 12.6% of respondents) or talking specifically about the ingredients of the food or the contents of the product ($n=35$, 14.6%). On some occasions, respondents made inferences about the product's attributes that seemed to be derived from the FOP NC, even though the attribute information was not explicitly stated in the FOP NC text (e.g., *denotes quality*, 48-year-old man; $n=8$, 3.4%). Participants also mentioned the application of the information as being useful, such as being used to make a purchasing decision ($n=21$, 8.8%) or they helped to identify food products that are suitable for members of groups with special needs (e.g., children, adults with certain diseases; $n=18$, 7.5%).

Another way that participants explained the influence rating which they gave to the FOP NC was by referring to their own values and interests that would be served by the information

provided by the FOP NCs. Specifically, these values and interests were health, diet awareness, and food safety. These themes are explored individually in Table 4.3.

Some participants took a view that the FOP NCs are not useful, stating that instead they either do not trust the FOP NCs ($n=14$, 5.9% of respondents), or that they based their decision making on other factors such as past experiences with products or the company's reputation ($n=20$, 8.4%). Still others only gave a negative numeric appraisal of the influence of the FOP NC without explaining their opinion ($n=6$, 2.5%).

A smaller number of participants reflected on various FOP NC features, giving opinions about their source characteristics. These responses touched on the need for FOP NCs to be attractive in order to be effective ($n=7$, 2.9% of respondents) or they likened them to advertisements ($n=3$, 1.3%). Still others mentioned that FOP NCs engender trust, especially on the products of trustworthy companies (e.g., *Well known brands don't lie. They have tendency to satisfy customers*, 29-year-old man; $n=10$, 4.2%). Finally, one person mentioned that FOP NCs seem directed towards children, while four others discussed the product's country of origin as grounds for evaluating the influence of the FOP NC (e.g., *I don't know. Some materials might be good, but people say you don't get quality products in Nepal*, 40-year-old woman).

The final theme emerging from responses about the FOP NCs' influence seemed to reflect on some characteristic of the consumer. For example, three respondents explained that the rating of FOP NC influence would depend on the education of the consumer seeing it. Several participants noted various other characteristics, such as the age cohort or the level of conscientiousness ($n=9$, 3.8%).

Other types of responses were provided to answer the question about FOP NC influence. Four respondents gave answers that did not fit within our coding scheme (e.g., *food products I*

don't really see but I consider the ingredients on cosmetic products; 53-year-old woman). In addition, 33 respondents did not give an answer; five of these had indicated that they did not speak English and could not read the FOP NC.

Food shopping priorities. Respondents gave answers to the questions, *what is one important factor for whether or not to buy a food product?*, and *what is another important factor for whether or not you buy a food product?* The coding team began by comparing participant responses to the *food choice values* (FCV) taxonomy outlined in the *Food Choice Process model* (Connors et al., 2001; Furst et al., 1996; Sobal & Bisogni, 2009). The team adopted some of the FCV as shopping-priority themes, and defined some novel themes as well. Table 4.4 lists the frequency of each theme, its theoretical origin, and some example quotes from our sample.

We found overlap between five out of six of Furst and colleagues' original FCVs. These were *sensory perceptions*, *monetary considerations*, *health and nutrition*, *quality*, and *managing relationships*; Furst and colleagues' (1996) sixth value—*convenience*—was not mentioned by our Nepali sample. In this analysis, we interpreted *sensory perceptions* as applying solely to taste, and not the appeal of the product packaging. *Managing relationships* appeared primarily as satisfying the preferences of children in the family.

In Connors and colleagues' (2001) expanded version of the FCV model, five additional values were added to the original six: *variety*, *safety*, *symbolism*, *ethics*, and *limiting waste*. However, our participants mentioned only *safety* and *variety*, and only one person mentioned *variety*. *Safety* was discussed more broadly, and encompassed topics of hygiene and food expiry. Three new shopping-priority themes emerged from the participants' responses that were not FCVs the Food Choice Process model. These were *familiarity*, *meeting needs*, and *package labeling*. The theme *familiarity* referred to basing a purchase decision on knowledge of and

Table 4.3. Themes pertaining to the perceived influence of FOP NCs.

| Theme or Sub-theme | Frequency* | | Perceived influence rating [#] | | Quote |
|---------------------------------------|------------|--------|---|-----------|---|
| | <i>n</i> | (%) | <i>M</i> | <i>SD</i> | |
| FOP NCs provide information | | | | | |
| Get information | 73 | (30.5) | 5.15 | 1.54 | <i>"It helps to get the overall idea about the contents of product."</i> (30 yr. old man) |
| Apply information | 39 | (16.3) | 4.71 | 1.69 | <i>"I am diabetic; I buy sugar free products by looking at labels."</i> (40 yr. old man) |
| FOP NCs speak to consumers' values | | | | | |
| Health | 17 | (7.1) | 5.44 | 1.26 | <i>"Health is first priority to me."</i> (29 yr. old man) |
| Diet awareness | 13 | (5.4) | 5.17 | 1.03 | <i>"We should know what we are eating."</i> (32 yr. old woman) <i>"You have to know what you are buying nowadays."</i> (33 yr. old woman) |
| Food safety | 15 | (5.4) | 5.77 | 1.01 | <i>"We can see the dates on [the product]."</i> (39 yr. old man) <i>"How hygienic for the children."</i> (49 yr. old woman) <i>"The product is authentic."</i> (32 yr. old woman) |
| FOP NCs are not useful | 40 | (16.7) | 4.67 | 1.34 | <i>"It matters to people who are very conscious. I buy the products looking at the brand name"</i> (30 yr. old woman) <i>"I don't usually read labels."</i> (22 yr. old woman) <i>"I do not believe that it includes all ingredients and it does not have others."</i> (30 yr. old woman) |
| Reflections on source characteristics | 25 | (10.5) | 4.65 | 1.27 | <i>"[The FOP NC] is like an advertisement which has an impact on people."</i> (26 yr. old man) <i>"I probably believe in written information. If it is true it could be beneficial."</i> (34 yr. old man) |
| Reflections on consumers | 12 | (5.0) | 5.09 | 1.51 | <i>"The new generation views details of product."</i> (28 yr. old woman) <i>"Depends on the educational level of the consumer."</i> (35 yr. old woman) |

* *n* represents the number of participants whose responses were categorized under the theme. Percentages represent the number of respondents who mentioned each theme relative to the total number of respondents (*n* = 239).

Mean perceived utility/influence rating scores are from a 7-point scale, with 1 representing the lowest score and 7 representing the highest score.

experience with the food product brands and manufacturers. Mentions of brands and company logos and names were categorized in this theme.

Another novel theme that emerged was *meeting needs*. The name comes from participant responses that spoke about buying products because they addressed everyday needs. This response type portrays the decision-making process as straightforward, and does not seem to acknowledge using priorities to navigate choosing between several options. *I need milk* is a need that must be met, yet in the U.S. shoppers would likely have to choose among many varieties that are widely available. Perhaps the theme *meeting needs* reveals a less option-filled shopping experience that may exist for consumers in Nepal relative to consumers with more varied food marketplaces.

The final novel theme around shopping priority responses was *package labeling*. Among these responses were advertisements, packaging, cover of the product, and written information/delivery of information. This theme is interesting, because while its absence from the Food Choice Process Model could indicate cultural difference among the consumers in this study, we the researchers also observe the possibility that the line of questioning in the survey up to this item may have primed participants with certain ideas about what guides their shopping. Specifically, it could be that participants were unduly prompted to mention this theme because the topics were unconsciously *brought online* in the minds of participants. However, it may be that participants would have offered these responses independently of researcher intervention.

Beyond the thematic interpretations of participant responses to the questions about shopping priorities, seven respondents gave answers that did not fit within our coding scheme (e.g., *if I desire to eat then I buy the product*; 80-year-old man). In addition, two responses were

not interpretable from the SA's notes and one respondent did not give an answer to either question.

Table 4.4. Themes pertaining to food shopping priorities.

| Theme | Frequency* | | Theoretical Origin | Quote |
|------------------------|------------|------------------|----------------------|--|
| | <i>n</i> | (%) [#] | | |
| Sensory perceptions | 82 | (34.3) | Furst et al., 1997 | "Taste" (23 yr. old man) "Taste" (40 yr. old woman) |
| Monetary consideration | 79 | (33.1) | Furst et al., 1997 | "Cost" (32 yr. old woman) "Price" (35 yr. old man) |
| Health and nutrition | 35 | (14.6) | Furst et al., 1997 | "Health is my first priority" (40 yr. old man) "Nutrition" (21 yr. old woman) "Ingredients" (22 yr. old woman) |
| Quality | 84 | (35.1) | Furst et al., 1997 | "Clean, made well" (17 yr. old woman) |
| Managing relationships | 3 | (1.3) | Furst et al., 1997 | "Depends upon what our children like" (31 yr. old woman) "Whether children like it or not" (45 yr. old man) |
| Safety and hygiene | 69 | (28.9) | Connors et al., 2001 | "Hygienic" (32 yr. old woman) "Manufacturing date" (33 yr. old man) |
| Variety | 1 | (0.4) | Connors et al., 2001 | "Something I want to try something new" (29 yr. old man) |
| Familiarity | 82 | (34.3) | <i>Novel theme</i> | "Company's reputation" (35 yr. old man) "Brand/company" (28 yr. old man) |
| Meeting needs | 34 | (14.2) | <i>Novel theme</i> | "If the product is necessary I buy it" (49 yr. old woman) "Daily needs" (29 yr. old woman) |
| Package labeling | 26 | (10.9) | <i>Novel theme</i> | "Packing system, label..." (31 yr. old woman) "Packaging" (23 yr. old woman) "Cover of the product" (36 yr. old woman) |

*The total number of responses exceeds the sample total ($n = 239$) because the responses to both shopping priority questions were combined and then coded.

[#]Percentages represent the number of respondents who mentioned each theme relative to the total number of respondents.

Analysis of Rating Data

Respondents' open-ended responses (analyzed above) were solicited as explanations of 7-point Likert ratings of trustworthiness and perceived influence given for the FOP NC. On average, respondents rated FOP NCs as having more influence ($M = 4.98$, $SD = 1.50$) than trustworthiness ($M = 3.76$, $SD = 1.60$), $t(213) = -9.79$, $p < .001$. The rating scales were weak-to-moderately correlated, $r = .31$. Missing values were deleted pairwise.

Between-theme differences. In order to test if the ratings would support the thematic categories described earlier, these categories were grouped according to those that would logically garner higher or lower trust or perceived influence ratings, and *t-tests* of their average rating scores were conducted. Specifically, the mean trust rating of participants whose responses were coded with a trust theme (i.e., themes found on Table 4.1; $M = 3.80$, $SD = 1.61$) were compared to the mean ratings of participants whose responses were coded as a mistrust theme (i.e., themes found on Table 4.2; $M = 3.81$, $SD = 1.64$). Results did not show a difference in trust rating means, $t(173) = .012$, $p = .99$.

Regarding perceived influence, the mean perceived influence rating of participants whose responses were coded as *FOP NCs provide information or respondent values* (both of which alluded to the influence of FOP NCs; $M = 5.13$, $SD = 1.51$) were compared to the mean rating of participants whose responses were coded as *FOP NCs are not useful* ($M = 4.67$, $SD = 1.34$; see Table 4.3). Results did not show a difference in influence rating means, $t(148) = -1.586$, $p = .12$.

Between-FOP NC differences. The themes above were derived from responses to four separate FOP NCs that appeared on four separate products. Differences in participant responses could be related to the specific characteristics of each FOP NC. However, these differences (e.g., product category, country-of-origin, wording of FOP NC, number of statements on FOP

NC) were not systematically varied across the different stimuli. The result of this is that we did not formally test the differences in trust or perceived influence between FOP NCs because it would be impossible to discern which factor or factors were at the root of the differences. Nevertheless, Table 4.5 provides the mean trust and perceived influence ratings for each product, as well as the frequencies of the trust and influence themes. Shopping values theme frequencies are not provided since these questions did not use the FOP NC as a referent.

Discussion

Summary of findings

Respondents saw one of four possible FOP NCs on a product. For this FOP NC, they gave a rating of its trustworthiness and perceived influence using 7-point Likert items. These data showed perceived influence to be slightly higher than trustworthiness, with a weak-moderate correlation between the two. After giving a rating, the respondents were asked to explain the rating that they had given.

Participants gave explanations for their trust and perceived influence ratings, and responses were categorized by theme. When respondents explained their trust in an FOP NC, it was usually tied to a positive view of the message source, corroboration from the respondents' knowledge of, or experience with, the product or a belief that the company would not lie due to market regulations or concern over maintaining positive public relations. For mistrust, several themes emerged, including the view that FOP NCs are expressly false or nothing more than marketing, which could be due to a lack of consumer protections in Nepal. Others talked about being unable to verify whether or not the FOP NC is true, or the FOP NC seemed to be untrue due to seeming contradictions between the claim and the respondents' existing knowledge of or experience with the product.

Table 4.5. Across each product, trust and utility/influence rating and frequencies of themes from each question.

| Mean Ratings* | Cheeseballs | | Fruit Juice | | Biscuits | | Bhujia | |
|--|-------------|------------------|-------------|------------------|----------|------------------|----------|------------------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Trust | 3.50 | 1.57 | 3.44 | 1.56 | 4.32 | 1.66 | 3.84 | 1.52 |
| Utility/Influence | 4.84 | 1.51 | 4.94 | 1.52 | 5.57 | 1.10 | 4.66 | 1.65 |
| Themes | Cheeseballs | | Fruit Juice | | Biscuits | | Bhujia | |
| | <i>n</i> | (%) [#] | <i>n</i> | (%) [#] | <i>n</i> | (%) [#] | <i>n</i> | (%) [#] |
| FOP NCs are Trustworthy | | | | | | | | |
| Positive view of source | 12 | (20.0) | 9 | (15.0) | 5 | (8.5) | 7 | (11.7) |
| Company constraints | 0 | (0.0) | 4 | (6.7) | 2 | (3.4) | 1 | (1.7) |
| Convergent knowledge/ experience | 0 | (0.0) | 5 | (8.3) | 1 | (1.7) | 0 | (0.0) |
| Unquestioned trust | 6 | (10.0) | 6 | (10.0) | 3 | (5.1) | 3 | (5.0) |
| FOP NCs are Not Trustworthy | | | | | | | | |
| Marketing strategy | 9 | (15.0) | 9 | (15.0) | 12 | (20.3) | 12 | (20.0) |
| How can I verify? | 5 | (8.3) | 6 | (10.0) | 8 | (13.6) | 8 | (13.3) |
| Contradictory knowledge/ experience | 5 | (8.3) | 13 | (21.7) | 19 | (32.2) | 16 | (26.7) |
| Lack of consumer protections | 2 | (3.3) | 2 | (3.3) | 1 | (1.7) | 4 | (6.7) |
| No trust without explanation | 7 | (11.7) | 2 | (3.3) | 2 | (3.4) | 1 | (1.7) |
| The Perceived Influence of FOP NCs | | | | | | | | |
| FOP NCs provide information | 29 | (48.3) | 22 | (36.7) | 23 | (39.0) | 25 | (41.7) |
| FOP NCs speak to consumers' values of health, awareness, and/or food safety | 10 | (16.7) | 10 | (16.7) | 11 | (18.6) | 13 | (21.7) |
| FOP NCs are not useful | 2 | (3.3) | 9 | (15.0) | 10 | (16.9) | 19 | (31.7) |
| Reflections on source characteristics | 5 | (8.3) | 8 | (13.3) | 3 | (5.1) | 5 | (8.3) |
| Reflections on consumers | 5 | (8.3) | 1 | (1.7) | 6 | (10.2) | 0 | (0.0) |

*Ratings were 7-point Likert items , with 1 representing the lowest score and 7 representing the highest score.

[#]Percentages represent the number of respondents who mentioned each theme relative to the total number of respondents.

The statements of mistrust towards FOP NCs among our sample supports previous observations that Nepalis also mistrust their governing institutions (Askvik et al., 2011). While mistrust in FOP NCs is acceptable based on the premise of this study which is that FOP NCs are

marketing, a related mistrust in nutrition labeling would be problematic. This is because, the healthfulness of a food is a credence attribute that is not self-evident, and must be determined through some means other than experience, such as package labeling (Verbeke, 2005). If Nepali consumers are unable to trust in the information provided on food packages, then this could be creating a barrier to making informed purchasing decisions. At this point, however, it is unclear if consumers' mistrust in FOP NCs extends to nutrition labeling. One caveat to this conclusion is the fact that trust in FOP NCs is only weakly-to-moderately correlated with perceived influence, and so mistrust towards FOP NCs does not necessarily preclude a respondent from finding it useful or influential.

When explaining their rating of perceived influence of FOP NCs, consumers described receiving or using information that was available on the FOP NC, or talked about how that information was relevant to their values of health, diet awareness, or food safety. When describing the information provided by the FOP NCs, some participants related information that was not actually present on the package (e.g., the 48-year-old man who said that the FOP NC *denotes quality*). This phenomenon provides evidence of heuristic processing of health claims about which past research has warned (Wansink et al., 2004; Williams, 2005).

Other respondents said that FOP NCs were not useful because they were not trustworthy, or because consumers preferred other information for decision-making (e.g., brand name). Beyond this, some participants reflected on the source characteristics of the product/FOP NC, or on the characteristics of shoppers.

The variation among the themes suggests that some participants perceived more trustworthiness or influence in the FOP NCs than other participants. On average, however, there was no statistically significant difference in trust rating between people who gave reasons for not

trusting FOP NCs versus those who gave reasons for not trusting FOP NCs. There was also no statistically significant difference in mean perceived influence ratings between participants who described uses of FOP NCs and people who said that FOP NCs would not be useful. These quantitative ratings neither confirm nor refute the thematic analysis, but the lack of correspondence between the ratings and the thematic organization was certainly unexpected by the authors, since we expected that respondents who spoke about trusting FOP NCs would have given them higher trust ratings than those who gave reasons for not trusting FOP NCs. One possible explanation for the lack of correspondence could be that participants' negative-focused explanations for high (i.e., 5 or 6)—but not perfect (7)—ratings were based in a sense that they had to justify giving less than a perfect rating.

Regarding the open-ended items about shopping priorities, there was considerable overlap (e.g., *taste, cost, health*) between Nepali responses and the food choice values (FCVs) from the food choice model that was developed with U.S. populations (Connors et al., 2001; Furst et al., 1996). However, there were also FCVs that were not mentioned by the Nepali participants in this study (i.e., *convenience, symbolism, ethics, and limiting waste*), and variety was only mentioned by one respondent. It may be that the FCVs are not as salient to urban Nepali consumers as they are to other consumers.

There were some shopping priorities mentioned by Nepali respondents did not appear in the U.S.-based Food Choice Process Model as FCVs (i.e., *familiarity* and *meeting needs*). The fact that these shopping priorities were not defined as FCVs could possibly be due to cultural differences. However, it is more likely that they were described in the Food Choice Process model—not as FCVs—but rather as *food choice strategies/scripts*, which are decision heuristics that are used to eliminate the need value negotiations at every decision point (Sobal & Bisogni,

2009). This explanation seems to fit with *familiarity* (i.e., automatically choosing based on brand) and *meeting needs* (i.e., developing a routinization of food choice; Falk, Sobal, & Bisogni, 1996). With regards to the third novel shopping-priority theme, *package labeling*, the self-awareness required to describe the influence of package labeling on shopping behavior is not typically found among consumers, who typically either do not notice or—when they do notice—underestimate the effect of environmental cues on their purchasing decisions (Bargh, 2002). Because consumers often are not aware of the influence of environmental cues on their purchasing (or on their food- and eating-based decisions; Wansink & Sobal, 2007), the explanation of researcher influence on respondents (via conscious demand characteristics or unconscious priming) seems more likely than a true cultural difference between this sample and others.

It is important to note that of all of these shopping priorities, *health and nutrition* and *packaging* were the two most likely to motivate a consumer to utilize FOP NCs. However, only 12.4% of the responses were classified as one of these two themes. Given this, there is not much supporting evidence that FOP NCs are a sought-after tool for making food-purchasing decisions among urban Nepali consumers.

Strengths and Limitations

This study counted several strengths. First, interviews were conducted outside a grocery store that regularly stocks food products featuring FOP NCs. This recruitment strategy increased the likelihood that questions were salient to participants. Second, surveys were conducted in the most prevalent local language by native speakers, an approach that enhanced the quality of the data. Third, shopping priorities were solicited without any specific prompting. In contrast with research approaches that ask participants to respond to an existing list of domains compiled by

the researchers, this approach is effective with understudied populations because it allows them to communicate which themes are salient without the burden of researcher expectation, especially when those themes differ from other populations (e.g., *convenience*).

Unfortunately, the possibility that responses for the shopping priorities items were biased emerges from exposure to product attitude items from phase one of the survey—or other survey items—either because of priming effects or because of demand characteristics. For example, some respondents spoke of the importance of the food product ingredients in their purchasing decision, although this may be a demand characteristic from the item asking respondents to evaluate how natural a product's ingredients were. Ultimately, the relative proportion of the endorsed themes in the data might not be representative of the broader urban Nepali population, and should be interpreted with caution.

While interviews were conducted in Nepali by local SAs, the majority of responses were summarized and translated into English at the moment that responses were collected and recorded. These translational processes have likely resulted in some recorded participant responses that lack the nuance that they originally contained at the moment of interaction. Additionally, although the Likert-item response style instrument followed best-practice recommendations found in the literature (Kohrt et al., 2011) and was pilot tested, it could be that the instrument was unclear to participants. This could account for the discrepancy between the Likert ratings of trust and perceived influence and the open-ended responses.

Implications

Urban Nepali consumers seem to carry a greater sense of skepticism towards the FOP NC marketing approach relative to other consumer populations, and perhaps a reduced sense of health consciousness. This makes them resilient against falling victim to heuristic processes that

might lead them to make erroneous health attributions to objectively unhealthful snacks. While a nutrition transition is occurring in Nepal, it is not likely due to health claim marketing strategies that have been imported from more developed food markets.

Should marketers wish to be more effective in their communication towards urban Nepali consumers, Glanz et al. (1998) argue that marketers ought to appeal to the most salient shopping priorities. In 1998, taste, cost and convenience were high among the nation-wide sample of U.S. adults. In the present sample, the most frequently occurring priorities were taste, cost, quality and safety/hygiene. Though taste and cost priorities overlap between the U.S. and Nepali samples, the Nepali focus on quality and hygienic foods is perhaps more revealing of the concerns of a LMIC population. In such a context where undernutrition and food security has been the long-standing issue, a healthful diet may have more of an implication of 'safe' rather than the FOP NC message 'Low fat'.

CHAPTER 5: ADDITIONAL RESULTS

Other Consumer Factors as Potential Moderators: Continuation of RQ2

Parenthood status. The status of being a parent of one or more children that was twelve years old or younger (henceforth *parenthood status*) was originally intended to be included as a covariate and potential moderator of the effect of front-of-pack nutrition claim presence (*FOP NC*) on product attitudes and purchase intention (*PI*). This was because buying food for young children has been shown in one study (Visschers et al., 2010) to serve as an effective inducement of health motivation (the participants were college students who were told they were choosing foods for their kindergarten classes vs. their college-aged peers). However, there were some complications during data collection (explicated below) which resulted in the necessity to drop the variable from the analysis.

Rationale for exclusion. Of the 239 participants, 16 were missing responses about parent status. In order to determine what to do about these missing data, the nature of their missingness needed to be determined. According to Tabachnick and Fidell (2012), a case-wise deletion is feasible if the data are missing completely at random (MCAR; missingness is not related to participant characteristics or to the values that are missing); this is a conservative approach because it prevents the researcher from having to invent data for participants, but it reduces the overall power of the analysis, as the sample size is reduced. Alternatively, the data might be missing at random (MAR; missingness is attributable to some characteristic of the respondent, but not to the specific missing value) or missing not at random (MNAR; participants refused to provide values based on what those values are [e.g., do not want to report income because they feel embarrassed that it is too high/low]). In these latter two cases, removing those participants

case-wise could skew results and alter the profile of the sample because data are being lost from a specific class of participant. In such a case as that, a better alternative would be to remove the variable in question from the analysis or use a procedure to estimate the missing values.

The following information was used to determine which type of missing data constitute the missing parenthood status data in this study: 94% of missing parenthood status values were attributable to one survey administrator (SA), 87.5% of participants with missing data were between the ages of 20-30, and 68.8% were women. This compares to the broader sample of missing values, where 27% were attributable to that same SA, 47.3% were in between the ages of 20-30, and 58.6% were women. Efforts later on to communicate with that SA so that she might explain these missing data were unsuccessful, rendering further insight impossible.

Considering these facts, the data are not MCAR. It can be seen that these were not missing in a random way because more than 90% were the responsibility of one SA. The data then will be MAR since the values are predictable based on the identity of the SA, or could even be MNAR if the SA systematically did not ask parenthood status question because of participants' specific characteristics (e.g., felt embarrassed to ask young women if they had children). In the case of either explanation, these seem *not* to fit the definition of Missing Completely At Random (MCAR).

To empirically test these suspicions, I conducted a logistic regression analysis with the "parenthood status missing value" as the DV, to see if age or sex might be able to predict whether or not the data are missing (since these may have been salient to the SA when deciding to ask or not ask the question). Results showed that participants who were 11 years older than the mean age of 32 (1 *SD* higher) had 1.48 times lower chance that their *parenthood status* value would be missing ($p = 0.01$) relative to 32 year-old participants. The same analysis for *sex*

showed no statistically significant result ($p = .69$). If the missingness can be predicted by any of the demographic variables, then it would seem reasonable to declare that the data are not MCAR, and try to avoid case-wise deletion. The results of the logistic regression analyses indicate that we can predict missingness based on *age*, but not *sex*. Therefore, to do case-wise deletion to preserve the *parenthood status* variable in the analysis would eliminate cases from more young people than older people and possibly skew the sample. Therefore, I chose to drop the *parenthood status* variable from the analyses and preserve the cases.

Parenthood status as a moderator. As mentioned in the previous section, including the parenthood status variable would not be appropriate due to the nature of its missingness. However, for the purposes of counter-factual imagination, I conducted a version of the conditional process model analysis from Manuscript One, except that I dropped the cases which were missing the *parenthood status* values and included the *parenthood status* variable and its interaction term with *FOP NC*. See Table 5.1 for β coefficients and p -values of the covariates and interaction terms. Results showed that parenthood status was occasionally significant as a covariate in *a*-path models of *FOP NC* on product attitudes, but there were no statistically significant moderating effects in any of the models for any of the products. Thus, not including *parenthood status* was not a great theoretical loss, and its exclusion helped to maintain the integrity of the study in other areas.

Please note that since this model includes more predictor variables than previous models, separate power analyses (two-tailed, $\alpha = .05$) were conducted using G*Power3 (Faul et al., 2007) for each product's mediation model. Because of differences in sample sizes across products, the power of each model varied slightly. Power analyses indicated excellent power to detect large

effects ($d = 0.35$), $1-\beta > .999$, adequate power to detect medium effects ($d = 0.15$) ranging from $1-\beta = .952 - .954$, but insufficient power (.163 – .165) to detect small effects ($d = 0.02$).

Previous Use. After conducting the primary conditional process analysis of the study, *previous use* was retroactively considered to be a potential moderator of the effectiveness of *FOP NC*, given that frequent users of a product would have their *PI* be more heavily influenced by their own habitual behavior than by environmental cue of the *FOP NC* (Ouellette & Wood, 1998; Verplanken & Orbell, 2003). Thus, a hypothesis emerged that *FOP NC* would have a greater influence on the *PI* of consumers who did not have previous use of the food category. This relationship was suspected to only be relevant to the direct effect of *FOP NC* on *PI* (*c'*-path), and should have been irrelevant to *FOP NCs'* effects on the product attitudes (*a*-path). Tests of significance were null for all four product models.

Research Question Three: Country of Origin and Consumer Ethnocentrism

One of the aforementioned purposes of this study was to measure whether or not a products' country-of-origin (COO)—in conjunction with consumer ethnocentricity—might weigh on the attitudes and purchase intentions towards the products themselves and possibly the *FOP NCs*. My intention to measure these differences came about because of some evidence that reasonably suggested that Nepali consumers might experience the opposite of an ethnocentric bias towards Nepali products; it could be that they were biased *against* Nepali products, due to mistrust towards government institutions and a preference for foreign pop culture. To test this hypothesis, I had hoped to measure differences in attitudes and purchase intentions between the products whose COO varied; for some products the COO was Nepal and for others it was India.

Table 5.1. Beta coefficients (β) and p -values for *FOP NC* and covariates in a -path (predicting product attitudes) and c'/b paths (predicting *PI*), including the *parenthood status* covariate and the *FOP NC x parenthood status* interaction term.

| Product | Covariate | a -path | | | | | | | b/c' -path |
|------------------------------|----------------------------|------------------|----------------|------------------------|----------------------|---------------------|----------------------|---------|--------------|
| | | Children like it | Adults like it | Healthful for children | Healthful for adults | Natural ingredients | Quality Manufactured | Tasty | PI |
| | | β | β | β | β | β | β | β | β |
| Cheese-balls | <i>FOP NC</i> # | -0.30 | -0.55 | -0.36 | -0.39 | 0.17 | -0.11 | -0.24 | 0.77* |
| | Previous use# | 0.04 | 0.58** | 0.51** | 0.64** | 0.75** | 0.61** | 0.62** | 0.49** |
| | Understand <i>FOP NC</i> # | -0.39 | -0.38 | -0.50 | -0.56 | 0.07 | -0.26 | -0.06 | 0.66* |
| | Age ^s | -0.10 | -0.08 | -0.04 | 0.05 | 0.26** | 0.02 | -0.05 | 0.01 |
| | Sex (male)# | -0.06 | -0.39* | -0.09 | -0.18 | -0.01 | 0.27 | -0.43* | 0.01 |
| | Education ^s | -0.01 | 0.04 | 0.04 | 0.00 | 0.04 | 0.00 | -0.13 | -0.27** |
| | Parent status# | 0.07 | -0.18 | -0.39* | -0.44* | -0.18 | -0.52** | -0.18 | 0.09 |
| | <i>FOPNC X Understand</i> | 0.02 | 0.52 | -0.18 | -0.11 | -0.19 | 0.07 | -0.19 | -0.40 |
| | <i>FOPNC X Age</i> | -0.11 | 0.13 | -0.13 | -0.11 | -0.28 | -0.12 | 0.06 | -0.05 |
| | <i>FOPNC X Sex</i> | -0.16 | 0.04 | 0.37 | 0.36 | 0.06 | 0.15 | 0.16 | -0.12 |
| | <i>FOPNC X Education</i> | -0.09 | 0.13 | -0.16 | -0.14 | 0.07 | 0.19 | 0.16 | -0.01 |
| <i>FOPNC X Parent status</i> | -0.01 | 0.08 | 0.15 | 0.19 | -0.14 | 0.42 | 0.46 | -0.32 | |
| Fruit Juice | <i>FOP NC</i> # | -0.67 | -0.32 | -0.58 | 0.25 | -0.39 | -0.23 | -0.29 | -0.62 |
| | Previous use# | 0.21 | 0.62** | 0.55* | 0.49* | 0.28 | 0.60** | 0.31 | 0.81** |
| | Understand <i>FOP NC</i> # | -0.43 | -0.30 | -0.78* | 0.29 | -0.53 | -0.41 | -0.01 | -0.63* |
| | Age ^s | 0.17 | 0.05 | -0.21 | 0.09 | -0.23 | -0.22 | -0.03 | -0.29* |
| | Sex (male)# | 0.08 | -0.15 | 0.10 | -0.16 | 0.06 | 0.02 | -0.02 | -0.31* |
| | Education ^s | -0.02 | 0.10 | 0.01 | -0.32** | 0.05 | 0.00 | -0.11 | 0.15 |
| | Parent status# | -0.13 | -0.14 | -0.15 | -0.16 | -0.19 | -0.14 | -0.13 | -0.11 |
| | <i>FOPNC X Understand</i> | 0.86 | 0.45 | 1.01* | -0.23 | 0.47 | 0.46 | 0.23 | 0.46 |

| | | | | | | | | | |
|----------|--------------------------------|---------|--------|--------|-------|--------|---------|---------|--------|
| | FOPNC X Age | -0.28 | -0.16 | 0.13 | -0.20 | 0.13 | 0.15 | -0.03 | 0.26 |
| | FOPNC X Sex | -0.04 | 0.18 | -0.02 | 0.24 | 0.03 | -0.14 | -0.04 | 0.14 |
| | FOPNC X Education | -0.20 | -0.12 | -0.14 | 0.18 | -0.15 | -0.02 | 0.07 | -0.09 |
| | FOPNC X Parent status | 0.05 | -0.20 | -0.08 | -0.12 | 0.10 | -0.33 | -0.03 | 0.20 |
| Biscuits | FOP NC [#] | -0.35 | 0.38 | 0.14 | 0.59 | 0.38 | 0.63 | 0.10 | -0.20 |
| | Previous use [#] | 0.37 | 0.48* | 0.38* | 0.32 | 0.23 | 0.69** | 0.46* | 0.48** |
| | Understand FOP NC [#] | 0.04 | 0.14 | 0.21 | 0.44 | 0.45 | 0.63 | 0.16 | -0.20 |
| | Age [§] | -0.04 | 0.07 | -0.08 | -0.01 | 0.06 | 0.11 | 0.06 | -0.07 |
| | Sex (male) [#] | -0.09 | 0.03 | 0.14 | 0.25 | -0.04 | -0.20 | 0.03 | 0.02 |
| | Education [§] | 0.01 | -0.11 | -0.11 | -0.17 | -0.11 | -0.01 | -0.20 | -0.10 |
| | Parent status [#] | -0.24 | -0.07 | -0.28 | -0.14 | -0.10 | -0.06 | 0.18 | 0.15 |
| | FOPNC X Understand | 0.01 | -0.21 | -0.08 | -0.38 | -0.23 | -0.53 | -0.02 | 0.31 |
| | FOPNC X Age | 0.10 | -0.01 | -0.06 | 0.00 | -0.04 | -0.06 | -0.03 | 0.05 |
| | FOPNC X Sex | 0.39 | -0.20 | 0.38 | 0.11 | 0.07 | 0.45 | 0.20 | -0.27 |
| | FOPNC X Education | -0.15 | 0.08 | -0.02 | 0.05 | 0.12 | 0.02 | 0.03 | 0.05 |
| | FOPNC X Parent status | 0.37 | 0.20 | 0.18 | -0.06 | -0.12 | -0.12 | -0.03 | -0.20 |
| Bhujia | FOP NC [#] | 1.35** | 0.71 | 0.48 | 0.10 | -0.02 | 0.07 | 1.20** | -0.41 |
| | Previous use [#] | 0.23 | 0.73** | 0.26 | 0.29* | 0.29 | 0.55** | 0.64** | 0.61** |
| | Understand FOP NC [#] | 0.77* | 0.47 | 0.35 | 0.19 | 0.22 | 0.41 | 0.95** | -0.16 |
| | Age [§] | 0.12 | 0.10 | 0.21* | 0.17 | 0.21* | 0.10 | 0.17* | -0.16* |
| | Sex (male) [#] | -0.02 | 0.03 | 0.18 | 0.27 | -0.01 | 0.05 | -0.09 | -0.05 |
| | Education [§] | -0.33** | -0.01 | -0.13 | -0.07 | 0.19 | 0.15 | 0.02 | -0.09 |
| | Parent status [#] | -0.02 | 0.30 | -0.37 | -0.32 | -0.39* | -0.49** | -0.04 | 0.06 |
| | FOPNC X Understand | -1.45** | -0.36 | -0.56 | 0.11 | -0.10 | -0.45 | -1.65** | 0.27 |
| | FOPNC X Age | -0.22 | -0.13 | -0.32* | -0.22 | -0.07 | -0.20 | -0.30* | 0.08 |
| | FOPNC X Sex | -0.06 | -0.36 | -0.11 | -0.19 | 0.04 | -0.05 | -0.07 | 0.19 |
| | FOPNC X Education | 0.19 | -0.16 | -0.11 | -0.26 | -0.34* | -0.34* | 0.03 | -0.06 |
| | FOPNC X Parent status | 0.09 | -0.25 | 0.01 | 0.02 | 0.08 | 0.36 | 0.28 | -0.13 |

*p < .05, **p < .01.

These variables are dichotomous, and so the beta coefficient represents the z-score change in the outcome variable when this variable is present.

§ These variables are standardized, so the beta coefficient represents the z-score change in the outcome variable when this variable's value is one standard deviation above the sample mean.

Conducting this test, however, was complicated by two factors. The first is that the COO of a product may not be clear to consumers and, specifically, participants in this study. The determination of COO can be a legal question in the context of trade law, but studies from the business psychology literature (Elliott & Cameron, 1994; Watson & Wright, 2000) refer to it as the *place of manufacture*. Some consumers could be mistaken about the COO of products because the information has not been available or salient to them (Samiee et al., 2005); our stimuli in this study provided the company name but there was no explicit information about its place of manufacture on the part of the package that was visible to the participant. Because of this, knowledge about the COO would need to be based on prior knowledge of a company and its products' COO. This leads to another source of confusion: participants could be confused about a company and its products' COO due to the globalization of the manufacturing process. While cheeseballs were a clear Nepali product¹³ and bhujia as a snack is culturally foreign to Nepal (suggesting a foreign COO), two of the products (fruit juice and biscuits) split their company headquarters and manufacturing between Nepal and India, thereby making a determination about COO not so obvious. Ultimately, participants were not asked where they believed a product originated from, and so the beliefs of participants regarding this topic are unknown.

The second factor complicating the testing of this question is that the design of the study did not systematically vary several aspects of each visual stimulus. For example, the FOP NC on cheeseballs had one piece of information, but the FOP NC on bhujia had four pieces of information, and cheeseballs were always from Nepal and never from India. This means that it is impossible to compare the specific influence of COO on product attitudes or purchase intention because between-product variance on these measures could also be attributable to unpaired

¹³ Its maker— Chaudhary Group (CG)—is a well-recognized manufacturer that has diversified product lines across goods categories.

product factors such as food category (e.g., fruit juice vs. cheeseballs) or claim factors (e.g., number of FOP NC statements, content of FOP NCs).

Because of these complications, it was impossible to directly test the influence of COO on product attitudes or *PI* while controlling for other product factors. However, I was able to collect some quantitative and qualitative evidence about this research question, which are presented below.

A proxy quantitative analysis. In this study, we did not collect data about consumers' perceptions of the COO. However, we did collect consumers' rating for their liking of the company that made the final product presented in phase one of the survey, and this product was counter-balanced across participants. Liking for the company should be related to ethnocentrism, in that consumers who are displaying ethnocentrism should be more likely to display higher liking for products made locally and lower liking for products made abroad. My specific hypothesis was that Nepalis would display a form of reverse-ethnocentrism, showing a preference for products made in India (and therefore have higher liking for the companies that produce those products), and would have less preference for products made in Nepal (and therefore have lower liking for the companies that produce those products). If we assume that Nepalis have an accurate perception of the COO of these products, then given this hypothesis Nepalis should show higher liking for Indian companies (makers of bhujia) and show lower liking for the Nepali companies (makers of cheeseballs). Companies that are multinational in nature (makers of biscuits and fruit juice) may have liking that is between these two, depending on which COO attribution was made by the participant.

This scenario was tested using an ANOVA, which demonstrated that there was a difference in liking for company across the four products, $F(3, 235), p < .001$ but which did not

confirm my hypothesis. Figure 5.1 shows the mean liking-for-company scores. Post-hoc pairwise comparisons revealed that liking for the Indian company that made bhuja , $M = 3.80$, $SD = 2.0$, was significantly less than liking for the Nepali company that made cheeseballs, $M = 5.12$, $SD = 1.17$, $p < .001$, $CI [-1.85, -0.78]$, or the companies with multi-national operations that make fruit juice, $M = 4.67$, $SD = 1.37$, $p = .002$, $CI [-1.40, -0.33]$, and biscuits, $M = 5.37$, $SD = 1.29$, $p < .001$, $CI [-2.11, -1.03]$. The Nepali company that makes cheeseballs was not liked significantly more or less than the two multi-national companies that make fruit juice, $p = .100$, $CI [-0.09, 0.99]$, or biscuits, $p = .350$, $CI [-0.80, 0.28]$, but the company that makes biscuits was liked significantly more than the company that makes fruit juice, $p = .010$, $CI [0.17, 1.25]$.

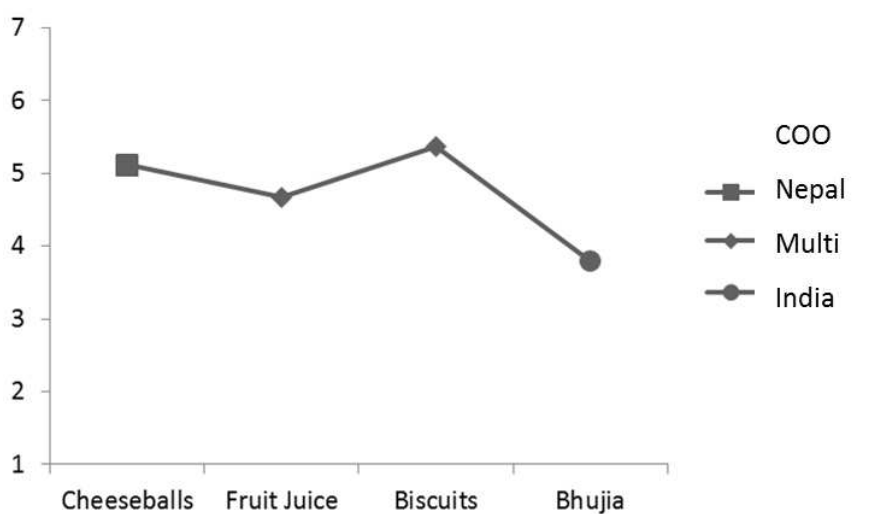


Figure 5.1. Mean liking for company scores across the four products (Likert-type item, 1-7). The COO is indicated by the marker shape.

A post-hoc power analysis (two-tailed, $\alpha = .05$) was conducted using G*Power3 for the one-way ANOVA. Power analyses indicated excellent power ($1-\beta > .999$) to detect large effects ($d = 0.35$), adequate power ($1-\beta = .911$) to detect medium effects ($d = 0.25$), but insufficient power ($1-\beta = .221$) to detect small effects ($d = 0.10$).

In sum, participants in this study reported liking the Indian company least of all, and then had more liking for companies that were Nepal-based or had operations in both Nepal and India. Based on these results, there is not enough evidence to conclude that Nepali consumers in this study show a clear preference for any product based on its COO, much less any kind of reverse-ethnocentrism. If this effect is present, it might be diluted by some consumers' misunderstanding of the COO of any given product. Alternatively, the effect may exist, but it might be weaker than other between-product differences already mentioned, such as food type, number of FOP NC statements, content of FOP NCs, etc. Future research hoping to address this question more effectively ought to take steps to control the comparison conditions as much as possible such that products differ only on the dimension of COO. This would mean that the products should be equivalent, the FOP NCs should be identical, and perhaps hypothetical products should be contrived such that they vary only on COO which is explicitly represented somewhere on the stimulus image.

Qualitative findings. Additional insights can be found in comments regarding COO which were occasionally made in explanations of FOP NC trust and perceived influence ratings, as well as for shopping values. The prevalence of comments ranged in frequency between two and four for each question, and were counted as sub-categories of existent themes (for trust, *positive view of source*; for perceived influence, *reflections on source characteristics*), or were counted as miscellaneous and were not included in the thematic structure due to their relative infrequency (for shopping values). See Table 5.2 for a listing of all of the participant responses (drawn from the complete pool of responses) that had to do with COO of the product or consumer ethnocentrism.

Table 5.2. Participant responses relevant to product COO and ethnocentrism.

| Question | Product | Rating* | Explanation | Respondent |
|---------------------|-------------|------------|---|------------------|
| Trust | Biscuits | 5 | <i>"Good Indian company."</i> | 28 yr. old man |
| | Bhujia | 6 | <i>"There are rules and regulation and the company should not have right to write it. It is a multinational company."</i> | 33 yr. old woman |
| Perceived Influence | Biscuits | 4 | <i>"It's Indian company. [The product is] good for health conscious people."</i> | 28 yr. old woman |
| | Fruit juice | 4 | <i>"I don't know. Some materials might be good, but people say you don't get quality products in Nepal."</i> | 40 yr. old woman |
| | Cheeseballs | 1 | <i>"There is no ethics in Nepali manufacturing products."</i> | 35 yr. old man |
| Shopping Values | Cheeseballs | None given | <i>"It's all business and Nepal is a poor country."</i> | 58 yr. old man |
| | N/A | N/A | <i>"National products."</i> | 40 yr. old woman |
| | N/A | N/A | <i>"Nepali products with quality."</i> | 39 yr. old woman |

* Ratings given for trust question refer to item, "How true is this message? Please rate it." Ratings given for perceived influence question refer to item, "How much does this influence whether or not you buy the product? Please rate it." Items for shopping values did not solicit a rating.

In sum, two comments gave praise for Indian companies. One man reported suspicion of products manufactured in Nepal, while a woman was dubious of products purchased in Nepal. In contrast, two seemingly patriotic consumers reported that one of their shopping values was to purchase Nepali-made products. The comment by a 58-year-old man seems unclear (*"It's all business and Nepal is a poor country."*), but a report after the fact by the SA who spoke with him offered the following interpretation: *"Things written on this package does not matter to me. Written things are for marketing only. Further, it does not matter if anything is written on the package as health concerns are minimal in Nepal."* These comments seem to be speaking less of the product's COO, and more discussing a mistrust of the FOP NC and the shopping values of Nepali consumers, which—due to poverty—emphasize other aspects besides health.

All told, there was mixed evidence for ethnocentrism and the hypothesized reverse-ethnocentrism. However, it can be said that across all three open-ended response survey items,

only 2.9% of participants ever mentioned COO as being relevant to either the trustworthiness or perceived influence of the FOP NC, or as a relevant shopping value that informs their purchasing decision.

Taken together, quantitative and qualitative evidence does not suggest that product COO is a consistent or powerful influence on Nepali consumers' attitudes or *PIs* towards foods.

Other Influences on Purchase Intention

Manuscript One discussed the influence of *FOP NC* on attitudes and *PI* towards food products. However, it did not analyze the potential differential effects of *FOP NC* based on participants' trust or perceived influence ratings for the FOP NCs, or their liking of the companies. These effects cannot be tested using a moderation model where an interaction term is created with *FOP NC*, and this is because these ratings were collected in the condition where *FOP NC* was present, but were necessarily not collected in the condition where *FOP NC* was absent (i.e., we could not inquire about the trustworthiness of a non-existing FOP NCs). Instead, these three effects were tested using a linear regression model where the standardized *PI* for the fourth product of the survey was regressed on the standardized rating for *liking for company*, *trust in FOP NC*, and *perceived influence of the FOP NC*. This conglomeration of rating scores and *PI* from the four products was necessary because the ratings of *trust* and *perceived influence of FOP NC*, and *liking for company* were only collected for the fourth product shown in the survey. The regression model accounted for 25.5% of the variance of *PI* (adjusted R^2 ; $F(3, 209) = 25.25, p < .001$). *Trust* and *perceived influence in FOP NC* ratings were not statistically significantly related to *PI*, but *liking for company* was. See Table 5.3 for regression results.

As with the COO variable, it was not possible to disentangle the effect of one product feature on *PI* from other product features' effects on *PI*. In this case, the *trust* or *perceived*

Table 5.3. Regression results for purchase intention by standardized ratings of *trust in FOP NC*, *perceived influence of FOP NC*, and *liking for the company*.

| | β | S.E. | t | CI 95% [LL, UL] |
|-------------------------------|---------|-------|--------|-----------------|
| (constant) | 0.000 | 0.060 | 0.003 | [-0.118, 0.118] |
| Liking for company | 0.502 | 0.062 | 8.039 | [0.379, 0.625] |
| Trust in FOP NC | 0.042 | 0.065 | 0.648 | [-0.086, 0.171] |
| Perceived influence of FOP NC | -0.034 | 0.064 | -0.527 | [-0.159, 0.092] |

influence of FOP NC might have an influence on *PI*, but those effects are not stronger than other influences such that they can be clearly observed. In contrast, liking for company shows a considerably significant (both statistically and practically) influence on *PI*; participants who were one standard deviation higher than the average participant on liking for company also gave a *PI* rating that was one half of a standard deviation higher than the average person.

CHAPTER 6: DISCUSSION

Summary of Results

Research Question 1. As predicted by Wills and colleagues' model (2012), attitudes towards a product did predict the purchase intention (*PI*) for that product. The most robust relationship was for *tasty*, which had a positive relationship with *PI* across all four products. Other effects were seen for the attitudes *adults like it* (three products), *quality manufactured* (two products), *children like it* (one product), and *healthful for children* (one product). The product attitudes *made with natural ingredients* and *healthful for adults* were never predictive of *PI*. These relationships constituted the *b*-paths. The findings that *tasty* and *adults like it* were most frequently predictive of *PI* make sense in light of the literature that shows that for most consumers, hedonistic (taste-oriented) motivations outweigh health motivations when making food selections (Lyly et al., 2007; Verbeke, 2005). Also, since adults constituted the participant sample, it makes sense that higher ratings of adult liking would correspond to their intention to buy the product.

Regarding the influence of front-of-pack nutrition claim presence (*FOP NC*) on product attitudes (*a*-paths), these relationships were not so prevalent. *FOP NC* seemed to influence the product attitude rating for *healthful for children* (three times, twice positively and once negatively), *children like it* (one time, negatively), and *quality manufactured* (one time, positively). The product attitudes *healthful for adults*, *adults like it*, *tasty*, and *made with natural ingredients* were not found to be influenced by *FOP NC*. Interestingly, not all of the statistically significant *a*-path relationships were positive. Specifically, for cheeseballs, when the *FOP NC* was present on the package, the product attitude *healthful for children* decreased by 0.30

standard deviations and *children like it* decreased by 0.34. An alternative interpretation of this result, however, could be that when the control claim was present on the package (i.e., “No spice” instead of “Low fat”), then ratings for these product attitudes were higher. This alternative reading seems valid since cheeseballs were the only product that had a control claim rather than the complete absence of a claim.

Examining the influence of *FOP NC* on *PI*, no effect was found at all for fruit juice or biscuits. For cheeseballs, however, *FOP NC* increased *PI* by a standard deviation of 0.25 (direct effect), and had a still significant total effect (0.24) despite a significant indirect effect through *healthful for children* in the negative direction (-0.04). *FOP NC* for bhujia, in contrast, had a negative direct effect on *PI* (-0.22), and though there were no individually significant indirect effects, the total effect of *FOP NC* reduced *PI* even lower (-0.28).

In total, of the 32 pathways that examined the influence of *FOP NC* across the four products (*a*- and *c*'-paths), seven (21.9%) were statistically significant.

Research Question 2. The results of the primary moderation analysis showed that effectiveness of *FOP NC* never depended on other consumer characteristics such as sex or education, and only occasionally depended on the age of the consumer or whether or not they understood the language of the claim text. In sum, *FOP NC* increased ratings of *PI* for fruit juice among those of older age relative to those of younger age. However, younger age resulted in *FOP NC* increasing ratings of *made with natural ingredients* for cheeseballs and *healthful for children* for bhujia relative to those of older age. Also, among those who had the ability to understand the language (i.e., English) of the *FOP NC*, *FOP NC* increased ratings of *healthful for children* for fruit juice relative to those who could not understand, and increased ratings of *children like it* and *tasty* for bhujia. When making this interpretation, it is important to note that

out of 128 pathways tested, only six were statistically significant. This statistical significance hit rate of 4.7%—in light of these analyses' alpha level of .05—could lead to the fair conclusion that these findings are entirely the result of chance.

Two other consumer factors were investigated apart from the primary analysis as potential moderators of the relationship between *FOP NC* and product attitudes and *PI*. *Parenthood status* was excluded as a covariate and as a potential moderator due to non-random missing data. *Previous use*—while included in all models as a covariate—was not included as a potential moderator because it lacked a strong, *a priori*, theoretical underpinning for inclusion in the mediation models. Steps were taken to measure the effects of these two interaction terms within the conditional process models in the Additional Results chapter, and neither showed significant effects.

Research Question 3. Results from a quantitative analysis could not provide enough evidence to conclude that Nepali consumers in this study show a clear preference for any product based on its country-of-origin (COO), much less any kind of reverse-ethnocentrism. Qualitative evidence was mixed for the presence of ethnocentrism and the hypothesized reverse-ethnocentrism. However, it can be said that across all three open-ended response survey items, only 2.9% of participants ever mentioned COO as being relevant to either the trustworthiness or perceived influence of the FOP NC, or as a relevant shopping priority that informs their purchasing decision.

Taken together, quantitative and qualitative evidence does not suggest that product COO is a consistent or powerful influence on Nepali consumers' attitudes or *PIs* towards foods. If this effect is present in the population, it might be diluted by some consumers' misunderstanding of the COO of any given product. Alternatively, the effect may exist, but it might be less-strong

than other between-product differences that were not systematically controlled, such as food type, number of FOP NC statements, content of FOP NCs, etc.

Research Question 4. Respondents saw one of four possible FOP NCs on a product. For this FOP NC, they gave a rating of its trustworthiness and perceived influence using 7-point Likert items. These data showed perceived influence to be slightly higher, with a weak-moderate correlation between the two. After giving a rating, the respondents were asked to explain the rating that they had given.

Participants gave explanations for their trust and perceived influence ratings, and responses were categorized by theme. When respondents explained their trust in an FOP NC, it was usually tied to a positive view of the message source, corroboration from the respondents' knowledge of, or experience with, the product or a belief that the company would not lie due to market regulations or concern over maintaining positive public relations. For mistrust, several themes emerged, including the view that FOP NCs are expressly false or nothing more than marketing, which could be due to a lack of consumer protections in Nepal. Some participants talked about being unable to verify whether or not the FOP NC is true, or the FOP NC seemed to be untrue due to seeming contradictions between the claim and the respondents' existing knowledge of or experience with the product.

When explaining their rating of perceived influence of FOP NCs, consumers described receiving or using information that was available on the FOP NC, or talked about how that information was relevant to their values of health, diet awareness, or food safety. When describing the information provided by the FOP NCs, some participants related information that was not actually present on the package (e.g., the 48-year-old man who said that the FOP NC

denotes quality). This phenomenon provides evidence of the heuristic processing of health claims identified in past research (Wansink et al., 2004).

Other respondents said that FOP NCs were not useful because they were not trustworthy, or because consumers preferred other information for decision-making (e.g., brand name). Beyond this, some participants reflected on the source characteristics of the product/FOP NC, or on the characteristics of shoppers.

The variation among the themes suggests that some participants perceived more trustworthiness or influence in the FOP NCs than did other participants. On average, however, there was no statistically significant difference in trust rating between people who gave reasons for trusting FOP NCs versus those who gave reasons for *not* trusting FOP NCs. There was also no statistically significant difference in mean perceived influence ratings between participants who described uses of FOP NCs and people who said that FOP NCs would not be useful. These quantitative ratings neither confirm nor refute the thematic analysis, but the lack of correspondence between the ratings and the thematic organization was certainly unexpected; it was anticipated that respondents who spoke about trusting FOP NCs would have given them higher trust ratings than those who gave reasons for not trusting FOP NCs. One possible explanation for the lack of correspondence could be that participants' negative-focused explanations for high (i.e., 5 or 6)—but not perfect (7)—ratings were based in a sense that they had to justify giving less than a perfect rating.

Research Question 5. Regarding the open-ended items about shopping priorities, there was considerable overlap (e.g., *taste, cost, health*) between Nepali responses and the food choice values (FCVs) from the food choice model that was developed with U.S. populations (Connors et al., 2001; Furst et al., 1996). However, there were also FCVs that were not mentioned by the

Nepali participants in this study (i.e., *convenience*, *symbolism*, *ethics*, and *limiting waste*), and variety was only mentioned by one respondent. It may be that those absent FCVs are not as salient to urban Nepali consumers as they are to other consumer populations.

There were some shopping priorities mentioned by Nepali respondents did not appear in the U.S.-based Food Choice Process Model as FCVs (i.e., *familiarity* and *meeting needs*). The fact that these shopping priorities were not defined as FCVs could possibly be due to cultural differences. However, it is more likely that they were described in the Food Choice Process model—not as FCVs—but rather as *food choice strategies/scripts*, which are decision heuristics that are used to eliminate the need for value-based negotiations at every decision point (Sobal & Bisogni, 2009). This explanation seems to fit with *familiarity* (i.e., automatically choosing based on brand) and *meeting needs* (i.e., developing a routinization of food choice; Falk, Sobal, & Bisogni, 1996). With regards to the third novel shopping-priority theme, *package labeling*, the self-awareness required to describe the influence of package labeling on shopping behavior is not typically found among consumers, who typically either do not notice the effects of environmental cues or—when they do notice—underestimate those effects on their purchasing decisions (Bargh, 2002). Because consumers often are not aware of the influence of environmental cues on their purchasing (or on their food- and eating-based decisions; Wansink & Sobal, 2007), the explanation of researcher influence on respondents (via conscious demand characteristics or unconscious priming) seems more likely than a true cultural difference between this sample and others.

Convergence of Quantitative and Qualitative Analyses

Results from these five research questions coalesce to meet the purpose of this study: to learn whether or not FOP NCs related to more or less healthful food selections by urban Nepali consumers, who are increasingly at risk for obesity.

Probably the most decisive way to answer this question is with the quantitative analyses. These analyses can shed light on the unconscious, heuristic processing mechanism that was at the center of this investigation. Over the past decade, research has considered the potential danger of health claims resulting from a *halo effect* (Grunert et al., 2011; Wansink et al., 2004; Williams, 2005; Wills et al., 2012), the cognitive bias that leads consumers to make incorrect inferences of a food's health value by generalizing from incomplete claims about the food's nutrient profile. So is this bias occurring? Results from the conditional process model suggest that FOP NCs only occasionally result in modified attitudes or *PI* towards the products, but usually there is no effect. After examining the effects that do emerge across the four products, no clear trends were discernable from the data, either in the specific product attitudes that were affected, or in the direction of the changes. Some responses to open-ended survey items regarding the perceived influence of FOP NCs do show participants making statements about the food products that were not explicitly stated on the FOP NC (a sub-code of the theme *FOP NCs provide information: Apply information*), but these were mentioned by less than four percent of the participants.

Could it be that the effect of FOP NCs depends on consumer factors—the specific group of urban Nepali consumers? Some participants talked about their view that the influence of FOP NCs would likely depend on the characteristics of the shopper, such as level of education or being a part of the “new generation”. Past research has empirically shown that people's food

attitudes and *PIs* change when they have strong health motivations when shopping for food (Lähteenmäki, 2013; Williams, 2005; Wills et al., 2012). Women, older-adults, and parents often report having a health motivation or describe themselves as health-conscious. Despite this, analysis of data from the present sample shows that FOP NC effectiveness was rarely related to consumer factors. These effects were so rare, in fact, that they were statistically likely to have occurred by chance.

This body of evidence suggests that urban Nepali consumers are not having their dietary choices influenced by FOP NCs. This is a desirable finding given that most health claims are forms of marketing rather than nutrition labeling. However, this finding does contrast with findings from other populations, and it deserves an attempt at explanation.

Observers from cultures outside of south Asia might wonder if Nepali consumers feel comfortable taking time to stop and look at the packaging in such close shopping quarters (see Figure 1.2). Supplemental semi-structured interviews were conducted with two Nepalis (born and raised in Kathmandu) who had immigrated to the U.S. within the past two years. They were asked to contrast the experience of grocery shopping in the two countries. Both interviewees commented that in the U.S. grocery stores felt very large and spacious in comparison to the various shopping locations in Kathmandu (e.g., street markets, *kirana pasal*, grocery stores). However, neither recollected ever feeling explicitly cramped while shopping for foods in Nepal, although one did comment that during a recent visit to Nepal, moving about the city and shopping had begun to feel cramped. My conclusion from these interviews is that urban Nepali consumers are likely accustomed to navigating life in close-quarters, and that a feeling of physical discomfort is not a barrier to this group reading FOP NCs should they so choose.

Another possible explanation for the null effect of FOP NCs on urban Nepali consumers is that they do not value healthfulness of foods as much as other populations. Again, evidence from phase two of the survey showed that only 7.1% of participants talked about the FOP NCs' relevance to health-conscious consumers. With regards to shopping priorities, quality, taste, familiarity, and price were the most prevalent themes. In total, ten distinct priorities were mentioned, but only two of these shopping priorities—*health and nutrition* and *food packaging*—were likely to motivate a consumer to utilize FOP NCs. Moreover, these two themes only constituted 12.4% of the responses provided by participants. This evidence does not seem to support the notion that FOP NCs are a sought-after tool for making food-purchasing decisions among urban Nepali consumers. In fact, past research has consistently found the primacy of taste over health motivation in food selection across multiple populations, not including Nepal (Lyly et al., 2007; Verbeke, 2005).

Finally, the absence of FOP NC influence on Nepali consumers could be due to a lack of trust in them. The statements of mistrust towards FOP NCs among our sample supports previous observations that Nepalis also mistrust their governing institutions (Askvik et al., 2011). While mistrust in FOP NCs is acceptable based on the premise of this study (i.e., that FOP NCs are marketing rather than reliable and accurate labeling of nutrition content), a related mistrust in nutrition labeling would be problematic. This is because the healthfulness of a food is a credence attribute that is not self-evident, and must be determined through some means other than experience, such as package labeling (Verbeke, 2005). If Nepali consumers are unable to trust in the information provided on food packages, then this could be creating a barrier to making informed purchasing decisions. At this point, however, it is unclear if consumers' mistrust in FOP NCs extends to nutrition labeling. One caveat to this conclusion is the fact that

trust in FOP NCs is only weakly-to-moderately correlated with perceived influence, and so mistrust towards FOP NCs does not necessarily preclude a respondent from finding it useful or influential.

A final interesting methodological note is that quantitative findings did not show prevalent or consistent influences of FOP NCs. Despite this, 54.4% of the sample stated that FOP NCs influence purchasing decisions via the information that the FOP NCs provided, especially as it is related to consumers' own concerns about health, safety, and the ingredients of the food. This means that although a majority of participants thought that FOP NCs influenced purchasing decisions, by and large the participants' attitudes and purchase intentions were not influenced by FOP NC presence.

The discrepancy between consumers' self-reported, anticipated response to these stimuli and their actual response was predicted based on existing literature (Bargh, 1994; Nisbett & Wilson, 1977b), and this justifies the research design decision to not explicitly direct the participants' attention to the FOP NCs in the first phase of the experimental survey. By first testing the effect of *FOP NC* on product attitudes and *PI* and then following with questions specifically about the FOP NCs, we avoided consciously motivating or unconsciously priming participants to pay more effortful attention to the FOP NCs than they otherwise would have. One result of not testing FOP NCs explicitly is that consumers' cognitive processing of product images more closely resembled typical real-world shopping tasks (Orquin & Scholderer, 2015), which occur through the peripheral (low-effort, unconscious) route, rather than the central (effortful, thoughtful) route (Bargh, 2002; Petty & Wegener, 1999). These findings then provide a complement to lab-based studies that mostly provide information about the influence of effortful consideration of health claims.

Strengths and Limitations

Strengths. Some strengths of the study were that it empirically tested several aspects of Wills and colleagues' (2012) model, and expanded it in a meaningful way. Specifically, the study avoided explicitly drawing participants' attention to the FOP NC. Adopting this approach produced several benefits to the study. First, participants were not asked to self-report the influence of environmental cues; such reports are often incorrect. Second, health-motivations have been shown to increase attention to FOP NCs, and so our design was now able to detect whether or not demographic variables thought to be associated with health motivation would moderate the relationship between FOP NC presence and food purchasing antecedents. Third, in naturalistic settings consumers often do not look at food package labeling, and if this were the case, FOP NCs would be shown to be ineffective.

Another strength was that the data collection approach of this study was tailored to the cultural context. Past studies about health claim influences have utilized internet-based surveys, and while one study of rural Nepalis found that 63% were users of the internet, non-mobile computing device ownership is rare (less than 10%; Zhou, Singh, & Kaushik, 2011), and regular electricity and internet outages further complicate using the internet as a data collection method. For this study, urban Nepali consumers were recruited where they shop and were interviewed in the most common local language. Finally, owing to the overall convergent parallel mixed-methods design, this study's quantitative findings benefit from the clarifying perspective of qualitative data.

Limitations. One of the limitations of the study was that power would not have been sufficient to detect the effects of FOP NCs if they were small; a larger sample size in future studies could remedy this problem. Additionally, the research design did not systematically vary

product and claim factors such as the number of statements on the FOP NC, the wording of the FOP NCs, and the product bearing the FOP NC. Because of this, it is impossible to discern to which of these factors attitude and *PI* differences between products should be attributed.

While interviews were conducted in Nepali by local SAs, the majority of responses were summarized and translated into English at the moment that responses were collected and recorded. These translational processes have likely resulted in some recorded participant responses that lack the nuance that they originally contained at the moment of interaction. Additionally, although the Likert-style instrument followed best-practice recommendations found in the literature (Kohrt et al., 2011) and was pilot tested, it could be that the instrument was unclear to participants. This could account for the discrepancy between the Likert ratings of trust and perceived influence and the open-ended responses.

One of the strongest predictors of product attitudes and *PI* was the covariate *previous use of product category in the past month*. While studies have demonstrated time and again the predictive power of previous behavior (e.g., Ouellette & Wood, 1998; Verplanken & Orbell, 2003), it is also possible that probing this information contaminated the data collection. To explain, *previous use* was ascertained first in the survey item order, followed by product attitudes and *PI*. It could be that asking about previous use induced participants to identify with their food choice, and then be more inclined to positively evaluate the product in order to avoid cognitive dissonance (i.e., the thought that they are a user of food products that are not liked, not healthful, not quality manufactured, etc.). Those who reported no previous use likely would not have experienced any cognitive pressure to answer one way or the other. It may have been preferable to ascertain *previous use* after having participants describe their attitudes and *PI*, although doing so might not have provided an effective remedy given that participants could have learned to

expect the question regardless of presentation order. This expectation for the question could have emerged since the entire sequence of questions was asked four consecutive times, once for each product.

A final limitation was that the possibility that responses for the shopping priorities items had been biased from exposure to product attitude items or other survey items. This could have been either because of priming effects or because of demand characteristics. For example, some respondents spoke of the importance of the food product ingredients in their purchasing decision, although this may be a demand characteristic from the survey item asking respondents to evaluate how natural a product's ingredients were. Ultimately, the relative proportion of the endorsed themes in the data might not be representative of the broader urban Nepali population, and should be interpreted with caution.

Implications

While the exact nature of urban Nepali consumers' interactions with FOP NCs on food products is unclear, it is evident that these consumers are not falling victim to halo effect heuristics, which could have led them to make erroneous conclusions about the nutrient value of these snack foods. This could be due in part to the fact that urban Nepali consumers seem to carry a greater sense of skepticism towards the FOP NC marketing approach relative to other consumer populations, and perhaps a reduced sense of health consciousness. This makes them resilient against falling victim to heuristic processes that might lead them to make erroneous health attributions to objectively unhealthy snacks. While a nutrition transition is occurring in Nepal, it is not likely due to health claim marketing strategies that have been imported from more developed food markets.

From a consumer advocacy standpoint, this finding is encouraging. If the nutrition transition in Nepal is coming about due to a decrease in diet quality, then the use of FOP NCs does not seem to have a pronounced role in this process. In some high-income countries such as the U.S. and members of the E.U., there are marketing regulations that define how claims about food nutrition and health effects must be constructed (Silverglade, 1996; Wills et al., 2012). In Nepal, these regulations do not exist. The Nepali government could take steps to adopt health claim marketing regulations, but efforts would likely be better invested in enforcing existing regulations about food safety and hygiene—a more prominent concern among our sample.

Despite largely finding FOP NCs harmless, causes of nutrition transition in Nepali remain. Increases in SES potentially impact obesity rates through dietary changes like increased consumption of more costly foods such as prepackaged food and animal fats (Stuckler et al., 2012), or higher SES could be associated with higher-wage, more sedentary jobs, resulting in unhealthful lifestyle changes (Balarajan & Villamor, 2009). Increased obesity in urban regions of LMICS could be due to a proliferation of supermarket chains over traditional food outlets, leading to increased availability of refined carbohydrates and added sugars and fats (Gorton et al., 2011; Hawkes, 2006; Stuckler et al., 2012). These problems are complex, and solutions must begin before the point-of-sale for unhealthful foods.

Business implications of this study are that it seems as though the use of FOP NCs on food packages is not furthering the business interests of the companies utilizing them, either in bolstering brand image or in increased *PI* among urban Nepali consumers. Should marketers wish to be more effective in their communication towards urban Nepali consumers, Glanz et al. (1998) argue that marketers ought to appeal to the most salient shopping priorities. In 1998, taste, cost and convenience were high among the nation-wide sample of U.S. adults. In the

present sample, the most frequently occurring priorities were taste, cost, quality and safety/hygiene. Though taste and cost priorities overlap between the U.S. and Nepali samples, the Nepali focus on quality and hygienic foods is perhaps more revealing of the concerns of a LMIC population. In such a context where undernutrition and food security has been the long-standing issue, a healthful diet may have more of an implication of *Safe* rather than the FOP NC message *Low Fat*.

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APPENDICES

APPENDIX A



a.



b.



d.



c.

Pictured above: Experimental stimuli



a.



b.

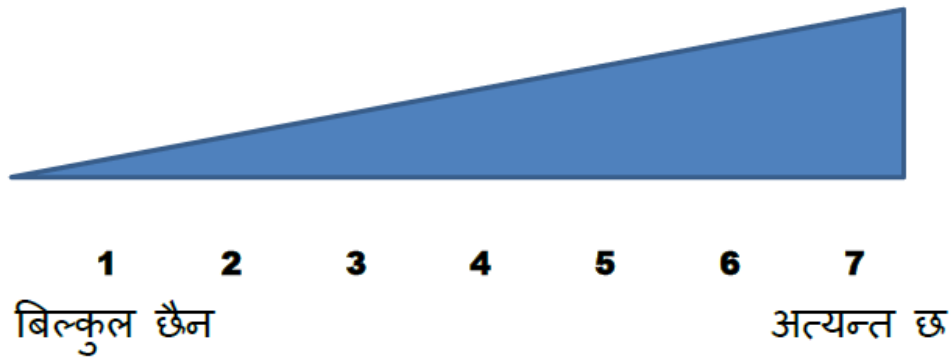


d.



c.

Pictured above: Control stimuli



Pictured above: wedge graphic to accompany each visual stimulus to assist participants with understanding the gradually increasing gradient of the likert-style rating system

APPENDIX B

DATE _____ LOCATION _____ STIMULI CODE _____

In this part of the survey I will show you a picture of a product and ask you to answer some questions and rate some statements about it.

PRODUCT ONE

Have you eaten [**biscuits : bhujia : cheeseballs : juice**] in the past month? Y/N

Was it this type of [**biscuits : bhujia : cheeseballs : juice**] (*point to the picture*)? Y/N

Ignore the cost. Please rate the product.

| | Not at all | | | | | | Extremely |
|---|------------|---|---|---|---|---|-----------|
| Children under 12 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Adults older than 20 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for children under 12 yrs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for adults older than 20. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is made from natural things[ingredients]. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is quality manufactured. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is tasty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| How likely are you to buy this product in the next month? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

PRODUCT TWO

Have you eaten [**biscuits : bhujia : cheeseballs : juice**] in the past month? Y/N

Was it this type of [**biscuits : bhujia : cheeseballs : juice**] (*point to the picture*)? Y/N

Ignore the cost. Please rate the product.

| | Not at all | | | | | | Extremely |
|---|------------|---|---|---|---|---|-----------|
| Children under 12 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Adults older than 20 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for children under 12 yrs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for adults older than 20. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is made from natural things[ingredients]. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is quality manufactured. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is tasty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| How likely are you to buy this product in the next month? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

PRODUCT THREE

Have you eaten [**biscuits : bhujia : cheeseballs : juice**] in the past month? Y/N

Was it this type of [**biscuits : bhujia : cheeseballs : juice**] (*point to the picture*)? Y/N

Ignore the cost. Please rate the product.

| | Not at all | | | | | | Extremely |
|--|------------|---|---|---|---|---|-----------|
| Children under 12 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Adults older than 20 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for children under 12 yrs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for adults older than 20. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is made from natural | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| things[ingredients]. | | | | | | | |
| It is quality manufactured. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is tasty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| How likely are you to buy this product in the next month? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

PRODUCT FOUR

Have you eaten [biscuits/cheeseballs/bhujia/fruitjuice] in the past month? Y/N

Was it this brand of [biscuits/cheeseballs/bhujia/fruitjuice] (*point to the picture*)? Y/N

Ignore the cost. Please rate the product.

| | Not at all | | | | | | Extremely |
|---|------------|---|---|---|---|---|-----------|
| Children under 12 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Adults older than 20 yrs. like it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for children under 12 yrs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is healthy for adults older than 20. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is made from natural things[ingredients]. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is quality manufactured. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| It is tasty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| How likely are you to buy this product in the next month? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Rate how much you like the company that makes this food? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | | |

| | |
|--|--|
| Look at this label (<i>point to label</i>) | |
| Can you read it? It is written in English. | Yes ___ No ___ |
| What does it mean? | |
| How true is this message? Please rate it. Please explain why. | Not at all 1 2 3 4 5 6 Extremely 7 |
| How much does this influence whether or not you buy the product? Please rate it. Please explain why. | Not at all 1 2 3 4 5 6 Extremely 7 |
| What is one important factor for whether or not to buy a food product? What is the other next important factor for whether or not you buy a food product? | |

DEMOGRAPHIC QUESTIONS

In this part of the survey I will ask you some questions related to the population.

1. What is your age? _____
2. What is your sex? Male ___ Female ___
3. Do you have children? Yes ___ No ___
 - If yes, how old are they? _____
4. What is your level of education?
 - Primary (up to grade _____)
 - Secondary (up to grade 10)
 - +2 Higher Secondary (grades 11 & 12)

- Bachelor's
- Master's
- Other (Please Specify _____)

5. What is your occupation/work (What do you do)? _____

6. Who is primarily responsible for buying food for your household? _____

7. Approximately how often do you shop for food at this store?

| | | | | |
|-------|--------------------------------|-------------------------|------------------------|-------------------------|
| Never | One time every three months | One time every month | One time every week | Several times a week |
|-------|--------------------------------|-------------------------|------------------------|-------------------------|

8. Which part of Nepal do you belong to?

| | | | | |
|--------|-------|-----------|---------------------|------------------------|
| Plains | Hills | Mountains | Kathmandu Valley | Other country _____ |
|--------|-------|-----------|---------------------|------------------------|

9. How long have you lived in Kathmandu? _____

APPENDIX C

RECRUITMENT STATEMENT

Hi, my name is _____ and I am working with researchers from Colorado State University in the United States. We are doing a research study about food purchasing choices.

I am giving a survey about some popular food products which takes between ten and fifteen minutes to complete. You don't have to take the survey if you don't want to. I will not ask for your name but I will ask for other information like your age and education level.

Would you like to do the study?

If 'yes': [Proceed]

If 'no': Thank you for your time.

There are no known risks or direct benefits to you. If you change your mind about participating, you can stop at any time without any problems or penalty.