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Research report

Human contact imagined during the production process increases food naturalness perceptions ☆

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ABSTRACT

It is well established that food processing and naturalness are not good friends, but is food processing always detrimental to naturalness? Building on the contagion principle, this research examines how production mode (handmade vs. machine-made) influences naturalness perceptions. In a pilot study ($n = 69$) and an experiment ($n = 133$), we found that compared with both a baseline condition and a condition in which the mode of production process was portrayed as machine-made, a handmade production mode increases naturalness ratings of a grape juice. A mediation analysis demonstrates that these effects result from higher perceived human contact suggesting that the production process may preserve food naturalness when humanized.

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Introduction

With the modernization of food processing technologies, consumers express concerns about the way food products are manufactured (Bredahl, 1999) and they search for food products resulting from traditional production modes (Pieniak, Verbeke, Vanhonacker, Guerrero, & Hersleth, 2009). To address these concerns, food companies develop new products that are promoted as handmade. For example, Domino's Pizza has recently created a new line of "artisan" pizzas which are personally signed by the pizza-maker to underline that it is made by hand. Indeed, handmade products are often preferred by consumers over more processed products (Fuchs, Schreier, & Van Osselaer, 2015). Surprisingly, this trend even affects food categories that traditionally result from machinal production. Starbucks has recently launched a new soda, Fizzio, which is made by hand on demand. One reason why demand for handmade food products is on the rise is that handmade foods are often considered as more natural than industrial foods. Indeed, the desire for naturalness has never been greater (Rozin, 2005). Companies rely often implicitly on this handmade–naturalness connection. For example, Starbucks claims that Fizzio is made with no preservatives, artificial flavors or high-fructose corn syrup, suggesting that handcrafted soda is more natural than soda resulting from machinal production. Thus, a handmade production process often signals to consumers that the product is more natural. This is a paradox, because production processes involving machinery are safe and, generally, do not alter the natural composition of food products. For instance, bottling a fruit juice using a machine rather than by hand does not objectively reduce its naturalness.

However, this is not so surprising because research on naturalness perception finds that naturalness judgments are more dependent on a product's processing history than on its content – the so-called process dominance effect (Rozin, 2006). In other words, the process matters more to consumers than the final content. This evaluative rule often leads to unexpected findings. For example, people continue to prefer natural products even when they are chemically identical to their artificial counterparts (Rozin et al., 2004). Thus, lay theories held about production processes play an important role in naturalness judgments.

As a general rule, food processing has been viewed as a naturalness reducer. For example, genetic modification or pasteurization reduces naturalness dramatically (Rozin, 2005). Contrary to this view, we show that food processing, in some cases, can exert a positive influence on naturalness perceptions. Building on contagion effects (Morales & Fitzsimons, 2007), we propose that a handmade production process increases naturalness perceptions because of an increase in human contact imagined during the production process (an evidence of positive contagion). By doing this, we extend past research on factors that shape naturalness by demonstrating that process plays an important role in determining naturalness judgments (Rozin, 2005), because it signals to consumers that the product has been in physical contact with a natural or an unnatural source.

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Conceptual background

Mode of production and naturalness perception

As a general rule, consumers hold negative attitudes toward food production methods (Von Alvensleben, 2001). One reason for this is that food processing is perceived as detrimental to naturalness (Bredahl, 1999; Rozin, 2005). Thus, the more foods are processed the less they are considered natural. However, losses in naturalness depend on the mode of production. For example, even if the above authors conclude that content and process modifications influence naturalness judgments equally, Evans, de Challemaison, and Cox (2010) found that physical processing (e.g. chopping and blending) decreases naturalness less than chemical processing (e.g. chemical extraction from plant sources). In this research, we presume that the level of humanization of the production process should also impact naturalness perceptions. Industrial food systems are thought to produce unnatural foods (Murdoch & Miele, 1999) whereas homemade foods are judged to be more respectful of nature (Moisio, Arnould, & Price, 2004). Past research has shown that consumers perceive products resulting from rough production processes as less natural than products resulting from gentle production processes because they perceive such products to have undergone less transformation (Gomez, 2012). One reason why people value homemade food is its connection with nature (Moisio et al., 2004). These findings suggest that individuals prefer human process because they are more respectful of food integrity. Conversely, machine contact should act negatively on naturalness perceptions. Indeed, Rozin (2005) has shown that the intrusion of technology in the production process reduces naturalness perceptions. For example, intrusive technologies such as irradiation and pasteurization cause a dramatic drop in food naturalness perceptions. Similarly, although it requires massive human intrusion, domestication results in less extensive loss of naturalness than genetic modification (Rozin, 2005). This is also consistent with a stream of research which shows that consumers respond positively to brands or products with human-like traits (Aggarwal & McGill, 2007). Thus, modes of production involving humans should lead to higher naturalness perceptions than those involving machines. We hypothesize that this effect is due to an increase in human contact imagined during the production process.

Contagion principle

The contagion principle is a basic feature of human thinking (Rozin & Nemeroff, 2002). It posits that when two entities (a source and a recipient) are in contact, they exchange their characteristics permanently (Rozin, Nemeroff, Wane, & Sherrod, 1989). Once the contact ceases, the characteristics transmitted remain active durably (Morales & Fitzsimons, 2007), whatever the duration of contact between the two entities (Rozin, Ashmore, & Markwith, 1996). For example, participants in an experiment refuse to drink a juice if a sterilized cockroach briefly comes into contact with it (Rozin, Millman, & Nemeroff, 1986). Importantly, contagion is insensitive to dose (Rozin et al., 1996). Rozin (2005) demonstrates that adding very small amounts of ingredients causes a significant decrease in food naturalness. For example, a milk to which 2% additional milk fat was added and a milk to which 4% additional milk fat was added were perceived as equally natural (Rozin, 2005). Thus, even brief contact with unnatural entities may cause a dramatic drop in the naturalness of natural entities.

Of particular relevance to this research is the finding that physical contact does not necessarily have to be visible to the naked eye to produce contamination effects. Indeed, the production process is not usually apparent, which can encourage consumers to use mental imagery. Past research has shown that imagined physical contact has similar effects to visible physical contact (Argo, Dahl, & Morales, 2006). In fact, contact salience plays an important role in contagion effects. It is well accepted that proximity to contact increases the likelihood of product contamination (Argo et al., 2006; Kim & Kim, 2011). People are less inclined to make a choice from a set of adjacent objects if they are informed that one object in that group is defective (Mishra, Mishra, & Nayakankuppam, 2009). Furthermore, the transfer of attributes from the source to the recipient is greater when the contact is easily imagined (Morales & Fitzsimons, 2007). Besides their physical characteristics, entities in contact also exchange their symbolic properties. For example, people favor a sweater less when a disliked person has previously worn it even when told that it has been boiled (Rozin et al., 1989). Thus, physical contamination occurring during the production process can be related to residual perception (e.g. smell, heat, microorganisms, germs) or to immaterial qualities transferred to foods.

This research investigates how consumers react to cues signaling human contact during the production process. We anticipate that not all types of contact are equal. In particular, human contact occurring during the production process should destroy naturalness less than machine contact. Past research has shown that product evaluations increase when a product comes in contact with an attractive person (Argo, Dahl, & Morales, 2008), suggesting that human contact does not necessarily lead to negative reactions (Rozin et al., 1986). Similarly, contact with attractive celebrities has been shown to increase auction prices and product value (Newman & Bloom, 2014; Newman, Diesendruck, & Bloom, 2011). In the same vein, foods prepared by a loved one (e.g. a grandmother) are often judged as tastier than when an unknown person prepares them (Rozin & Fallon, 1987). Thus, there is reason to believe that human contact imagined during the production process will act positively on naturalness perceptions.

We conducted a pilot study and an experiment to test the hypothesis that handmade production preserves food naturalness more than machine-made production. We further expect that this effect occurs because of an increase in perceived human contact. We exposed participants to a description of a food production process highlighting human intervention or machine intervention. We included a baseline condition (where participants were not informed of machine and human intervention during the production process) allowing us to assess separately the effect of handmade and machine-made modes of production.

Methods

Pilot study

We conducted a pilot study to ensure that the production mode manipulation worked as intended. We also took advantage of this study to examine whether portraying the production mode as handmade or machine-made influences naturalness directly or operates through product quality (a possible confound).

Procedure

Sixty-nine undergraduate students (51% female) at a French business school took part in product testing as a requirement of a marketing research course. They were asked to read a paragraph describing the production process of a 100% grape juice. Participants were randomly assigned to one of three conditions (handmade production mode vs. machine-made production mode vs. baseline). In the handmade production mode condition, participants read that the entire process was carried out by hand (grapes were hand harvested and sorted, pressed in a manual grape press within 24 hours to preserve quality, the juice was strained and bottled manually). In contrast, in the machine-made production mode condition,

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