

The Backdoor to Overconsumption: The Effect of Associating "Low-Fat" Food with Health References

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Using a priming procedure, the authors study the influence of associating low-fat snack products with contextual health references (e.g., words, such as diet and fiber) on the consumption of these products. Health primes increase consumption of low-fat potato chips (Study 1) and lead consumers to report that they are closer to their ideal weight (Study 2). These results indicate that associating low-fat products with health references may contribute to rather than solve the obesity problem, and they have useful implications for public policy and society.

Obesity and Food Marketing Practices

Obesity constitutes a health problem (Abelson and Kennedy 2004) that has increased in prevalence in most countries around the world (World Health Organization [WHO] 1998). Although genetic determinants (Aitman 2003; Dietz 1991) and worldwide societal changes and nutrition trends (e.g., shifts toward less physically demanding work; more varied diets with a higher proportion of fats, saturated fats, and sugars; agricultural productivity; federal food subsidies; convenience-related trends; see Cutler, Glaeser, and Shapiro 2003; Mitka 2003) all contribute to the problem, marketing influences, such as decreased prices, increased flavor variety (Raynor and Epstein 2001), availability (Tardoff 2002), larger serving sizes (Nielsen and Popkin 2003; Wansink 1996), and more convenient eating opportunities (e.g., ready-to-eat meals, eating in restau-

rants), are often cited as driving the obesity epidemic (Nestle 2002).

Over the past decades, these environmental changes have led to an enormous increase in the consumption of fattening snacks. Together with the reduction in physical activity, increased caloric intake leads to energy imbalance and, inevitably, to weight gain (Centers for Disease Control and Prevention 2004). Among the many other possible remedies, health organizations want to stimulate the market penetration of low-fat products to reduce overall caloric intake. For example, the WHO states that a remedy for obesity is "[c]reating supportive population-based environments through public policies that promote the availability and accessibility of a variety of *low-fat*, high-fiber foods, and that provide opportunities for physical activity" (WHO 2004, emphasis added).

Low-Fat Products and Health References

Recently, low-fat snack foods have gained market share. Low-fat snack foods ("light" products) are snack foods that claim to contain less fat (i.e., a nutrient claim) than their "regular" counterparts. Marketers present these low-fat snack products as better for consumers' weight and health than regular snack products. Therefore, these low-fat snack products seem to offer the perfect "solution" for dieters because they claim to offer the pleasure of regular snack foods with fewer costs (i.e., lower calories and lower fat). This study of the effects of health references on the consumption pattern of low-fat products is timely because the WHO has encouraged public policies to promote the availability and accessibility of a variety of low-fat, high-fiber foods to help remedy the obesity problem (WHO 2004). However, recent research has shown that low-fat nutrition claims can increase food intake (Wansink and Chandon 2006), which may severely attenuate the fat-intake reduction from the consumption of low-fat snacks. This finding is remarkable in light of the expectation that low-fat foods will help reduce the obesity epidemic. Still, Wansink and Chan-

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don's (2006) findings are only a first step toward a more general understanding of the effect of health claims and health references on the consumption of low-fat snacks because they investigate only the effect of *explicit* health claims, such as light labels.

This article documents the possible consumption-enhancing effect of suggestive (nonexplicit) health references. These health references can be indirect or implicit (e.g., labels such as "natural" and "vitamin fortified"; pictures of fibers, grains, slim models) or incidental (e.g., health-related stimuli in the purchase or consumption environment that are not associated with the target product) health associations. We evaluate whether the paradoxical effect of explicit light labels on consumption, as Wansink and Chandon (2006) demonstrate, is replicated for health references. In other words, we test whether health references have a consumption-increasing effect for snack products that are explicitly labeled as low fat. From a policy standpoint, this deserves attention because existing policy primarily regulates the provision of nutrition information and explicit health claims, some of which promise health enhancement or reduction in the risk of disease (e.g., "Proven to reduce cholesterol," "It does your heart good"; Williams 2005). Far less attention has been paid to the use of seemingly incidental health references, which merely (indirectly or implicitly) refer to health (e.g., associations to a healthful lifestyle, such as "forest air" or pictures of pristine landscapes, embedded in the purchase or consumption environment).

Prior research has shown that explicit health claims can make consumers believe that the product is more healthful than when the nutrient information is unavailable, ambiguous, or consistent with the claim (Garretson and Burton 2000; Kozup, Creyer, and Burton 2003; Mason and Scammon 2000; Mitra et al. 1999; Roe, Levy, and Derby 1999). Wansink and Chandon's (2006) finding that explicit light labels increase consumption is consistent with this stream of research. However, it is less clear whether the process producing these findings is similar to the process underlying the possible effect of health references on low-fat snack consumption. In this research, we simulate the presence versus absence of health references in the environment (e.g., pictures of fibers, grains, or slim models on products next to the target product or on store displays) using a priming technique.

We hypothesize that contextual health references, such as words referring to health or pictures of fibers or athletes, that happen to be present in the environment of the consumption of low-fat snack foods increase the amount of these low-fat snack foods consumed, as Wansink and Chandon (2006) find for explicit low-fat labels. After demonstrating that Wansink and Chandon's effect of explicit health claims on consumption generalizes to health references, we consider the processes that may underlie this effect and present a second study that provides initial information on one such process.

Study 1

In the first study, we tested the effects of health references on the consumption of low-fat snack foods of middle-aged women. We introduced health references using a priming

technique, which resulted in two conditions: a control condition without health primes (neutral-prime condition) and an experimental condition with health primes (health-prime condition). The aim of priming is to activate a concept in long-term memory by exposing participants to words related to that concept (Bargh and Chartrand 1999). With this priming technique, we simulated the presence versus absence of health references (e.g., words that are related to health) in the environment (e.g., in a television commercial, on the package, on products next to the target product). Subsequently, we measured the amount of low-fat chips participants ate.

Method

Participants

In total, 37 female members (between the ages of 27 and 57 years; mean age = 43.38, SD = 7.84) of a local research agency consumer panel participated in the study in exchange for €15 worth of household products. Most of them were housewives. Participants had a mean height of 1.63 meters (SD = .06) and a mean weight of 68.7 kilograms (SD = 11.4), for a mean body mass index of 25.9 (SD = 4.5). Of the 37 participants, 10 (27%) were overweight, and 7 (19%) were obese.

Procedure

Participants entered the lab in groups of five to ten and were seated in individual cubicles. They were randomly assigned to one of two experimental conditions. The experimental conditions were randomized within each session and over the time of day.

Health- versus neutral-prime manipulation. Participants first received a "language test" that primed them with health words or neutral words. The language test was a scrambled-sentences task (Bargh and Chartrand 2000). Each sentence consisted of five words, and participants were instructed to construct a grammatically correct four-word sentence from them. In the health-prime condition, 15 of the 30 sentences in the test contained a word that was related to health. We selected these 15 words (i.e., "healthy," "apple," "biking," "jogging," "fit," "fruit," "vegetables," "laughing," "lively," "forest air," "nature," "kiwi," "sleeping," "sports," and "vitamins") on the basis of a pretest of 100 candidate words. We chose the words in a way that ensured that the health-related words would be used in the sentence composition. In the neutral-prime condition, we replaced the health-related words with health-neutral words (i.e., "shoes," "painting," "working," "driving," "obedient," "studying," "squirrel," "something," "plant," "beautiful," "decoration," "boy," "parents," "inside," and "chairs"), which we also derived from a pretest.

Taste test. Subsequently, participants received two bowls, each of which contained 50 grams of the same brand of light chips, and an evaluation form. They were told that they were participating in a blind taste test between "two different brands of light" chips (labeled as "Brand A" and "Brand B"). They were asked to rate each brand on several dimensions. They were allowed to eat as many of the chips as was

necessary to fill out the taste-test evaluation form. All participants had ten minutes to finish the taste test, which was sufficient for everyone.

Measures

Consumption. Unbeknownst to the participants, the remaining chips were weighed after the taste test. We summed consumption in grams over the two bowls.

Reported eating behavior. At the end of the experiment, participants completed the Dutch Questionnaire of Eating Behavior (Van Strien et al. 1986) to correct the results for the degree of self-reported dietary restraint. This questionnaire contains 33 items that measure the extent to which people are restrained (10 items), externally controlled (10 items), and emotionally controlled (13 items) in their eating behavior. We measured restraint with questions such as, "Do you deliberately eat things that help you maintain your diet?" We measured external control with questions such as, "When you see or smell something tasty, do you develop an appetite for it?" We measured emotional control with questions such as, "When something bad is going to happen to you, do you feel like eating?"

Hunger level. At the end of the eating-behavior questionnaire, as a proxy of their hunger level, participants indicated how much time had elapsed since their last meal before entering the lab.

Results

We conducted an analysis of covariance with prime (neutral or health) as a between-subjects independent variable, and we log-transformed (to achieve homogeneity of variance) the grams of low-fat chips eaten as the dependent variable. For clarity, we did not transform the reported means. To control for the degree of dietary restraint, we included the restraint score as a covariate in the analysis. This analysis of covariance revealed a main effect of the prime on the grams consumed of low-fat chips ($F(1, 34) = 4.25, p < .05$). Consistent with our hypothesis, participants in the health-prime condition consumed more ($M = 18.07$ grams, $SD = 13.69$) than participants in the neutral-prime condition ($M = 10.96$ grams, $SD = 5.26$).

Discussion

The results of the first study suggest that health primes linked with low-fat snack foods increase the amount consumed of this low-fat snack product. In Study 2, we test two possible explanations for this phenomenon, one that proceeds by means of biased product perceptions and one that proceeds by means of biased self-perceptions.

Prior research has shown that among other factors, social factors (e.g., culture, the food industry, the media) influence people's attitudes toward certain food products by demonizing or praising them (e.g., by associating a food with health; see Oakes 2004; Rozin et al. 1999). Thus, health references might affect the attitude toward the low-fat product they accompany, creating biased product perceptions. This implies that the activated construct (i.e., by health references) serves as an interpretive frame for subsequent information (i.e., the health evaluation/interpretation of a low-fat

snack food). The activated construct creates a standard against which the information is evaluated. Depending on whether the accessible construct is included or excluded from the representation formed of the target information, this might result in assimilation or contrast effects, respectively (Higgins 1996; Moskowitz and Skurnik 1999; Stapel and Koomen 2001). When applied to the case of health references in food consumption contexts, both the assimilation and the contrast effects imply that the health construct will affect subsequent judgments of information compared with a situation without health references. In the case of the assimilation effect, low-fat snacks should be perceived as more similar to the activated health construct and, thus, as more healthful. In the case of the contrast effect, low-fat snacks should be perceived as less similar to the activated health construct and, thus, as less healthful. If we assume that the effect is mediated by biased product perceptions, the findings of Study 1 are consistent with an assimilation effect, not with a contrast effect. This should imply that the low-fat snack is perceived as more compatible with health after exposure to health references than without these health references, thus allowing consumption to increase. In other words, the health references might make these low-fat snack foods appear less harmful to a person's health, resulting in a decreased risk perception, higher consumption, and even higher overall caloric intake; this is also known as a "boomerang effect" (Bolton, Cohen, and Bloom 2006). Assimilation would be reflected in the support for a second hypothesis: Namely, health references in the environment lead consumers to perceive low-fat snack products as more healthful than a situation without health references.

The findings of Study 1 may also be consistent with a bias in self-perception that results from health references. Health references might lead consumers to report that they are closer to their ideal weight and, in this way, possibly distance themselves temporarily from restraining their food intake (Fishbach and Dhar 2005). It has been shown that exposure to advertisements with thin models leads restrained eaters to think that they already obtained their goal of being thin (Mills et al. 2002; Oettingen 1996). This biased perception decreases consumers' motivation to inhibit eating, and consequently they feel entitled to consume more. In the same vein, health references might influence consumers' self-perceptions by influencing their perceptions of closeness to their ideal body size. In this way, consumers might end up consuming more because they temporarily distance themselves from their goal to restrict food intake. This effect would be reflected in empirical support for an alternative to the second hypothesis: Namely, health references in the environment lead consumers to perceive themselves as closer to their ideal weight than a situation without health references. In summary, we tested the influence of associating low-fat snack products with contextual health references on the consumers' healthfulness perceptions of the low-fat food products and their self-perceptions.

Study 2

The aim of the second study was to investigate whether health references may change the perception of the self, the low-fat product, or both. We tested the effects of health primes on product perception and self-perception using the

same priming technique as in Study 1. We measured the perceived healthfulness of low-fat snacks (with regular snacks as a reference point) and self-perceptions pertaining to consumers' closeness toward their ideal weight. If the health primes operate by means of product perception, consumers should perceive the low-fat product as more healthful on exposure to health primes. That is, the perceived health of low-fat products is assimilated to the health prime. If health primes operate by means of self-perception, consumers should perceive themselves as closer to their ideal weight after exposure to health primes.

Method

Participants

Fifty-six undergraduate female students (between the ages of 18 and 29 years; mean age = 21, SD = .50) participated in exchange for €6. Participants had a mean height of 1.69 meters (SD = .07) and a mean weight of 59.61 (SD = 8.6), for a mean body mass index of 20.9 (SD = 2.6). Three participants (5.4 %) were overweight, and one (1.8 %) participant was obese.

Procedure

Participants entered the lab in groups of eight and were seated in individual cubicles. They were randomly assigned to one of two experimental conditions. The experimental conditions were randomized within each session and over the time of day.

Health- versus neutral-prime manipulation. Participants first received a language test, which was identical to the one used in Study 1. Again, they constructed sentences from health- versus non-health-related words.

Measurements. Subsequently, participants received a questionnaire about their self-perceptions and their perceptions of regular and low-fat chips. We counterbalanced the order of both perception measures. Unlike Study 1, we did not measure actual consumption of the chips.

Measures

Product-perception. Participants were asked to indicate the perceived healthfulness of regular chips and low-fat chips. We assessed their responses on a scale ranging from 0 ("very unhealthy") to 100 ("very healthy").

Self-perception. In a first measure, we measured closeness to ideal weight in three different ways. We asked participants to indicate their current weight and their ideal weight. The difference between both measures indicated their closeness to their ideal weight. In a second measure, we asked them directly for their perceived distance from their ideal weight. We assessed this on a scale ranging from 0 ("ideal weight attained") to 100 ("far from ideal weight"). The third, more indirect measure of closeness to their ideal weight measured satisfaction with their weight. We assessed this on a scale ranging from 0 ("not at all satisfied") to 10 ("very satisfied").

Reported eating behavior. At the end of the experiment, participants completed the Dutch Questionnaire of Eating Behavior (Van Strien et al. 1986) to correct the results for the degree of dietary restraint.

Results and Discussion

We conducted a multivariate analysis of covariance with the prime (neutral or health) as a between-subjects independent variable and perceived healthfulness of regular chips, perceived healthfulness of low-fat chips, current weight, ideal weight, perceived distance from ideal weight, and satisfaction with weight as the dependent variables. To control for the degree of dietary restraint, we included the restraint score as a covariate in the analyses. The order of the perception measures had no effect, and we left it out of the analyses. The multivariate analysis of covariance resulted in a significant Wilks' lambda = .77 ($F(6, 48) = 2.46, p < .05$) for the main effect of the prime. To follow up on this effect, we explored the effect for each variable separately.

Product Perception

The low-fat ($F(1, 53) = 7.44, p < .01$) and regular ($F(1, 53) = 6.55, p < .02$) chips were perceived as less healthful in the health-prime condition than in the neutral-prime condition (see Table 1). Moreover, if we examine the difference in perceived healthfulness of low-fat versus regular chips, the prime manipulation has no effect ($F < 1$). These findings imply that the health prime makes both the low-fat and the regular chips appear less healthful to the same extent.

The effect of the health prime on the perception of low-fat (and regular) chips cannot explain the increased consumption of low-fat chips following a health prime in Study 1 and is incompatible with an assimilation mechanism, dis-

Table 1. Study 2: Means and (Standard Deviations) for the Independent Variables in the Neutral- Versus Health-Prime Condition

	Product Perceptions		Self-Perceptions				
	Low-Fat Chips	Regular Chips	Current Weight	Ideal Weight	Current-Ideal Weight ^a	Perceived	Satisfaction
						Distance from Ideal Weight	with Current Weight
Neutral prime	26.76 (17.78)	17.93 (16.93)	62.33 (9.14)	58.26 (6.57)	6.01 (4.72)	37.23 (27.35)	6.04 (2.59)
Health prime	16.67 (10.07)	8.48 (11.15)	57.08 (7.00)	55.00 (5.32)	3.57 (1.89)	22.86 (21.99)	7.21 (1.59)

^aWe included only participants whose current weight was higher than their ideal weight ($n = 40$).

confirming the second hypothesis. In contrast, these results indicate a contrast effect of the health prime on the healthfulness perception of the low-fat and regular chips. Contrast effects are often documented in situations in which the target to be judged is rather remote from the primed construct. For example, priming people with the word "professor" makes them feel smarter, whereas priming them with the word "Einstein" makes them feel less smart (Dijksterhuis et al. 1998). Our findings suggest that chips (i.e., the target of evaluation) are rather remote on the health dimension. That the contrast effect is as large for low-fat chips as it is for regular chips suggests that the contrast effect is not moderated by the low-fat label.

Self-Perception

Participants in the health-prime condition perceived their current weight (in kilogram) as lower than did those in the neutral-prime condition ($F(1, 53) = 6.30, p < .02$; see Table 1). Moreover, participants in the health-prime condition had a lower ideal weight (in kilogram) than did participants in the neutral-prime condition ($F(1, 53) = 4.12, p < .05$; see Table 1).

More important, we examined the difference between the current weight and the ideal weight for participants whose current weight was higher than their ideal weight ($n = 40$). The difference between the current weight and the ideal weight (in kilogram) was smaller for participants in the health-prime condition than for those in the neutral-prime condition ($F(1, 37) = 4.12, p = .05$; see Table 1). Consistently, participants in the health-prime condition perceived the distance from their ideal weight as lower than did participants in the neutral-prime condition ($F(1, 53) = 5.13, p < .03$; see Table 1). Finally, participants in the health-prime condition were more satisfied with their weight than were participants in the neutral-prime condition ($F(1, 53) = 5.03, p < .03$; see Table 1).

Our three operationalizations of perceived closeness to ideal body weight all lead to the same conclusion. Health primes decrease consumers' perceived distance from their ideal body weight. This biased self-perception may lead to greater consumption.

General Discussion

Overview of the Findings

The results of Study 1 show that exposure to health primes increases the amount of low-fat chips consumed. In Study 2, we examined two potential processes for increased consumption after exposure to health primes. First, exposure to health primes may lead people to perceive the low-fat chips as more healthful. Such an assimilation mechanism could explain the consumption increase of low-fat snacks after exposure to health primes because the low-fat snack would appear more healthful than it actually is. Second, exposure to health primes may lead consumers to perceive themselves as closer to their ideal weight. Such a mechanism could also explain the consumption increase of low-fat snacks after exposure to health primes because consumers may believe that they can devote less effort to their diets than in situations without health primes.

The results show that the consumption increase following health primes cannot be explained by the perception of the low-fat snack product as more healthful. On the contrary, exposure to health primes apparently makes the low-fat chips appear less healthful than is the case without such an exposure. Indeed, exposure to health primes even makes regular chips appear less healthful. A possible explanation is that the health primes emphasize the health dimension of any food in the environment. Chips, which are typically believed to be an unhealthy food regardless of whether they are low fat, are perceived as less healthful. Thus, the consumption increase of a low-fat snack food following health primes cannot be explained by a more healthful image of the low-fat snack food. Conversely, the health primes led consumers to report that they were closer to their ideal weight than when there were no health primes. In addition, exposure to health references led people to feel more satisfied with their current weight than when there were no health primes.

Implications for Consumer Welfare and Public Policy

For marketers, our results might sound like good news in the short run, given the recent boom in the demand and supply of low-fat and other light products (American Dietetic Association 1998). By associating these products with implicit or incidental health references, marketers might increase sales and profit. For society in the longer run, however, our data imply that the promotion of low-fat snack foods may be a counterproductive strategy to halt the obesity epidemic because of the increased presence of health references in the environment. Although low-fat snack products are better for health than their regular counterparts, their associations with health references that happen to be present in the direct environment (e.g., pictures of fiber, grains, or slim models on products next to the target product or on in store displays) might counteract the intended caloric reduction by embellishing consumers' self-perceptions. These health references appear to make consumers believe that they are closer to their ideal weight and, consequently, could lead them to consume more of low-fat snack products.

Raynor and colleagues (2004) suggest that interventions to reduce fat intake should target the increased liking for low-fat foods, along with increasing the proportion of low-fat foods in the household. Our results imply that these interventions should be carefully considered to prevent consumers from perceiving themselves as closer to their ideal weight than they really are.

Further Research and Limitations

A limitation of this research is the short duration of the consumption opportunity in Study 1, and we should be careful in drawing conclusions about the long-term effects of health references. Moreover, eating behavior in a laboratory is not the same as real eating behavior, even though research examining the effects of environmental stimuli on food intake mostly uses such methods and analyses (Roefs and Jansen 2004; Rotenberg et al. 2005). In support of our approach, we argue that the consumption pattern in the control condition (i.e., the neutral-prime condition) reflects nor-

mal eating and, therefore, that the difference between the control and the experimental condition is meaningful. Our results should serve as initial evidence that deserves further exploration.

Further research could investigate the effect of less explicit claims that are related to the product (e.g., pictures of athletes on the package). Combining Wansink and Chandon's (2006) finding that explicit health claims increase consumption of low-fat products and our finding that health references also increase consumption of low-fat products suggests that health references that are linked to the product (e.g., pictures on the package of the low-fat snack product) would further increase consumption. Nevertheless, the underlying mechanisms in Wansink and Chandon's findings and ours are different. The priming manipulation we used (as an operationalization of health primes that are present in natural environments without being linked to the product) increases the likelihood of producing a self-based (rather than product-based) effect. Therefore, our results might not generalize to "on-product" health associations.

It would be worthwhile to explore the effects of health associations that are directly associated with the low-fat product. Health references that are directly linked to the product might proceed by means of biased product perceptions and thus might not necessarily increase consumption. Indeed, associating health references directly with low-fat snack products might help consumers control their food intake if the same contrast effect as we found in Study 2 emerged.

On a more theoretical level, the exact processes through which health references bias self-perception and thus affect consumption await further research. There are at least two possible processes. First, increased consumption may result from a "liberation effect" (Fishbach and Dhar 2005). That is, a person's perception that he or she is closer to a goal after exposure to health references may reflect the evaluation that he or she has made progress toward reaching this goal and thus may liberate him or her to pursue unrelated or even conflicting goals. In terms of food consumption, the environmentally induced belief that a person has made progress toward his or her ideal body weight may entitle that person to eat more. In other words, partial goal achievement may liberate consumers from their strict goal to follow their food regulatory plans. The second possible process that explains the consumption-increasing effects of health references as a result of biased self-perceptions proceeds by means of coping mechanisms. Health references may induce consumers to realize that they are not healthy at all, which may demotivate them to stay with their plan. Thus, their self-perceptions about their health may be affected by a contrast effect after exposure to, for example, a mountain-climbing athletic character. In other words, consumers might perceive themselves as being far away from the seemingly unachievable ideal standard with which they were primed. A side effect of this demotivation may be a biased perception of their actual weight as a way to cope with this unsettling news. Not only is the distinction between liberation and demotivation of theoretical interest for researchers interested in self-control, but it may also help find ways to prevent the consumption-increasing effects of health references, and therefore it deserves future research attention.

Further research could also help distinguish between a goal- and a perceptual-based mechanism for explaining why health references make people feel closer to their ideal weight. On the one hand, health references might change a person's view of his or her closeness toward an ideal weight goal (i.e., a goal-based mechanism). On the other hand, the health references might change how a person views him- or herself (i.e., a perceptual-based mechanism) because the exposure to the health primes serves as a context within which the self is perceived (Higgins, Rholes, and Jones 1977).

It would be worthwhile to examine the effects of health references that accompany vice products as well. Because health references lead consumers to believe that they are closer to their ideal weight, this should also result in the increased consumption of regular snacks. Furthermore, because the effects appear to operate through changes in self-perception rather than product perception, health references to low-fat products may even increase the consumption of other threatening foods without claims. This would have serious implications for public policy and consumer welfare.

As we mentioned previously, Raynor and colleagues (2004) suggest increasing the proportion of low-fat foods in the household to reduce fat intake. It has been shown that consumers ration the purchase quantities of vice products (i.e., products that satisfy a short-term desire but hurt the attainability of long-term goals; e.g., regular potato chips) to solve their self-control problems (Werthenbroch 1998). They do so because they believe that limiting the stock of vice products reduces the temptation to overconsume vices. For (relative) virtue products, such as low-fat potato chips (i.e., products that provide more utility in the long run than [relative] vice products), consumers probably experience less of a self-control threat. This implies that low-fat versions of unhealthy snacks may be more readily stockpiled at home. Unfortunately, the number of health references (e.g., in advertisements, on packages) at home could increase drastically, which might encourage overconsumption of these low-fat snacks by leading consumers to perceive themselves as closer to their ideal weight. In addition, Chandon and Wansink (2002) show that stockpiling makes people consume convenience products at a faster rate. Thus, it would be worthwhile to explore the stockpiling and subsequent consumption behavior of virtue products.

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