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Abstract

Based on recent advancements in the behavioral priming literature, three experiments investigated how incidental exposure to fast food can induce impatient behaviors and choices outside of the eating domain. We found that even an unconscious exposure to fast-food symbols can automatically increase participants' reading speed when they are under no time pressure and that thinking about fast food increases preferences for time-saving products while there are potentially many other product dimensions to consider. More strikingly, we found that mere exposure to fast-food symbols reduced people's willingness to save and led them to prefer immediate gain over greater future return, ultimately harming their economic interest. Thus, the way people eat has far-reaching (often unconscious) influences on behaviors and choices unrelated to eating.

Keywords

fast food, impatience, time efficiency, priming

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Eating habits have shifted dramatically over the past few decades. Fast food, first introduced with hot-dog and hamburger food stands, is now a multibillion-dollar industry that has widespread influence on what and how people eat. The golden arch of McDonald's is ranked as one of the most globally recognized cultural symbols (Schlosser, 2001). The expansion of the fast-food industry is accompanied by growing concerns over associated health hazards. Cross-sectional studies show a positive association between the density of fast-food restaurants and obesity at the state level (Maddock, 2004). A longitudinal study found that frequent fast-food consumption is associated with weight gain and risk of insulin resistance over 15 years (Pereira et al., 2005). Despite increased awareness of the health hazards of fast food, much less is known about the consequences of fast food in other domains. Although burgers and fries are prototypical fast foods, the essence of fast food is not what you eat but how you eat. From selection of ingredients to preparation of food to consumption of the end products, the goal of fast food is to save time (Schlosser, 2001). Fast food allows people to fill their stomach as quickly as possible and move on to other things. It represents a culture that emphasizes time efficiency and immediate gratification.

On the basis of recent advancements in the behavioral priming literature, we suggest that exposure to fast-food concepts can automatically induce time-saving behaviors. Previous studies have found that social behaviors can be primed by

environmental cues. For example, exposure to a picture of an exclusive restaurant led people to behave with better manners in a subsequent eating task (Aarts & Dijksterhuis, 2003). Similarly, people who cast their vote within a school are more likely than others to endorse school funding initiatives on the ballet (Berger, Meredith, & Wheeler, 2008). These results are interpreted as due to goals associated with the environmental cues being activated and then soliciting corresponding behaviors. Moreover, the activation and execution of these goals require no conscious awareness or regulation (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001). Thus, a subliminal prime of the Apple logo can activate a creative goal that leads participants to perform more creatively than they do following a prime of the IBM logo (Fitzsimons, Chartrand, & Fitzsimons, 2008). Given that fast food embodies the goal of saving time, these findings suggest that exposure to fast-food-related concepts may automatically increase speed and time preference (i.e., preference for immediate utility over delayed utility; see Frederick, Loewenstein, & O'Donoghue, 2002).

It is important to note that the social implications of such an automatic effect of exposure to fast food are likely to be mixed. On the one hand, speed or time preference can no doubt be

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beneficial in certain contexts. On the other hand, automaticity of the effect means that the goal of saving time will be activated upon exposure to fast food regardless of whether time is a relevant factor in the given context. For example, walking faster is time efficient when one is trying to get to a meeting; it is a sign of impatience when one is going for a stroll in the park. Thus, although fast food has certainly contributed to a culture of time efficiency, the exposure to fast food might have also promoted haste and impatience.

In this article, we report three experiments focused on revealing the link between fast food and impatience. Experiment 1 examined whether subliminal primes of fast-food logos can increase participants' reading speed while they are under no time constraint. In Experiment 2, we manipulated exposure to fast-food-related concepts and examined impatience in consumer choices. Finally, Experiment 3 examined whether priming fast-food logos would induce impatience in financial decisions, as reflected by people's unwillingness to postpone immediate gains for greater future returns. Together, these experiments suggest that the unconscious goal of saving time embedded in fast food may have the unexpected consequence of inducing haste and impatience.

Experiment 1

Experiment 1 tested whether exposure to symbols of fast food, even at an unconscious level, can automatically induce impatience, as manifested in reading speed. General action speed has been one of the core components of measures of impatience and time urgency. The Speed and Impatience scale used to measure Type A behavior (Jenkins, Zyzanski, & Rosenman, 1979), for example, asks people to report how quickly they eat, walk, and process things in general. In Experiment 1, we gave participants a short paragraph to read after exposure to fast-food or control primes and measured the time it took them to finish reading.

Fifty-seven undergraduates were randomly assigned to either the fast-food or the control condition. Participants were first asked to "pretest" some experimental materials for future studies; they read a short paragraph that was unrelated to fast food and typed it on a computer. The time it took them to finish was recorded and later used as a covariate to control for individual differences in reading speed. Participants then engaged in a lexical decision task that served as our prime manipulation. Subjects were told to focus attention on the center of the computer screen while ignoring flashes of objects in the corners of the screen. In the fast-food condition, the flashing objects included subliminal primes of fast food. Six logo images (matched for size) taken from major fast-food chains (McDonald's, KFC, Subway, Taco Bell, Burger King, and Wendy's) were each flashed twice in random order at one of the corners of the computer screen. Each flash consisted of a pattern mask presented for 80 ms, the logo images for 12 ms, and the pattern mask again for 80 ms. The control condition was the same as the fast-food condition except that the logo

images were replaced by blank squares of the same size. It is important to note that the conscious mind cannot recognize images flashed at this quick rate. When asked after the experiment what they had seen in the flashes, all the participants reported that they had seen color blocks without any meaningful pattern. Nevertheless, prior research has shown that such briefly flashed stimuli can be processed at an unconscious level and influence behavior (e.g., Bargh, Chen, & Burrows, 1996; Fitzsimons et al., 2008).

Immediately after the lexical task, participants saw a computer screen containing a 29-word instruction and a 320-word description of Toronto. They were asked to read the description and move on to the next screen when they finished. The time taken to finish reading this page was recorded and used as the dependent variable.

To test whether the unconscious exposure to fast food affected reading speed, we conducted a one-way analysis of covariance, controlling for individual differences in initial reading speed. Even though none of the participants in the fast-food condition reported seeing any of the logos flashed, reading speed was significantly faster in this condition ($M_{\text{adjusted}} = 69.54$ s, $SE = 4.32$) than in the control condition ($M_{\text{adjusted}} = 84.01$ s, $SE = 4.40$), $F(1, 54) = 5.44$, $p = .023$, $\eta_p^2 = .091$. At the unconscious level, exposure to fast food increased speed when there was no time pressure in the situation.

Experiment 2

Experiment 2 examined another form of impatience: preferences for time-saving products. The extent to which a product saves time is just one of many characteristics (e.g., environmental friendliness, aesthetics, quality, or time efficiency) that consumers may consider in evaluating a product. When individuals are exposed to fast-food-related concepts, however, the activated goal of saving time may make time efficiency the most prominent feature and trump other considerations. Indeed, Ferguson and Bargh (2004) showed that the activation of goals (e.g., thirst) increases desirability of goal-relevant objects (e.g., water). Thus, we predicted that exposure to the concept of fast food would increase the desirability of time-saving products.

Even though we used the term "time-saving products," the extent to which a product is time efficient is likely to be relative. Therefore, we pretested five pairs of similar products with different levels of time efficiency. We asked an independent sample of 54 participants to indicate the extent to which each product was time efficient (5-point scale: 1 = *not at all time efficient*, 3 = *moderately time efficient*, 5 = *very time efficient*). We then conducted a paired-sample *t* test on the ratings for each pair. With one exception (toothpaste and lip balm), all of these within-pair comparisons were consistent with our initial expectations (see Table 1). We dropped the inconsistent pair from subsequent analyses and divided the remaining eight products into two categories: time-saving versus control products. Further analysis showed that these two categories

Table 1. Mean Pretest Ratings of Products' Time Efficiency in Experiment 2

Time-saving products		Control products		t test
Product	Rating	Product	Rating	
2-in-1 shampoo	3.35 (1.03)	Regular shampoo	2.11 (0.98)	$t(53) = 7.62^*$
Four-slice toaster	4.04 (1.04)	Single-slice toaster	2.23 (1.19)	$t(52) = 8.03^*$
High-efficiency detergent	3.02 (1.04)	Regular detergent	2.74 (1.12)	$t(53) = 2.27^*$
3-in-1 skin-care solution	3.51 (1.20)	Skin-care solution	2.51 (1.01)	$t(52) = 6.10^*$
Lasting-protection toothpaste	2.94 (1.28)	Lip balm	2.94 (1.28)	$t(53) = 0.00$

Note: Products were rated on a 5-point scale (1 = not at all time efficient, 3 = moderately time efficient, 5 = very time efficient). Standard deviations are given in parentheses. Within-pair comparisons were made using paired-sample t tests. * $p < .05$.

differed significantly in time efficiency at an aggregate level ($M = 3.47$, $SD = 0.66$, vs. $M = 2.40$, $SD = 0.73$), $F(1, 53) = 120.08$, $p < .001$, $\eta_p^2 = .694$.

To test the prediction that exposure to fast-food primes increases preference for time-saving products relative to control products, we randomly assigned 91 undergraduate students to recall either a time they had a meal at a fast-food establishment or the last time they went grocery shopping (control condition). Participants then completed an ostensibly unrelated marketing survey in which they rated the desirability of the eight products on a scale from 1 (not at all) to 7 (very desirable).

As expected, participants primed with fast food desired time-saving products more ($M = 3.70$, $SD = 1.12$) than participants in the control condition did ($M = 3.07$, $SD = 1.07$), $F(1, 89) = 7.54$, $p = .007$, $\eta_p^2 = .078$; desirability of control products did not differ between the two conditions ($M = 3.47$, $SD = 1.14$, vs. $M = 3.40$, $SD = 1.00$), $F(1, 89) = 0.089$, $p = .766$, $\eta_p^2 = .001$. The interaction between condition and product type was significant, $F(1, 89) = 4.33$, $p = .04$, $\eta_p^2 = .046$. These findings suggest that thinking about fast food makes individuals impatient and strengthens their desire to complete tasks as quickly as possible.

Experiment 3

Thus far, we have shown that fast food, originally designed to save time, can have the unexpected consequence of inducing haste and impatience, as reflected in increased reading speed where there is no time pressure and increased preference for time-saving products when there are potentially other important features to consider in choosing a product. Experiment 3 examined whether this effect of fast food would extend to one of the most studied temporal decisions—the decision to save. We tested whether the impatience induced by exposure to the concept of fast food can actually work against one's economic interest. Saving involves delaying immediate gratification from spending in order to realize greater future gain. Saving means waiting patiently for greater future return and is counter to the ethos that fast food embodies: getting things as quickly as possible and receiving immediate gratification. Thus, although few people would associate the mere exposure to fast

food with saving preferences, we predicted that individuals exposed to symbols of fast food would be less likely to save than would individuals without such exposure.

Fifty-eight undergraduate students were randomly assigned to rate the aesthetics of four different logos. In the fast-food condition, two of the logos were from well-known fast-food franchises (McDonald's and KFC); in the control condition, these logos were replaced by the logos of two inexpensive diners, to control for the inexpensiveness dimension of fast food that may be relevant to preferences regarding saving.¹ After participants completed the priming task, we measured their saving preference using a standard task in which participants make a series of binary choices between money received at different times (Benjamin, Choi, & Strickland, in press; Frederick et al., 2002). Each choice was between "\$3 today" and " X in 1 week" ($X = \$3.05, \$3.10, \$3.25, \$3.50, \$3.75, \$4.00, \$4.50, \$5.00, \$5.50, \6.00 , or $\$7.00$). Participants were asked to circle their preference in each case. Our dependent variable was the minimum continuously compounded weekly interest rate that the subject required to choose the later payment over the earlier payment (i.e., the continuously compounded weekly interest rate that would be required for the earlier payment plus interest to equal the minimum later payment that the subject would accept). For example, if the participant would choose the later payment over the earlier \$3 payment if and only if the later payment was at least \$3.50, then the reservation interest rate (r) was calculated as $\log(3.50/3.00)$ and was equal to 0.154 (15.4%). The higher the interest rate, the greater the value the participant assigned to having an immediate gain.

Three participants who expressed inconsistent preferences were excluded from the analysis. As expected, participants who were merely exposed to the fast-food logos required a much higher minimum compounded weekly interest rate ($M = 17\%$, $SD = 10\%$) to delay payment than did those in the control condition ($M = 11\%$, $SD = 9\%$), $F(1, 53) = 6.65$, $p = .013$, $\eta_p^2 = .112$. In other words, participants primed with fast food were much more likely to accept a smaller payment now rather than wait for a larger payment in a week, compared with those in the control condition. Fast food seemed to have made people impatient in a manner that could put their economic interest at risk.

General Discussion

Fast food has become the ultimate icon for a modern culture that emphasizes time efficiency and instant gratification (Ritzer, 1992). The consequences of fast food's ubiquity, however, are not adequately understood. On the basis of the recent behavioral priming literature, we suggest that the time-saving principle embodied by fast food can automatically induce haste and impatience. In two experiments, we found that unconscious exposure to fast-food symbols increased reading speed when there was no time constraint and that thinking about eating fast food increased preferences for time-saving products. Further, in our final experiment, mere exposure to fast food reduced people's willingness to be patient and save, leading them to choose the financially inferior option.

These findings suggest some ironic implications. Although time-saving goals can certainly increase time efficiency, the activation and pursuit of these goals upon exposure to fast-food concepts are automatic and not contingent on the context. Thus, exposure to fast food may increase reading speed whether one is at work, where time efficiency matters, or relaxing at home. Scholars from different disciplines have made a similar observation that as people have more time-efficient technologies and products, they feel more, rather than less, impatience (e.g., Levine, 1997). It is possible that a fast-food culture that extols saving time not only changes the way people eat, but also fundamentally alters the way they experience events: Activities that used to be orthogonal to time concerns (e.g., leisure) are now experienced through the colored glasses of impatience. It is an open question whether fast food in part caused this culture or is merely a consequence of it. What we can infer from our studies, however, is that exposure to fast food and related symbols reinforces an emphasis on impatience and instant gratification and that fast food can have a far broader impact on individuals' behaviors and choices than previously thought.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

Note

1. An independent sample of 32 students were randomly assigned to rate the cost and service speed of either the two fast-food establishments or the two diners, using a 7-point scale (1 = *not at all*, 7 = *very much*). The fast-food establishments ($M = 3.00$, $SD = 1.25$) and diners

($M = 3.16$, $SD = 1.12$) were rated equally inexpensive, $F(1, 30) = 0.14$, $p = .71$, $\eta_p^2 = .005$; however, fast-food service was rated speedier ($M = 5.38$, $SD = 0.94$) than diner service ($M = 4.40$, $SD = 0.82$), $F(1, 30) = 9.64$, $p = .004$, $\eta_p^2 = .243$.

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