Marketing Processed Organic Foods: The Impact of Promotional Message Framing (Vice Vs. Virtue Advertising) on Perceptions of Healthfulness

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ABSTRACT
The study shows that the perceived healthfulness of processed organic foods, compared to their conventional counterparts, can be altered by slight variations in how promotional messages are framed. A sample of US organic shoppers (N = 375) was exposed to advertisements promoting processed organic (and processed conventional) foods by highlighting either virtue or vice aspects of the products. An interaction between the type of processed food (organic, non-organic) and the type of promotional message (vice, virtue) was observed. Processed organic foods were perceived as more healthful than non-organic equivalents only when advertisements emphasized vice-related aspects of the product. Following exposure to virtue-framed advertisements, organic and non-organic products were seen as equally healthful. The result was replicated conceptually using different vice and virtue products, rather than framing the same product as virtue and vice. The paper concludes by presenting theoretical, practical, and methodological implications of the design and reported findings.

KEYWORDS
Processed organic food; vice-virtue; message framing; food marketing; schema congruity

Introduction

In recent years, perceived healthfulness of food items has figured prominently among factors influencing consumers’ grocery shopping decisions (Grunert, 2013). According to a 2018 survey of American shoppers, more than half of US consumers have recently talked about food to a healthcare professional, and 78% made a change in their diet as a result of the conversation (International Food Information Council [IFIC] Foundation, 2018).

Both the conventional and organic food industries have benefited from this focus on healthfulness. Health consciousness has been, and remains, the primary reason people purchase organic foods (e.g., Hamzaoui-Essoussi & Zahaf, 2009; Harper & Makatouni, 2002; Hemmerling, Hamm, & Spiller, 2015; Padel & Foster, 2005), perhaps because for years organic foods have been promoted as healthful (Guion & Stanton, 2012), “resulting in an ‘organic-is-healthy’ intuition” shared among shoppers (Schouteten, Gellynck, & Slabbinck, 2019, p. 1000). At the same time, a gradual shift toward health-oriented claims and away from taste, convenience, and price has been taking place in conventional food advertising. It has been spurred by scientific progress in research on nutrition and by governmental efforts to streamline health claims in food marketing (Guion & Stanton, 2012).

The growth of the organic food industry has been truly spectacular. Worldwide sales reached 95 USD billion in 2018, a 600% increase since 2000 (Shahbandeh, 2020). With retailers and multinational...
companies continuing to expand organic farmland, product lines, and marketing budgets (Chokhani, 2019; Siegner, 2018), the market is expected to grow at a yearly rate of about 17% until 2027 (Absolute Markets Insights, 2019).

Historically most of the early growth has been among non-processed, whole organic foods such as fresh fruits and vegetables, which currently account for the largest portion (40%) of organic food purchases (United States Department of Agriculture [USDA], 2018). Organic whole foods have been consistently seen by consumers as healthier than their conventional counterparts (Massey, O’Cass, & Otahal, 2018; Prada, Garrido, & Rodrigues, 2017; Yiridoe, Bonti-Ankomah, & Martin, 2005). However, as the organic market matures, growth is likely to shift to the processed foods sector (Buder & Hamm, 2011; Spiller, Enneking, & Lüth, 2004). Since healthfulness is the most important reason for buying organic (Janssen, 2018; Kushwah, Dhir, Sagar, & Gupta, 2019), food marketers may default to promotional strategies that emphasize healthfulness as they promote processed organic foods. But will consumers respond favorably to such message strategies? Or, given the intuitive discrepancy between industrial food processing and healthfulness (Monteiro, 2009; Poti, Mendez, Ng, & Popkin, 2016), would it be wiser to promote processed organic foods with messages focused on other relevant product attributes (such as taste, for example)? Past studies have shown that while many consumers believe organic whole foods are healthier than their conventional counterparts, they are unsure whether the same health advantage exists in the case of processed organic foods (e.g., Prada et al., 2017). How should marketers frame advertising messages promoting processed organic foods like organic pizza and ice cream, to overcome this barrier?

These questions are important for the development of the processed organic food market, which is more dependent upon promotional communication than organic whole foods. Because processed foods are packaged and branded much more often than whole foods, they need to be advertised and marketed more strategically to differentiate themselves from competitors (see Monteiro, 2009). Add to this the challenge of convincing health-motivated organic shoppers that processed organic foods should be thought of as more beneficial for health than their conventional counterparts, and one can see the need for research on how marketing communication messages should be designed to effectively promote processed organic foods. Yet, although there is a well-developed literature on consumers’ perceptions of organic foods, to our knowledge, less than a handful of studies have addressed the role of promotional messages in marketing processed organic foods, and those that did were not focused on how marketing communication can alter perceptions of healthfulness.

In this exploratory article, we examine how slight variations in advertising messages influence consumers’ perceptions of the healthfulness of processed organic food products, in the context of an online experiment using a national sample of US organic shoppers (N = 375). Drawing from marketing and communication research on message framing (Anghelcev & Sar, 2014; Entman, 1993), consumer psychology studies on schema congruity (Cheong & Kim, 2011; Meyers-Levy & Tybout, 1989; Stayman, Alden, & Smith, 1992) and food studies research on vice and virtue products (van Doorn & Verhoef, 2011; Wertenbroch, 1998), we propose an interaction effect between the way the promotional message is framed (vice vs. virtue) and the type of advertised processed product (organic vs. conventional) on perceptions of healthfulness. Two other hypotheses are also advanced. A methodological improvement over previous operationalizations of a key variable (vice vs. virtue food) is incorporated in the design of the study.

The article is structured as follows: after a brief overview of academic literature on organic food marketing, a theoretical rationale is put forward to advance the hypotheses. The predictions are tested twice, using two sets of stimuli, as described in the methods section. Following the results, an assessment of the findings’ theoretical and practical implications, along with a discussion of limitations and future research directions, conclude the paper.
Current research on organic food marketing

Organic food is produced “without the use of toxic pesticides and synthetic nitrogen fertilizers, antibiotics, synthetic hormones, genetic engineering or irradiation” (Organic Trade Association, n. d., para. 1). Three streams of inquiry underscore the academic literature on organic food marketing. First, there are studies of the prototypical “organic consumer” (e.g., Bénard et al., 2018; Gustavsen & Hegnes, 2020; Hamzaoui-Essoussi & Zahaf, 2012; Thompson & Kidwell, 1998). Second, there is research on the motivations behind organic consumption (e.g., Kushwah et al., 2019; Onyango, Hallman, & Bellows, 2007; van Doorn & Verhoeof, 2015). Much less is known about the third area—namely, how marketing communications can be employed to promote the consumption of organic foods and, in particular, processed organic foods. A brief review of these three streams of literature is provided below.

The prototypical “organic consumer”

The term “organic consumer” describes individuals who regularly or occasionally purchase organic food as a portion of their food shopping (Tarkiainen & Sundqvist, 2009). Several variables such as gender, education, ethnicity, household income, and various psychographics have been used to describe the typical organic consumer. For example, women were found to be more likely to purchase organic food compared to men, which can be attributed to them doing most of the grocery shopping (Onyango et al., 2007).

Early studies characterized organic consumers as Caucasian, of higher socioeconomic status, well-educated, and highly concerned with health and product quality (Thompson & Kidwell, 1998). Such observations are not surprising. Well-educated consumers may be prompted to better understand organic food regulation and the health benefits derived from lack of chemicals and synthetic fertilizers (Zepeda &Deal, 2009), as well as the non-harmful environmental impact of organic agriculture. Also, organic food products continue to cost more than their conventional counterparts, with premiums cited as being greater than 20% for all except spinach (Carlson, 2016). Since education is positively correlated with income, well-educated consumers are able to afford the higher price of organic food. To no surprise, one study found that individuals who earn an annual income of 100,000 USD or more were significantly more likely to purchase organic food than those with an income below 30,000 USD (Ward et al., 2012).

While the findings are fairly consistent in terms of education and income, the typical age and family makeup of the prototypical organic consumer seem to vary from study to study. For example, some authors described the typical organic consumer as 18 to 32 years old (Onyango et al., 2007), while another study identified the group most likely to buy organic as being between 45 and 55 years of age—possibly because their children have already left home, allowing for more disposable income (Padel & Foster, 2005). In yet another discrepancy, one UK study indicated that those in single-person households purchase more organic foods (MINTEL, 2000), whereas data from the US and France suggests that people with children actually purchase organic more often (Monier, Hassan, Nicole, & Simioni, 2009; Onyango et al., 2007). It becomes apparent that the incongruent findings are due to variability in the location and time of the studies, as well as to differences in the economic development, culture, and social norms endorsed by the populations from which the samples were drawn. In conclusion, the demographic profile of the prototypical organic consumer has changed over time and it differs from country to country.

Motivations to purchase organic food

Health consciousness (e.g., Hamzaoui-Essoussi & Zahaf, 2009; Janssen, 2018) has been consistently found as the main motivation to purchase organic, followed by taste (Chekima, Oswald, Wafà, & Chekima, 2017; Johansson, Haglund, Berglund, Lea, & Risvik, 1999; Magnusson, Arvola, Koivisto
Hursti, Åberg, & Sjödén, 2001) and by moral considerations. Moral considerations refer primarily to a concern for the environment (Shafie & Rennie, 2012; Tobler, Visschers, & Siegrist, 2011) and the fair treatment of animals (Harper & Makatouni, 2002; Schröder & McEachern, 2004).

Health consciousness

Health consciousness has been identified as the most important driver of organic food consumption. Consumers preoccupied with health values buy organic to reduce exposure to chemicals or pesticides (e.g., Abrams, Meyers, & Irani, 2010; Dean, Raats, & Shepherd, 2008; Padel & Foster, 2005), and to avoid potentially harmful growth hormones and antibiotics (Abrams et al., 2010; Harper & Makatouni, 2002). A recent survey of US adults revealed that the top reasons for choosing organic are avoiding pesticides (52%), avoiding hormones and GMOs (50%), and avoiding antibiotics (47%) (A’s, 2018). Others have argued that the growing popularity of organic food among health-conscious consumers can be attributed to the desire to prevent lifestyle diseases, such as diabetes (Rana & Paul, 2017). These consumer behaviors are consistent with the “illness avoidance” motivation described in the Health Belief Model (Kirsch, 1974; Rosenstock, 1974). According to the model, consumers believe that food may make you ill if you do not select the right products (Hamzaoui-Essoussi & Zahaf, 2009; Kirsch, 1988; Zepeda & Deal, 2009). This belief has been validated by evidence that consumption of some organic foods reduces exposure to pesticides and antibiotic-resistant bacteria, compared to consuming their conventional counterparts (Smith-Spangler et al., 2012).

Health-conscious consumers also buy organic because some think that organic foods are richer in nutrients (Lee, Shimizu, Kniffin, & Wansink, 2013; Lee & Yun, 2015; Yiridoe et al., 2005) or lower in caloric content (Lee et al., 2013; Sörqvist et al., 2015). These beliefs may or may not be supported by evidence. On the one hand, organic produce, compared to conventionally farmed produce, has been found to contain more overall nutrition, more vitamin C, and many more plant-defense molecules that help shield against cancer and heart disease (Brandt, Leifert, Sanderson, & Seal, 2011). On the other hand, a meta-analysis found there is no strong evidence that organic foods are nutritionally superior to non-organic foods (see Smith-Spangler et al., 2012). Regardless of the actual evidence, the mere fact that consumers perceive a nutritional or caloric advantage of organic foods over conventional foods is enough to motivate them to purchase.

Finally, health consciousness motivates contemporary consumers to purchase organic food because they lack confidence in the conventional food industry and doubt that health and safety are its top priorities. Over a decade ago, 62% of Americans believed the food industry cared more about profits than ensuring the health and safety of its food products (McEachern & McClean, 2002). The numbers have not changed much since then: as of 2018, this “trust deficit” was illustrated when only 33% of those surveyed reported confidence in the safety of their food (Chew, 2018; The Center for Food Integrity, 2018). Organic food is still associated by many with small-crop, pesticide-free production and naturally fertilized soil, and therefore perceived as safer for one’s health than conventional foods, which are often linked with large-scale, industrial agriculture (Cook, Reed, & Twiner, 2009; Smith, 2006).

Taste

Whether organic food products taste better than non-organic food products has been debated by many researchers, food suppliers and even pro-organic institutions. Studies designed to compare the taste of organic products with that of conventional products reported a range of findings, but by and large they have failed to support the idea that organic products taste better (see Bourn & Prescott, 2002). Although consumers think that organic foods have a taste advantage over conventional foods (e.g., Dean et al., 2008; Hamzaoui-Essoussi & Zahaf, 2009; Magnusson et al., 2001; Schouteten et al., 2019; Tobler et al., 2011), some scholars have suggested it is more probable that consumers simply report that a product tastes better when they believe it’s organically grown (e.g., Bernard & Liu, 2017). In a within-subjects taste study conducted in Sweden, consumers were each given two pieces of the same tomato, but were told that one piece was organically grown and the other came from a conventionally farmed fruit. Although there
could not have been any differences in taste since both pieces were from the same fruit, consumers thought the half coming from the alleged “organic” tomato was better tasting and of higher quality than the piece they believed to be from a “conventional” tomato (Johansson et al., 1999). Whereas the study did not rule out the possibility that some organic products could taste better, it did show that the superior taste of organic might sometimes be a misperception induced by the organic label.

Moral considerations

Besides healthfulness and taste, two other motivations have been shown to fuel consumerism in the organic domain: the moral obligations to protect the environment and to ensure fair treatment of animals.

Since the 1980s the “green” consumer movement has advocated against purchasing products that harm the environment (Harper & Makatouni, 2002). In the public eye, organic products fit the “green” narrative well, because they exclude the use of pesticides, insecticides, and a range of other “unnatural” chemicals, and are therefore perceived as environmentally friendly (e.g., Lazzarini, Zimmerman, Visschers, & Siegrist, 2016). A global review of studies related to organic food consumers and sustainable agriculture affirms this as the authors determined that “the feeling of doing something good for the environment” was an appropriate motivator for the consumption of organic foods (Shafie & Rennie, 2012, p. 364).

The fair treatment of animals is another moral concern leading consumers to purchase organic food (e.g., Stobbelaar et al., 2007; Zakowska-Biemans, 2011). For example, if a chicken farmer opts not to use harmful hormones in the growth of his chickens, consumers will see benefits not only for their own health, but also for the welfare of the animals (Harper & Makatouni, 2002). This moral motivation is particularly powerful in guiding the consumption of organic milk, eggs, and various meat products (Harper & Makatouni, 2002). Zander and Hamm’s (2010) investigation of ethical values revealed “animal welfare” to be one of the most important attributes considered among organic consumers. They suggested the incorporation of high ethical standards as a way for companies to differentiate their organic food products from conventional foods.

The role of marketing communication in promoting organic foods

As a product group that commands a price premium, organic foods require significant promotional efforts (Bezawada & Pauwels, 2013). On top of this general requirement, it has been noted that given the ongoing commoditization of the organic food market, organic food brands must now be able to effectively differentiate their products beyond the organic label (Anisimova & Sultan, 2014)—an observation with particular relevance for the processed organic sector, where most branding and packaging occurs and where the need for differentiation through marketing campaigns is most acute (Monteiro, 2009).

In spite of this, it was impossible for us to locate research on brand-driven message strategies for processed organic foods. Generally speaking, extant research on how marketing communication can be employed to promote processed organic foods can be described at best as scant and non-programmatic. Only a handful of studies on this topic have been published, and none among those have examined the impact of advertising or any other form of mediated marketing communication on perceptions of healthfulness.

Hemmerling et al’s. (2015) review of the organic food marketing literature reveals the very limited scope of extant research on promotional communication for organic food products and shows how few investigations of message strategies actually exist. When one selects from that literature only the papers discussing processed organic food, the number of articles is extremely low. To be specific, Hemmerling et al. (2015) found that a majority of the published studies in the organic food marketing literature focused on product labels. They located only 30 articles about the communication and information needs of consumers. Of those, 14 examined message strategies, and none discussed the
impact of mass-mediated forms of promotional communication, such as advertising, on consumers’ perceptions of product healthfulness. Clearly, there is a need for more research concerning the marketing of processed organic foods.

**Theoretical rationale**

*Perceived healthfulness of processed organic versus processed conventional food*

In the United States, the highest grossing organic food product remains fresh cut produce. Fresh fruit and vegetable sales make up 40% of the total sales of organic foods and have consistently been the top selling category since the market emerged, both in the United States and in the European Union (Katsarova, 2015; USDA, 2018). Such whole foods have traditionally been the entry point into the organic market for most consumers and often the only type of organic food people buy (Padel & Foster, 2005; Pieniak, Aertsens, & Verbeke, 2010; Prada et al., 2017). Not surprisingly, most of the organic food literature has focused on whole products (e.g., Bernard & Liu, 2017; Chinnici, D’Amico, & Pecorino, 2002; Saba & Messina, 2003; Tranter et al., 2009).

With regard to perceptions of healthfulness, research has repeatedly shown that organic *whole* foods are perceived as more healthful than non-organic *whole* foods, both in general and when consumers evaluate specific products (Lazzarini et al., 2016; Prada et al., 2017; Schuldt & Hannahan, 2013; Sörlqvist et al., 2015). This finding has been reported consistently for decades. For example, Johansson et al. (1999) noticed that consumers expected organic tomatoes to be more healthful than conventional ones because the organic tomatoes were pesticide and chemical-free. Saba and Messina (2003) investigation of heavy- and non-consumers of organic fruits and vegetables yielded similar results, as these food types were considered healthy and more nutritious than conventional fruits and vegetables. A qualitative inquiry into the all-natural and organic labeling of unprocessed meat also confirmed the “organic = healthful” perception (Abrams et al., 2010).

Over time, organic offerings have emerged in other product categories, allowing consumers to move beyond produce into *processed* organic foods. Despite the new choices, consumers were initially reluctant to purchase processed organic (Dean et al., 2008). This was due to the misperception that all industrially processed foods are inherently unhealthy (Monteiro, 2009; Poti et al., 2016). Indeed, food processing is seen as interfering with nature (Evans, de Challemaison, & Cox, 2010) and thus processing may break the intuitive and strong “natural is healthful” belief (Bech-Larsen & Grunert, 2003; Rozin, 2005).

In a study of non-organic products, Lazzarini et al. (2016) offered support for the notion that food processing may decrease perceptions of healthfulness. The researchers investigated factors which influence consumer ratings of how healthful and environmentally friendly a product is seen to be. They observed a negative correlation between food processing and perceptions of healthfulness: the more processed a product was, the less healthful it was perceived to be by the consumers (Lazzarini et al., 2016).

Organic is also associated with naturalness (Berry, Burton, & Howlett, 2017; Gifford & Bernard, 2011; Lockie, 2006), so interfering with the natural attributes of organic products through processing can also diminish the perceived health benefits of the organic claim, leading to a perception that processed organic foods are not necessarily more healthful than their conventional counterparts. Prada et al. (2017) provided some indirect support for this notion through their investigation of both whole and processed organic foods. Across two studies, they found that whole organic foods were consistently perceived as more healthful than whole conventional foods, both in general and when consumers evaluated specific examples. However, the findings were less conclusive in the case of processed organic foods, which with few exceptions were seen as being equally healthful to the conventional counterparts. The researchers suggested an inverse relationship might exist between the organic claim advantage and level of processing—namely, that a higher level of processing is
associated with lower effectiveness of the organic claim, both in terms of healthfulness and in terms of perceived caloric content (Prada et al., 2017). However, they did not test this proposition empirically.

Another reason why processed organic foods might not be perceived as more healthful than their conventional versions is because they contain additives, which consumers consider unhealthy (Bearth, Cousin, & Siegrist, 2014; De Vlieger, Collins, & Bucher, 2017). Lastly, there is a shared perception that somehow pesticides, chemicals, and other artificial substances are less likely to be found in whole organic foods than in processed organic foods, even though both are labeled “organic” (Dean et al., 2008; Ellison, Duff, Wang, & White, 2016).

Based on the studies reviewed in this section, it would be reasonable to expect that (H1a) Consumers exposed to advertisements promoting the organic version of a processed product would not perceive it as significantly more healthful than those exposed to advertisements promoting the non-organic version of the product.

Yet, there is some evidence suggesting the opposite could be true. For example, Bech-Larsen, Grunert, and Poulsen (2001) reported that processed foods with an eco-friendly label are perceived as more natural than conventional processed foods. Given there is a strong “natural = healthful” association (Rozin, 2005), one could expect that processed foods with an eco-friendly label would also be seen as more healthful than conventional processed foods. Indeed, this was recently demonstrated empirically by Sörqvist et al. (2016). Given that healthfulness is at least as strongly associated with organic as it is with eco-friendliness, processed foods with an organic (rather than eco-friendly) label could also be perceived as more healthful than their conventional version. This line of reasoning, therefore, suggests the opposite of H1a, namely,

(H1b) Consumers exposed to advertisements for the organic version of a processed food product would perceive it as significantly more healthful than those exposed to ads promoting the non-organic version.

**Perceived healthfulness of vice versus virtue foods: from different products to framing the same product differently**

It is perhaps easier to understand consumers’ perceptions of whole organic and processed organic foods if one considers how these two types of products may align with the notions of virtue and vice. Food marketing research has long suggested that certain food products are perceived as nutritious and good for you (hence, “virtue foods”) while others are seen as indulgent and tasting good (hence, “vice foods”) (e.g., Wertenbroch, 1998). According to van Doorn and Verhoeof (2011), virtue and vice products are typically conceptualized in relation to each other as relative virtues and relative vices. Vice foods (or “want foods”) are products that provide an immediate pleasurable experience, “such as the good taste of chocolate cake” (van Doorn & Verhoeof, 2011, p. 168). Vice foods are consumed for enjoyment, pleasure, and immediate satisfaction, but often contribute to long-term health problems, such as weight gain and other negative outcomes. By contrast, “virtue foods” (or “need foods”) are less gratifying and appealing in the short-term, yet have fewer negative consequences in the long-term and therefore represent a more prudent choice for consumers (Milkman, Rogers, & Bazerman, 2008, 2010; Okada, 2005; Wertenbroch, 1998).

Researchers have explored differences in consumer perceptions of virtue and vice foods in relation to many variables, ranging from quality to environmental impact or fit with specific promotional tactics. In doing so, most studies employed entirely different products to represent the virtue and vice conditions, such as using chocolate cookies as the vice product and strawberries as the virtue product (see Ellison et al., 2016). A pattern emerges across studies whereby the virtue product is usually from a different product category than the vice product, and it differs from the vice product in many other respects, including the level of processing. For example, in a sales promotion context, Mishra and Mishra (2011; preliminary study and experiments 2, 3 and 5) reported that consumers prefer a bonus pack to a price discount for virtue foods, but to avoid guilt, they favor price discounts over bonus packs for vice foods. In the cited experiments, the
researchers used low-fat blueberry muffins, raisins, and fruit salad as virtue foods and chocolate-chip cookies, chocolate, and chocolate cake as vice foods. A recent investigation of the impact of mental stimulation on choice between virtue and vice foods operationalized the virtue product as a green smoothy and the vice product as potato chips (Muñoz-Vilches, van Trijp, & Piqueras-Fiszman, 2019). In the context of organic foods, Lee, Chang, Cheng, and Chen (2018) found that, compared to conventional products, an organic label increased intention to consume a vice food (white chocolate cookies), but it decreased intention to consume a virtue food (whole-grain wheat cookies). Hidalgo-Baz, Martos-Partal, and González-Benito (2017) captured quality assessments of virtue and vice foods based on environmental protection, health, and hedonic perceptions. Yogurt was utilized to represent the virtue category while chocolate represented the vice category. Further, both Hui et al. (2009) and Bezawada and Pauwels (2013) operationalized virtue and vice at the product category level.

While perfectly appropriate when the data are interpreted with caution, research designs that employ different products to represent the virtue and vice conditions nevertheless make it hard to establish whether perceived differences between products are due indeed to the vice versus virtue characteristics, or to other variables, such as product category, level of processing, taste, how much consumers generally prefer one type of product vs. the other, etc. Such variables and others akin to them can act as confounding factors, influencing the results, and limiting the theoretical and practical inferences one can draw from the data.

One solution to eliminate those potential confounding variables is to present the same processed food either as a vice or as a virtue product, which could be done using promotional messages that vary slightly in their emphasis of either the virtue or the vice aspects of the same product. That technique is known as message framing. Entman (1993, p. 52) described message framing as a communication technique based on “select[ing] some aspects of a perceived reality and make[ing] them more salient […] in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, or treatment recommendation for the item described.” In the context of advertising and marketing, framing consists in the presentation of a product or service by preferentially highlighting certain attributes or aspects of it instead of others, without changing facts about the promoted products. For example, a processed product like pizza can be advertised in a virtue frame by highlighting the nutritional value of its ingredients (e.g., calcium content, whole grains) or their natural origin (e.g., natural cheese); the very same processed product could be advertised in a vice frame by emphasizing words like indulge, savory, taste and by highlighting the enjoyment of the sensory experience brought about by its flavors. Research has shown that such variations in framing promotional messages can lead to significant differences in perception, even when the advertisements look very similar and only slight changes are implemented (e.g., Anghelcev & Sar, 2014).

In view of these considerations about research designs, the present study tested differences in perceived healthfulness of virtue and vice foods both in a traditional research design, whereby one processed product represented the vice food and another product the virtue food (first set of stimuli), as well as by framing the same processed food to be advertised either as a virtue product or as a vice product (second set of stimuli).

Given that, in general, consumers perceive virtue products to be inherently healthier than vice products (Ellison et al., 2016; van Doorn & Verhoef, 2011), the following hypothesis is proposed:

H2: Consumers exposed to advertisements promoting a processed virtue food (or framing a processed product as a virtue food) should perceive the product as more healthful than consumers exposed to advertisements promoting a vice processed product (or framing the same processed product as a vice food).

Consumer psychology studies have shown that people store product-related information in memory in the form of organized structures of interrelated concepts known as schemas, and that these
organized structures of prior knowledge influence the way they evaluate information about new products. Typically, perceptions of new products are influenced by the degree of match, or congruity, between new product information and preexisting expectations (or schemas) about that type of product (e.g., Loken & Ward, 1990; Meyers-Levy & Tybout, 1989; Stayman et al., 1992). Similarly, we expect that perceptions of healthfulness for processed organic products should be influenced by the degree of match, or congruity, between product information (organic, non-organic) and participants’ expectations about that type of product (virtue, vice).

More specifically, when attributes included in the description of a new product are congruent with schema-based expectations about that type of product, consumers’ perceptions are shaped by the existing schema (Loken & Ward, 1990; Meyers-Levy & Tybout, 1989; Stayman et al., 1992). We argue that such congruity exists between consumers’ preexisting schema about “virtue foods” and the organic designation of products, so that perceptions of healthfulness for virtue organic products should be shaped by the expected healthfulness of virtue foods. Mild incongruities, such as that between the virtue-food schema and non-organic foods are typically resolved by slightly modifying product expectations to fit the existing schema (Meyers-Levy & Tybout, 1989), so that perceptions of healthfulness for virtue non-organic products should also be shaped by the expected healthfulness of virtue foods. Consequently, we expect that for virtue foods, there should be no significant differences in perceived healthfulness between the organic and the non-organic versions of the processed product.

Stayman et al. (1992) demonstrated that when attributes included in communication about a new product are incongruent with category-based expectations about that type of product, consumers may switch schemas and evaluate the product in relation to a new schema suggested by the new information. We argue that such incongruity exists between consumers’ preexisting “vice foods” schema and the organic designation of products, so that in forming perceptions of healthfulness for vice organic products consumers should switch schemas from “vice foods” to the new “organic foods” category suggested by the new information. Thus, perceptions of healthfulness for vice organic products should be in line with the expected healthfulness of organic foods (which are relatively high). By contrast, there is relative congruency between “vice foods” and non-organic products, so that perceptions of healthfulness for vice non-organic products should still be shaped by the expected healthfulness of vice foods (which is relatively low). Consequently, we expect that following exposure to advertisements promoting processed vice foods, the perceived healthfulness of the organic version of the processed product should be significantly higher than the perceived healthfulness of the non-organic version.

Before offering the formal hypotheses, two considerations are in order. First, the proposed rationale is based on the statement that there is congruity between the concepts of organic and virtue foods, but incongruity between organic and vice foods. In the following paragraph, we review evidence that such congruity/incongruity indeed exists. Second, to overcome potential confounding variables like those discussed earlier in the paper, our predictions should not be about different vice and virtue products, but rather about the same processed product framed either as virtue or as vice.

Indirect evidence of congruity between organic and virtue (and incongruity between organic and vice) has been observed by several researchers. For example, it has been shown that consumers are more responsive to the promotion of virtue organic foods, as opposed to vice organic foods (Bezawada & Pauwels, 2013). Organic products have also been found to be more popular in virtue categories and less popular in vice categories (van Doorn & Verhoef, 2015), possibly because eating organic foods for utilitarian reasons, such as the benefit of improved nutrition, to avoid pesticides and chemicals and to promote long-term health, is a typical example of the virtue-related mind-set (Yiridoe et al., 2005). Furthermore, consumers should perceive the organic label as congruent with the idea of virtue foods because both organic and virtue foods are associated with positive health benefits (Chekima et al., 2017; Wertenbroch, 1998), naturalness (Dean et al., 2008; Wertenbroch, 1998) and are linked with self-control goals (Bezawada & Pauwels, 2013). By contrast, consumers should see incongruity between organic and vice because whereas organic is considered healthy, vice foods are associated with indulgence, and many consumers believe there’s a trade-off between indulgent and healthy (Schuldt & Hannahan, 2013; see also Padel & Foster, 2005; Wertenbroch, 1998). Further evidence of
incongruity stems from the fact that eating vice foods is often linked with reduced self-control while organic consumption is seen as exercising self-control (Bezawada & Pauwels, 2013).

In sum, organic is understood as having greater conceptual consistency with the functional benefits associated with virtue consumption, than with the pleasurable benefits associated with vice foods. These perceptions of congruity between organic and virtue, and incongruity between organic and vice foods, are rather widespread and seem to reflect “the implicit tradeoff between hedonic experience and health goals that consumers routinely experience in food consumption decisions” (Schuldts & Hannahan, 2013, p. 77; see also Ramanathan & Menon, 2006; Dhar & Simonson, 1999).

In view of our previous rationale based on schema congruity theory (Loken & Ward, 1990; Meyers-Levy & Tybout, 1989; Stayman et al., 1992) and previous research on schema switching (Stayman et al., 1992), an interaction effect is expected between the type of product (organic or non-organic) and the type of frame (vice or virtue) on perceptions of product healthfulness. In the context of a virtue frame, both the organic and the non-organic product are presented as having good ingredients, providing nutrition, and being good for one’s health—thus facilitating a perception of the non-organic product as having benefits typically associated with organic. As a result, the relative differences in perceived healthfulness between the organic and the non-organic products should be minimal or non-existent. However, there should be an observable difference between how healthful the organic and non-organic products are perceived to be when advertised in a vice frame. This is because a vice frame should reinforce the impression that non-organic products should be consumed primarily for hedonic reasons such as texture and taste, not necessarily for their health benefits. Thus, one should expect the difference in perceived healthfulness between organic and non-organic to be significant and larger in the vice frame than in the virtue frame. In the latter, both organic and non-organic products should be perceived as healthy. Therefore, the following hypotheses are proposed:

H3: There should be a significant interaction effect between type of promotional message frame (virtue vs. vice) and type of processed product (organic vs. non-organic) on perceived healthfulness. Specifically, it is expected that

H3.1: In the case of vice-framed advertisements, the processed organic product will be perceived as more healthful than the processed non-organic equivalent.

H3.2: In the case of virtue-framed advertisements, there should be no significant differences in perceived healthfulness between the processed organic product and the processed non-organic equivalent, with both products perceived as relatively healthy.

Method

Sample, design and procedure

A national sample of 375 organic food consumers (63.8% women, 46.2% men; 69% White/Caucasian, 9.4% African American, 8.4% Asian; 9.2% Hispanic/Latino; 4% other; annual household income from 24,000 USD to over 100,000 USD) took part in an online experiment. The sample was bought from the online survey research company, Qualtrics. To be included in the sample, participants had to be primarily or partially responsible for grocery shopping in their household as well as to have purchased an organic food product at least once in the previous month. Other demographic characteristics (e.g., level of education, household size) are available from the authors upon request. Respondents were paid 5 USD for participation.

The experiment was conducted using the Qualtrics Survey Software. A 2 × 2 between-subjects experimental design was employed (vice vs. virtue; organic vs. non-organic). Participants were randomly assigned by the software to one of the four conditions.
Two sets of stimuli were used to test the hypotheses. In the first test, vice vs. virtue was operationalized using different products. Based on pretests, granola cereal was selected as a virtue processed product and ice cream as vice, just like in previous study designs (see Appendix 1). However, because of the presence of potential confounds such as those discussed earlier in the paper, this was not a stringent enough test of the vice vs. virtue effects. Therefore, another set of stimuli was also administered, in a second test of the hypotheses. This time vice vs. virtue was operationalized by framing the same product (pizza) using either a vice frame or a virtue frame (see Appendix 2). The order of the two stimuli in each condition was randomized to avoid order exposure effects.

Thus, each participant had to evaluate either (a) two organic vice food ads (organic ice cream, organic vice-framed pizza), or (b) two organic virtue food ads (organic cereal, organic virtue-framed pizza), or (c) two non-organic vice food ads (non-organic ice cream, non-organic vice-framed pizza) or (d) two non-organic virtue food ads (non-organic cereal, non-organic virtue-framed pizza). Following the evaluation, various dependent measures and basic demographic information were collected.

**Stimulus development pretests**

**First pretest**

The first pretest was conducted to determine what foods should be used to represent vice and virtue products in the first set of stimuli. Respondents from a convenience sample of students (N = 90) rated a list of products (orange juice, apple sauce, pizza, ice cream, cereal, soup, apples, etc.) in terms of how vice-related or virtue-related they are, on two 6-point scales, anchored by (1) strongly disagree and (6) strongly agree. The results indicated a majority of the products were seen either as virtue (highest virtue means recorded was for apples and for cereal) or as vice (highest vice mean recorded was for ice cream), but not as both. Only one product was perceived as having both vice and virtue characteristics: pizza. Therefore, in the first set of stimuli, ice cream was used to operationalize processed vice foods and cereal to operationalize processed virtue foods. In the second set of stimuli, pizza was framed as either vice or virtue.

**Second Pretest.** The second pretest was completed to test the effectiveness of the brand name and logo created for the advertisements. This pretest was also designed to determine if pizza could be alternatively framed as a virtue or a vice product. The pretest was completed by respondents from another convenience sample (N = 61). The results indicated that pizza could be framed successfully through both a virtue and a vice frame, and the brand name was believable. A list of means from the pretests is available from the researchers upon request.

**Measures**

Unless otherwise mentioned, all measures were on 7-point scales. For concepts measured with multiple-item scales, the items were displayed in a randomized order to each respondent, to avoid order effects. Scale anchors, Cronbach’s α values, and the source of the scale are reported.

**Dependent variables**

**Perceived product healthfulness**

Perceived product healthfulness included two items: *product is healthy* (anchored by strongly agree and strongly disagree) and *product is bad/good for me* (Cronbach’s α = .74).
Attitude toward the ad

Three items were used to assess attitude toward the ads: ad is appealing, ad is interesting, and ad is believable, anchored by strongly agree and strongly disagree (Cronbach’s α = .89; Arias-Bolzmann, Chakraborty, & Mowen, 2000).

Behavioral intent

Participants indicated the likelihood they would purchase or try the product on a two item-scale with each item anchored by very unlikely and very likely (Cronbach’s α = .91; Coyle & Thorson, 2001; Kim & Biocca, 1997).

Results

Competing hypotheses (H1a and H1b) suggested by extant literature were advanced to determine if processed foods advertised as organic would be perceived as significantly more healthful than their conventional counterparts. H2 stated that consumers exposed to advertisements promoting a processed virtue food (or framing a processed product as a virtue food) should perceive the product as more healthful than consumers exposed to advertisements promoting a vice processed product (or framing the same processed product as a vice food). H3 proposed there would be an interaction effect between the type of processed food (organic vs. non-organic) and virtue vs. vice, on perceptions of healthfulness.

The pattern of results was the same for both sets of stimuli, providing replication of the hypotheses tests with different operationalizations of vice vs. virtue, and thus increasing the reliability of the findings. In the following paragraphs, the results are reported separately for each set of stimuli.

First set of stimuli: different vice vs. virtue processed food products

Regarding the competing hypotheses H1a and H1b, ANOVA results indicated a significant main effect (F(1,374) = 12.48, p < .001, ηp² = .03) for the type of product (processed organic vs. processed non-organic). The processed organic product (M = 4.75, SD = 1.20) was perceived as significantly more healthful than its non-organic equivalent (M = 4.30, SD = 1.52). H1a was supported. Supporting H2, the analysis showed a significant main effect of product type (vice vs. virtue) on the perceived healthfulness of the processed foods (F(1,374) = 86.16, p < .001, ηp² = .19, Mvirtue = 5.12, SD = .98, Mvice = 4.03, SD = 1.43). Additionally, results also indicated support for the interaction hypothesis, H3 (Figure 1). Supporting H3.1, there was a significant interaction between type of processed food product (vice vs. virtue) and its organic vs. non-organic nature, on perceived healthfulness (F(1,374) = 9.37, p < .002). The processed organic vice product (M = 4.35, SD = 1.32) was seen as more healthful than the conventional version (M = 3.51, SD = 1.47). Supporting H3.2, the perceived healthfulness of the organic processed virtue product (M = 5.15, SD = .90) was not significantly different from that of its non-organic counterpart (M = 5.09, SD = 1.11), p = .740.

Same processed food product, framed as vice vs. virtue (second set of stimuli)

Replicating the pattern observed for the first set of stimuli, ANOVA results indicated a significant main effect (F(1,374) = 3.96, p < .05, ηp² = .01) for the type of product (processed organic vs. processed non-organic). The processed organic pizza (M = 4.82, SD = 1.11) was perceived as more healthful than the non-organic version (M = 4.57, SD = 1.22). Supporting H2, the analysis showed a significant main effect of advertising message frame (vice vs. virtue) on perceived healthfulness (F(1,374) = 5.45, p < .05, ηp² = .01, Mvirtue = 4.84, SD = 1.18, Mvice = 4.62, SD = 1.14). Results also indicated support for the interaction hypothesis, H3 (Figure 2). Supporting H3.1, there was a significant interaction between the advertising message frame (vice vs. virtue) and the type of pizza (organic vs. non-organic), on perceived healthfulness (F(1,374) = 5.74, p < .05, ηp² = .02). When vice-framed advertisements were
used, the organic pizza ($M = 4.82, SD = 1.06$) was seen as more healthful than the conventional version ($M = 4.29, SD = 1.19$). Supporting H3.2, when virtue-framed advertisements were used, the perceived healthfulness of the organic pizza ($M = 4.82, SD = 1.17$) was not significantly different from that of the non-organic version ($M = 4.86, SD = 1.21$), $p = .775$.

**Further analyses**

The study aimed to contribute to the organic food marketing literature by investigating the impact of advertisements on the perceived healthfulness of processed organic foods. Consequently, perceived healthfulness of processed organic foods was the dependent variable of interest. Yet given the paucity of research on the role of promotional messages in promoting processed organic products, two other variables were included for exploratory purposes, even though they were not directly related to the hypotheses: attitude toward the ad and behavioral intent. There is a rich tradition in advertising research which demonstrates that advertising influences these variables, as evidenced in meta-analyses on advertising effects over the years (e.g., Eisend, 2006, 2009; see also Brown & Stayman, 1992). Attitudes toward the ad were measured to ensure that the manipulation would produce quasi-identical ads for use as stimuli. The goal was to create stimuli that would not alter perceptions of healthfulness from one condition to another simply because they were liked better by the participants, so we expected no significant differences in attitude toward the ads. As the appendixes show, the ads looked quasi-identical across conditions. Further analyses revealed no differences in attitude toward the ads across the board. Measured for exploratory purposes, behavioral intent did not differ significantly across experimental conditions either.

Previous research has also shown that health consciousness is one of the main reason consumers purchase organic food products. In this study, participants were also asked to indicate their agreement with two statements: “I usually read the ingredients on food labels” and “I am interested in information about my health.” These items were combined into a reliable health consciousness measure ($r = .52$). Including health consciousness as a control variable in hypothesis testing did not change the patterns of the main findings (predictably so, due to randomization). Nevertheless, given
the exploratory nature of this research, further analyses were conducting to assess the relationships between health consciousness and other variables. Two-way ANCOVAs (vice vs. virtue; organic vs. nonorganic) with health consciousness as a control variable revealed that health consciousness had a significant influence on ad attitude (stimuli set 1: $F(1,370) = 16.58, p < .001, \eta_p^2 = .04$; stimuli set 2: $F(1,370) = 22.36, p < .001, \eta_p^2 = .06$) and behavioral intention (stimuli set 1: $F(1,370) = 6.02, p = .02, \eta_p^2 = .02$; stimuli set 2: $F(1,370) = 12.44, p < .001, \eta_p^2 = .03$). Specifically, health consciousness was positively related to ad attitude ($r = .21$; $r = .24$, respectively, for the two sets of stimuli) and behavioral intention ($r = .13$; $r = .18$). However, the effect of health consciousness was not significant on perceived product healthfulness (stimuli set 1: $F(1,370) = 1.26, p = .26$; stimuli set 2: $F(1,370) = 1.61, p = .21$).

We also explored the potential effects of several demographic factors: age, gender, ethnicity, income, education, and household size. Including demographic variables such as age, gender, ethnicity, income, education, and household size as control variables in data analyses did not change the patterns in which the independent variables influenced perceived product healthfulness, ad attitude, and behavioral intention. Two-way (vice vs. virtue; organic vs. nonorganic) ANCOVAs revealed a marginally significant relationship between income and ad attitude for the first set of stimuli, $F(1,335) = 3.15, p = .08, \eta_p^2 = .01$. Participants with lower levels of income reported a more favorable ad attitude ($r = -.10$). For the second set of stimuli, there was a marginally significant gender difference in ad attitude, $F(1,335) = 2.97, p = .09, \eta_p^2 = .01$. Female participants indicated a more favorable attitude toward the ad ($M = 4.88, SD = .89$) than their male counterparts ($M = 4.68, SD = 1.01$). In addition, for the second set of stimuli, the influence of education was marginally significant on ad attitude, $F(1,335) = 3.07, p = .08, \eta_p^2 = .01$, and significant on behavioral intention, $F(1,335) = 6.01, p = .02, \eta_p^2 = .02$. Participants who received higher levels of education reported less favorable ad attitude ($r = -.11$) and behavioral intention ($r = -.14$). No other demographic effect was significant.
Discussion

The present study contributes to the organic food marketing literature by shedding light on the relationships between organic, processing, and healthfulness from the perspective of consumer perceptions.

A decade ago, Monteiro (2009, p. 729) stated that when it comes to perceptions of healthfulness, “the issue is not food [type], nor nutrients, so much as processing.” To-date, we still do not understand how processing alters perceptions of healthfulness, particularly when it comes to organic foods. On the one hand, the notion of “processed organics” contains the implicit promise of healthfulness consumers associate with organic (e.g., Berry et al., 2017; Lazzarini et al., 2016). On the other hand, processing means interfering with nature and that may disrupt the strong “organic = healthful” association shared by consumers, which stems from the belief that organic is natural (e.g., Dean et al., 2008; Harper & Makatouni, 2002). Indeed, it has been shown that among whole foods, organics are seen as more healthful than non-organics (e.g., Prada et al., 2017). But given the tension inherently embedded in the notion of “processed organic,” the question is, can processed organic foods be seen by consumers as significantly more healthful than their conventional counterparts? If so, under what circumstances?

The present study addresses these issues in a marketing communications context, by investigating the impact of two types of commonly used advertising message frames on the perceived healthfulness of processed organic food. Examining consumers’ perceptions of food healthfulness is important because healthfulness is, again, the main reason for buying organic (Hemmerling et al., 2015). Marketers interested in promoting processed organic foods may default to advertising messages that highlight the health and nutritional aspects of their products, trying to make them appear more healthful than conventional processed products. Highlighting health and nutrition does seem appropriate for promoting organic whole foods, which are bought for their nutritional value and perceived health benefits, exemplifying a virtue-oriented mind-set. However, the notion of processing adds a new layer of meaning to the organic food concept. Processed organic foods (e.g., pizza, cake, ice cream) often belong to product categories associated with consumption for pleasure, or a vice-oriented mind-set. For decades, such foods have been promoted by highlighting the taste and the pleasure of enjoying the product. Switching to messages that promote them as healthful might be a stretch for both brands and consumers. Should marketers use virtue-related advertising appeals, highlighting health and nutrition when promoting processed organic foods, or should they adopt vice-oriented advertisements, such as those focused on taste? How would the latter impact the perceived healthfulness of processed organic foods?

Data from an online experiment with US organic shoppers supported our predictions that processed organic foods would be perceived as more healthful than their conventional versions when the promotional messages emphasize hedonic, taste aspects of the product (i.e., vice-framed advertisements). Consumers who saw vice-framed advertisements perceived the processed organic product as significantly more healthful than the non-organic version. The same was not found when the focus of the promotional messages was on health or nutritional benefits (virtue-framed advertisements). Consumers who saw the virtue-framed advertisements did not perceive the processed organic products as healthier than the non-organic version. In a simultaneous replication, we also tested this interaction using a set of stimuli commonly employed in the literature, whereby comparisons are made between organic and non-organic versions of different vice and virtue products. For the replication, we used organic ice cream as the processed vice product and organic cereal as the processed virtue product. The results were the same.

From a practical standpoint, these exploratory findings present actionable insights to marketers and advertising campaign managers interested in promoting processed organic foods. Specifically, the current experiment demonstrates for the first time in the literature that processed organic products can be perceived as more healthful than their conventional counterparts even if they are promoted via taste-based appeals. Switching to the untested, and yet intuitively appealing strategy of promoting processed organic foods, by touting their superior health advantages over processed conventional
products, may simply not be worth the risks. This recommendation is in line with the suggestion made by Sierra, Taute, and Turri (2015) after studying perceptions of non-organic processed products. Noticing “inverse relationships between nutrition seeking and attitudes and emotions toward the processed food industry,” the researchers recommended that when promoting processed food items, persuasive messages should shy away from “nutritional-related verbiage” (Sierra et al., 2015, p. 516).

To our knowledge, this is the first study examining the joint impact of vice- and virtue-framed promotional messages on the perceived healthfulness of processed organic foods in a marketing communications context. Although the results may appear counter-intuitive (after all, why would taste-based appeals increase perceived healthfulness), they are neither theoretically anomalous nor entirely unexpected in view of other recent findings.

As detailed earlier in the paper, schema congruity theory (Meyers-Levy & Tybout, 1989) explains the observed interactions in a straightforward manner. In a virtue frame and for processed virtue products, we expected (and found) no significant differences in perceived healthfulness between the organic and conventional versions because the high congruity between virtue and organic, and the moderate incongruity between virtue and conventional, were both resolved by interpreting the product in view of the virtue schema. In a vice frame and for vice processed products, we found that organic was perceived as significantly more healthful than conventional because when confronted with incongruent information about the product schema (vice), consumers switched schemas and their perceptions of healthfulness was shaped by the new schema (organic). In the case of non-organic vice processed products, due to the moderate congruency between non-organic and vice, perceptions of healthfulness remain relatively low and aligned with expectations for the vice schema.

Ellison et al. (2016) also reported counter-intuitive findings about the impact of organic labeling on perceptions of taste (for virtue products) and nutrition (for vice products). In their study, when virtue products had an organic label, they were expected to taste better than the conventional version; vice products with an organic label had higher expected nutrition. Given the link between health and nutrition, the latter result is in line with the present finding that vice-framed advertisements (or advertisements for vice processed products) are perceived as more healthful.

In the present experiment, processed organic foods advertised as tasty were simultaneously perceived to also be healthful. Previous literature reported a trade-off between taste and healthfulness, whereby tasty foods are assumed to be unhealthful by consumers, who exhibit a “tasty = unhealthful” heuristic (e.g., Choi & Springston, 2014; Raghunathan, Naylor, & Hoyer, 2006; Westcombe & Wardle, 1997). The current findings may signal a new theoretical boundary for the generalizability of the “tasty = unhealthful” heuristic recognized in the literature. Werle, Trendel, and Ardito (2013) have also called into question the universality of that heuristic, by showing that it may not transfer cross-culturally (Werle et al., 2013). This study indicates that the “tasty = unhealthful” heuristic may not apply to evaluations of processed organic foods. Future research is needed to clarify what types of processed foods it may or may not transfer to; processing level would be an interesting variable for those investigations.

The main effects revealed by the data expand current literature on the distinction between vice vs. virtue foods from a consumer marketing standpoint, by providing support for the claim that, in the case of both organic and non-organic foods, consumers may perceive processed virtue products as healthier than vice processed products. Most importantly, this was noticed even when the same processed product was used in the test, being promoted alternatively by highlighting either its virtue or vice features. Perceptions of healthfulness associated with vice and virtue food categories have never been tested in designs that eliminate confounding variables, by framing the same product as vice and virtue.

The main effects also advance knowledge by showing that the perceived health advantage of organic food products over conventional counterparts may also hold in the case of even highly processed food products.

Methodologically, the study contributes to the literature by demonstrating that the same processed food (in this case, pizza) can be successfully framed through promotional messages to be seen either as
a vice or a virtue product. From a practical standpoint, this suggests to food marketers that other processed organic products have the potential to be framed as either vice-related or virtue-related, and could be advertised as either to different consumer clusters, without compromising their perceived health advantage over conventional foods. From a methodological vantage point, the present design, which transitions from different products to framing the same product differently, is proposed as a way to conduct more valid comparisons between vice and virtue products, by eliminating potential confounding variables associated with other differences between non-identical products.

**Limitations and implications for future research**

Despite the statistically significant effects, the study has several limitations which caution against hastily generalizing the findings.

For example, we did not vary the level of processing of the products described in the stimuli. Indeed, not all processed foods are the same when it comes to processing level. According to the International Food Information Council Foundation, there are four types of processed foods, depending on the level of processing. From the least processed to the most processed, these are: “minimally processed,” “processed for preservation,” “mixture of combined ingredients,” and “ready to eat” (IFIC Foundation, 2015). The products used in the present study fall at the high end of the processing level continuum (ready-to-eat food). In previous studies, consumers have been shown to consider processing levels when assessing the overall nutrition of a product (De Vlieger et al., 2017). Highly processed food was considered to be less nutritious. Given the link between nutritional value and healthfulness, it is possible that processing level would also impact perceptions of healthfulness. Future research should consider level of processing as a variable rather than a constant. Yet, since the level of processing in this study was high, the present test of perceived healthfulness for processed organic products was, if anything, more conservative than if we had used lower levels of processing. One would expect that less processed organic products would only be perceived as even more healthful. What would be interesting to examine in future studies is if, and how, promotional message strategies not considered in this study would interact with processing levels to influence perceptions of healthfulness. We hope the present study can serve as a starting point for such inquiries.

The imperfect nature of the distinction between processed organic foods and “whole organic products,” a term borrowed from the literature to designate non-processed foods, should also be acknowledged. Most foods go through some level of processing, even whole foods; organic fruits and vegetables, for example, are often cut, packaged, and frozen (Monteiro, 2009).

There are limitations inherent to the nature of the study’s method (online experiment) and sample (US organic shoppers with primary or secondary grocery shopping responsibility in the household). Replication is needed with different samples, product types, and message versions before generalizations can be made. Would vice-framed advertisements for processed organic foods (or advertisements promoting vice processed organic foods) still enhance perceptions of healthfulness among different types of consumers? Our participants were organic shoppers, who tend to be more health-oriented than the general public. Further research should determine what types of appeals can successfully promote processed organic foods among consumer segments who don’t have a health-oriented mind-set. It has been shown that organic shoppers respond differently to the organic label than other consumers. Prada et al. (2017) observed that the halo effect of the organic label (i.e., the positive influence of the organic attribute on other product characteristics) is stronger among organic shoppers, implying the possibility that the effect we observed might only be noticed in participants that believe in the advantage of organic food over conventional one (Prada et al., 2017; see also Sörqvist et al., 2016). The level of commitment to purchase only organic, or loyalty to the organic category, could also be tested as a possible mediator or moderator of the effects observed here.

Generalizability is also limited by the setting of the experiment, which may need to be replicated in different contexts. Of course, the setting of any study does not preclude the possibility that the findings can generalize to different contexts. In fact, there is reason to believe that these effects would also be
observed in other settings: recent comparisons between different contexts for testing the impact of messages on consumer perceptions of organic foods have shown that findings can generalize from one context to another (e.g., Schouteten et al., 2019).

In spite of these notes of caution, what can be generalized is the theoretically and practically meaningful observation that promotional messages for processed organic foods can highlight vice aspects of the product and these products will still be perceived as more healthful than conventional counterparts advertised (as they have historically been) in a similar manner. How strong the effect would be in different settings, with different samples or with different products is to be determined.

Funding

Open access funding provided by Qatar National Library. This work was funded in part by a grant from the Arthur W. Page Center for Integrity in Public Communication to the first author.

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Appendixes

Appendix 1. First set of stimuli.

Organic Vice

Non-Organic Vice

Organic Virtue

Non-Organic Virtue
Appendix 2.
The second set of stimuli

Organic Vice

GREEN FIELD ORGANIC PIZZA
Mouth-watering taste for a more satisfied you!

100% Organic, 100% Delicious

Enjoy the savory and delicious experience of our 100% organic pizza packed with tantalizing flavor in every bite. Indulge in the crisp whole grain crust topped with delectable, pesticide-free vegetables and luscious melted cheese leaving your taste buds begging for more. Relish in the sensational flavor and appreciate the blend of organic-certified ingredients.

Non-Organic Vice

GREEN FIELD PIZZA
Mouth-watering taste for a more satisfied you!

100% Appetizing, 100% Delicious

Enjoy the savory and delicious experience of Green Field’s pizza packed with tantalizing flavor in every bite. Indulge in the crisp whole grain crust topped with delectable, fresh vegetables and luscious melted cheese leaving your taste buds begging for more. Relish in the sensational flavor and appreciate the blend of simple ingredients.

Organic Virtue

GREEN FIELD ORGANIC PIZZA
Chemical-free ingredients for a better, healthier you!

100% Organic, 100% Good-for-You Food

Avoid the chemical-laden flavors of processed food and improve your health with our 100% organic pizza made with only organic-certified ingredients. With a 7 whole grain crust topped with pesticide-free vegetables and hormone-free cheese, our pizza helps you to steer clear of the harmful effects of artificial additives and keep you satisfied throughout the day. Stay away from unhealthy toxins and benefit your body with a vitamin-packed organic taste.

Non-Organic Virtue

GREEN FIELD PIZZA
For a better, healthier you!

100% Great Ingredients, 100% Good-for-You Food

Avoid chemical-laden additives and provide great nourishment for your active lifestyle by eating delicious Green Field pizza. With a 7 whole grain crust topped with fresh, packed vegetables and hormone-free cheese, Green Field pizza is only made with real ingredients to help you to steer clear of the harmful effects of artificial preservatives. Stay away from unhealthy toxins and benefit your body with vitamin-packed wholesome taste.