Choosing Your Future: Temporal Distance and the Balance between Self-Control and Indulgence

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This article investigates how temporal distance influences consumers' self-control. We demonstrate that self-control is dependent on the content of currently active information in decisions for the future. When indulgence information is currently active, decisions for the future tend to be oriented toward self-control. When self-control information is currently active, decisions for the future tend to be oriented toward indulgence. In four experiments investigating two self-control domains (healthy eating and saving money), we find evidence for an information activation/inhibition account of the influence of temporal distance on self-control decisions.

Decisions for the future are common in the consumer domain. Consumers plan and order products for a party long before the day of the party. Consumers frequently do grocery shopping for an entire month in advance. Consumers often make decisions about vacation destinations and how much they are willing to spend on their vacation long before the vacation occurs. All of these situations may involve decisions for which consumers need to exert self-control (e.g., choosing vices vs. virtues, spending a lot of money vs. saving money). Given that people’s decisions for the future often differ from their decisions for the present (Trope, Liberman, and Wakslak 2007), is one type of decision more conducive to self-control?

Previous research supports the notion that consumers are better able to exert self-control in decisions for the future than in decisions for the present. Read, Loewenstein, and Kalyanaraman (1999) find that people who make choices for future consumption tend to make more virtuous choices than their choices for present consumption because indulgences lose value with a large temporal distance. Fujita et al. (2006) find that, congruent with construal level theory, choices for the future activate one’s high-level concerns, which should lead to more virtuous choices. The idea that consumers defend their high-level concerns, however, may lead to more indulgence in the future in certain situations. Kivetz and colleagues (Kivetz and Keinan 2006; Kivetz and Simonson 2002) find that people precommit to indulgence in the future in order to make sure they will not exert excessive self-control. Independently of their specific predictions, all of these findings indicate that people’s choices for the future may sometimes be in the opposite direction of people’s choices for the present. This phenomenon of balancing between seemingly opposing behaviors has received significant attention in recent self-control research (Fishbach and Dhar 2005; Khan and Dhar 2006; Laran and Janiszewski 2009; Mukhopadhyay, Sengupta, and Ramanathan 2008). Drawing on this literature, this article proposes an additional way in which temporal distance can influence choices and preferences.

Based on research on the role of activation and inhibition processes in the representation of knowledge structures (Anderson and Spellman 1995; Kruglanski et al. 2002; Macrae et al. 1994), we propose that temporal distance may lead to inhibition of currently active information. Inhibition of currently active information may result in activation of competing information, which will, in turn, influence choices (Laran and Janiszewski 2009). For example, imagine a consumer who is grocery shopping and has just passed by the bakery department. The appealing baked goods and other cues in the bakery department make information about indulgence highly active and capable of influencing behavior. We propose that, when purchasing items for tonight (i.e., near future), the consumer will be influenced by the active indulgence information and be more likely to purchase tasty, fatty food. When purchasing items to be consumed much later in the week (i.e., distant future), thinking about future preferences may result in inhibition of the currently active indulgence information. This process leads to activation of competing information,
TEMPORAL DISTANCE AND SELF-CONTROL

Numerous theories and mechanisms have been proposed for why temporal distance may change decisions (Trope and Liberman 2000, 2003; Zhao, Hoefl, and Zauber 2007). A popular set of theories is time discounting, which predicts that the greater the temporal distance to an outcome, the smaller the perceived value of this outcome (Frederick, Loewenstein, and O’Donoghue 2002; Malkoc and Zauber 2006). Time discounting theories involve a variety of findings and proposed mechanisms. One of these mechanisms, hyperbolic discounting, is highly relevant to self-control. One of the phenomena involving hyperbolic discounting is the immediacy effect, incorporated in the models of Ainslie (1975), Loewenstein and Prelec (1992), and Read et al. (1999). People become more likely to choose a vice (virtue) as the time until consumption gets closer (more distant). Consider a choice between a quite wanted tasty meal and a not-so-wanted healthier meal. The tasty meal may be discounted if it will happen in the distant future, which leads to the choice of the healthier meal. As an alternative, Metcalfe and Mischel (1999) propose a system to predict why people find it hard to delay gratification (i.e., indulgence). Metcalfe and Mischel posit that when an indulgence is represented in the “cool” system, triggered by a larger temporal distance, rather than by the “hot” system, triggered by a smaller temporal distance, the emotional aspects of an indulgence lose value, which encourages self-control. Again, consider a choice between a tasty and a healthy food item. As temporal distance increases, consumers should be less influenced by the affective features of the tasty food item and become more likely to choose the healthy food item. These findings support the idea that choices for the future tend to be more oriented toward self-control than choices for the present. Other classes of findings, however, signal distinct processes or phenomena.

Temporal construal theory posits that assessments of preferences for the near future are based on low-level concerns, which focus on concrete features of an object, while assessments of preferences for the distant future are based on high-level concerns, which focus on abstract features of an object (Fujita et al. 2006; Trope and Liberman 2000, 2003). Consider a choice between a healthy and an unhealthy (tasty) food item. As temporal distance increases, consumers for whom leading a healthy lifestyle is a primary concern should choose the healthy food item, while consumers for whom pleasure seeking is a primary concern should choose the tasty food item. If we assume that most people are concerned with their health, a decision for the future should be more virtuous than a decision for the present under the construal level assumptions.

Additional findings indicate that people may make more indulgent choices as temporal distance increases. Kivetz and Simonson (2002) demonstrate that consumers tend to make choices of future rewards that are indulgent in nature. People precommit to future indulgence in order to avoid excessive self-control, and this phenomenon is accentuated as temporal distance increases (Keinan and Kivetz 2008; Kivetz and Keinan 2006; Kivetz and Simonson 2002). The implication is that, as much as some consumers develop self-control strategies for the future (e.g., buy small packages of vice items; Wertenbroch 1998), many consumers may also develop self-control strategies to ensure that they will have a balanced life.

These findings have one thing in common: all of them predict inconsistencies between decisions for the present and for the future. The current article proposes an alternative moderator of the extent to which temporal distance will change preferences and lead to indulgent or virtuous behavior. We propose that, in addition to the above described mechanisms, the shifts in preferences caused by temporal distance can be the result of differences in information activation and inhibition. When consumers make decisions for the present, currently active information will influence behavior. When self-control (indulgence) information is currently active, people’s choices for the present will signal self-control (indulgence). We derive these predictions from standard findings in the literature. All else being equal, currently accessible information has a major impact on behavior (Chartrand et al. 2008; Fishbach, Dhar, and Zhang 2006). Our predictions regarding decisions for the future require a more detailed appreciation of the processes underlying consumer self-control.

INFORMATION ACTIVATION AND INHIBITION

Research in habitual behavior (Loewenstein, O’Donoghue, and Rabin 2003) shows that, in some situations, people have a tendency to behave consistently. We expect that people who have formed a strong habit of performing certain behaviors (e.g., chronic dieters, compulsive shoppers) will have a tendency to predict their future preferences based on their current preferences. A habitual behavior, because it has been constantly chosen in the past, should have an advantage over other behaviors at the time of a behavioral choice, inde-
pendently of the time frame of the decision. Outside of these contexts, however, self-control research has found that acts of self-control are frequently followed by acts of indulgence (Fishbach and Dhar 2005; Khan and Dhar 2006; Vohs and Faber 2007). This behavioral inconsistency seems to be the result of the very essence of self-control. Self-control has been characterized as striving against the performance of unwanted actions, which can often be indulgent (Baumeister et al. 1998). Striving against the performance of indulgent actions requires activation of information related to self-control and inhibition of information related to indulgence. This information activation/inhibition process is necessary because consumers need to manage the pursuit of multiple competing behaviors, some of which are virtuous, some of which are indulgent. One way to attenuate the influence of competing behaviors is elevating the relative activation of information consistent with the current behavior relative to information inconsistent with the current behavior. By the same logic, in order to switch to competing behaviors, currently active information must be inhibited, whereas competing information is activated (Laran, Janiszewski, and Cunha 2008). This activation and inhibition process is grounded in several literatures. Förster and Liberman (2007) propose that people inhibit constructs that have the potential to interfere with the performance of a focal behavior. Goal shielding theory demonstrates that the activation of goals that are important to people results in decreased accessibility of goals that may interfere with the activated goal (Shah, Friedman, and Kruglanski 2002).

The issues of multiple-behavior management, information activation, and information inhibition are especially important when consumers make decisions for the future. The future consumption episode provides an opportunity for the management of multiple behaviors. When self-control information is currently active, decisions for the present tend to be virtuous. A choice for the future leads to inhibition of self-control information and activation of indulgence information; it provides the individual with an opportunity to indulge. Although resulting from a different process, this prediction is consistent with the findings of Kivetz and Simonson (2002). When indulgence information is currently active, decisions for the present tend to be indulgent. A choice for the future leads to inhibition of indulgence information and activation of self-control information; it provides the individual with an opportunity to perform self-control. Although resulting from a different process, this prediction is consistent with the findings of Wertenbroch (1998).

The management of multiple competing behaviors is an important skill in the pursuit of balance in people’s lives, not a disruption of the regulatory system (Laran 2010). Because the single-minded pursuit of actions that are congruent with currently active information would be unhealthy, it is important for people to learn to seek balance in their lives by activating competing information and pursuing multiple behaviors over time (Louro, Pieters, and Zeelenberg 2007). Therefore, it is reasonable to make decisions for the future that are different from decisions for the present. While some models of self-control have explicitly assumed an underlying motivation to balance (Fishbach and Dhar 2005, 376), these predictions are also congruent with several findings in other domains. For instance, people who inhibit stereotype thoughts often show an increased subsequent tendency for stereotyping (Macrae et al. 1994). People who are exposed to an actionable food temptation (e.g., real food) show inhibition of the “eating” concept (Geyskens et al. 2008). Finally, people often show purchase behavior that signals mere variety seeking in spite of having clear product preferences (Inman 2001; Ratner, Kahn, and Kahneman 1999).

**STUDY 1**

The theoretical background suggests possible paths through which temporal distance can influence self-control. Most models propose that an increase in temporal distance results in greater self-control, whereas some evidence suggests that an increase in temporal distance may also result in greater indulgence. In order to test our predictions, study 1 had two information prime conditions. In one condition, information associated with self-control was activated (i.e., primed) with the use of sentences containing words related to self-control in a scrambled sentence task. In this condition, the processes described above (i.e., information activation and inhibition) should be set in motion as a self-control strategy and influence choices. An increase in temporal distance should lead to more indulgent choices.

In a second condition, no specific information type was activated (i.e., primed). The scrambled sentence task had sentences containing words that were unrelated to self-control or indulgence. In this condition, the construal level of a decision should influence choices. Demonstrations of construal level theory focus on the influence of temporal distance on preferences (Troe and Liberman 2000). An increase in temporal distance leads to the utilization of abstract (vs. concrete) information in the decision-making process, which changes preferences when the concrete and the abstract aspects of a decision context are manipulated. Based on these findings, we predict that an increase in temporal distance will lead to healthier choices (e.g., eating means “being a healthy person”) under an abstract mind-set and that a decrease in temporal distance will lead to more indulgent choices (e.g., eating means “curbing one’s hunger”) under a concrete mind-set.

**Method**

**Participants and Design.** Participants were 400 students (48.1% female) who participated in exchange for course credit. The design was a 3 (construal: control, concrete, abstract) by 2 (information prime: neutral vs. self-control) by 2 (time frame: present vs. future) mixed design. The construal and information prime factors were manipulated between subjects, while the time frame factor was manipulated within subjects (i.e., each participant made one choice for the present and one choice for the future).
**Procedure and Stimuli.** Participants entered the behavioral lab and were seated in front of personal computers. Instructions told participants that they would now participate in three studies, supposedly unrelated. The first study purportedly investigated cognitive processes associated with unscrambling sentences. In truth, the study aimed at priming certain information content (Srull and Wyer 1979). Participants were presented with 10 sets of five words and asked to form sentences by unscrambling those words. Each sentence contained a word related to one type of information. In the “self-control information prime” condition, participants unscrambled sets of words such as *habits paid his healthy off*. In the “neutral information prime” condition, participants unscrambled sets of words such as *a had trip they great*. The self-control condition had 10 sentences including words related to self-control. The words were *work out, fat, weight, fit, slim, shape, healthy, diet, nutrition, and exercises*. The second task was a manipulation of construal level (Freitas, Gollwitzer, and Trope 2004). In the concrete (abstract) construal condition, participants were told that we were interested in how (why) people pursue academic success. We asked participants to describe how (why) they will achieve academic success. After participants wrote a response, they clicked on a “continue” button, and the next screen appeared. The next screen showed the exact response they had given on the previous screen and asked how (why) they were going to do that. This procedure was repeated one more time. Participants were given as much time as they wanted to write the responses. After participants were done, they were asked to indicate, on a scale ranging from 1 to 9, whether academic success for them was “getting my books, studying hard, and going to classes,” anchored at 1 on the scale, or “focusing on whom I want to be in my personal and professional life,” anchored at 9 on the scale. This measure was used as a manipulation check.

After the construal level manipulation task, participants where thanked and told that they were done with the main studies and that we now needed their opinion on the operations of the behavioral lab. We gave participants the following instructions: “We are selecting snacks that participants in the behavioral lab studies would like to get. Please indicate which one of the following snacks you would like to have if you were to get it [at the end of the experimental session] [a year from now] for your participation in this study.” We showed participants a list of 16 snacks, eight of which were tasty but fatty snacks (chocolate bar, Chips Ahoy cookies, cheese curls, Doritos chips, ice cream, doughnuts, Oreos, and fruit roll-ups) and eight of which were healthy snacks (raisins, celery sticks, cheerios, low fat yogurt, baby carrots, granola bar, rice cake, and apple). Participants were asked to choose one snack. This choice could have one of two possible values, indicating whether the snack was fatty or healthy. Each participant made two choices, one for the present and one for the future. Whether the first choice was the present or future choice was counterbalanced, and the order had no effect on choices ($F < 1$). Participants were extensively debriefed for suspicion following a common debriefing procedure (Bargh and Chartrand 2000; Chartrand and Bargh 1996; Fitzsimons and Shiv 2001), were told about the real purpose of the experiment, were thanked again for their help, and then were dismissed.

**Snack Pretest.** The snacks were chosen based on a pretest. Twenty-one participants from the same population as that of the main study indicated how healthy ($-4 =$ very unhealthy, $+4 =$ very healthy) they perceived 24 different snacks to be. We retained for the main study the eight options that were considered the healthiest ($M_{\text{healthy}} = 3.04$) and the eight options that were considered the most unhealthy snacks ($M_{\text{unhealthy}} = -2.79; F(1, 20) = 664.36, p < .01$). A second pretest ($N = 64$) indicated that these snacks were equally preferred overall in our participant population (no differences in preferences for healthy or fatty options; $F < 1$).

**Results.**

**Manipulation Check.** There was an effect of the construal manipulation on people’s mind-set ($F(2, 397) = 17.57, p < .01$). Participants in the concrete construal condition ($M = 4.48$) saw academic achievement more concretely than participants in the control condition ($M = 5.72; F(2, 397) = 11.37, p < .01$), but participants in the abstract construal condition ($M = 6.33$) saw academic achievement more abstractly than participants in the control condition ($F(2, 397) = 6.12, p < .01$).

**Choices.** Choice shares are presented in figure 1. A repeated-measures logistic regression indicates an interaction of the construal, information prime, and time frame factors ($Wald \chi^2(7) = 36.27, p < .01$). In the control, no construal manipulation condition, there was an interaction between information prime and time frame ($Wald \chi^2(1) = 5.97, p < .05$). In the neutral information prime condition, participants were as likely to choose a healthy snack for the present (49.3%) as they were for the future (52.1%; $\chi^2 < 1$). In the self-control information prime condition, participants were more likely to choose a healthy snack for the present (61.2%) than for the future (34.3%; $\chi^2(1) = 9.69, p < .01$).

In the concrete construal condition, there was also an interaction between information prime and time frame ($Wald \chi^2(1) = 16.35, p < .01$). In the neutral information prime condition, participants were less likely to choose a healthy snack for the present (28.1%) than for the future (46.9%; $\chi^2(1) = 4.80, p < .05$). In the self-control information prime condition, participants were more likely to choose a healthy snack for the present (61.9%) than for the future (41.3%; $\chi^2(1) = 5.37, p < .05$). In the abstract construal condition, there was also an interaction between information prime and time frame ($Wald \chi^2(1) = 7.82, p < .01$). In the neutral information prime condition, participants were less likely to choose a healthy snack for the present (53.4%) than for the future (69.0%; $\chi^2(1) = 4.24, p < .05$). The choice shares in the present time frame condition (53.4%) were higher than those in the concrete construal condition (28.1%; $\chi^2(1) = 8.12, p < .01$). The choice shares in the future time
frame condition (69.0%) were also higher than those in the concrete construal condition (46.9%; Wald $\chi^2(1) = 6.07, p = .01$). These results indicate that an abstract construal makes choices for the present more virtuous when compared to a concrete construal, as recent findings indicate (Fujita and Han 2009). In the self-control information prime condition, participants were more likely to choose a healthy snack for the present (59.7%) than for the future (42.9%; $\chi^2(1) = 4.39, p < .05$). The choice shares in the present time frame condition (59.7%) were similar to those in the concrete construal condition (61.9%; $\chi^2 < 1$). The choice shares in the future time frame condition (42.9%) were also similar to those in the concrete construal condition (41.3%; $\chi^2 < 1$).

**Discussion**

The results of study 1 show when information activation/inhibition and a construal level influence decisions for the present versus the future. When information about self-control was made highly active, choices for the present were consistent with the active information, while choices for the future were consistent with competing information. These
results indicate that making decisions for the future may lead to inhibition of currently active information and activation of previously inhibited information. When no specific information type is highly active and people are in a concrete mind-set, choices become more indulgent. When no specific information type is highly active and people are in an abstract mind-set, choices become more virtuous.

One issue is what determined choices in the control conditions, in which construal level and information accessibility were not explicitly manipulated. Previous literature has consistently shown that choices for the future tend to be more virtuous than choices for the present, independently of the factors that influence these choices (e.g., discounting, construal level). Therefore, characteristics of our procedure must have hindered the operation of these mechanisms in the control, neutral prime condition. This represents a limitation of our procedure, discussed in detail in the general discussion. Study 2 focuses on information accessibility and its mediating impact on choices.

**STUDY 2**

Study 2 uses information accessibility evidence to demonstrate the information activation and inhibition processes that may account for self-control in decisions for the future. We primed information about indulgence versus self-control and asked consumers to list which snacks they would like to get in the present versus in the future. We then used a reaction time task to investigate the activation level of self-control information. We predict that, when information about indulgence is primed, words related to self-control will be less accessible than neutral words (i.e., inhibition of the self-control concept) when people think about the present, but not the future, in which case we expect the opposite result. When information about self-control is primed, words related to self-control will be more accessible than neutral words (i.e., activation of the self-control concept) when people think about the present, but not the future. This accessibility should mediate the impact of our manipulations on the types of snacks listed by each participant.

**Method**

**Participants and Design.** Two hundred and thirteen students (55.2% female) participated in the experiment for extra credit. The design was a 2 (information prime: indulgence vs. self-control) by 2 (time frame: present vs. future) by 2 (word type: self-control vs. neutral) mixed design. The information prime and time frame factors were manipulated between subjects, while the word type factor was manipulated within subjects.

**Procedure and Stimuli.** The procedure consisted of three tasks. The first task was the same scrambled sentence task as that of study 1. In the “indulgence information prime” condition, participants unscrambled sets of words such as a 

had trip they delicious. The words present in the sentences in this condition were: delicious, feed, food, flavor, taste, delightful, savor, diner, recipe, and caked. The second task had the goal of influencing the activation and inhibition of information related to self-control. This study was run 3 weeks before the end of the semester. Participants were given the following instructions in the present (future) time frame condition: “We are selecting snacks to give behavioral lab study participants. Please think about snacks that you would like to get for your participation at the end of [this experimental session] [the semester]. We will give you a minute for this task.” After a minute had passed, participants were asked to list the snacks that they would like to get. In this study, time frame was manipulated between subjects: each participant listed snacks they would like to get either in the present or in the future, rather than both as in study 1.

The third task was a reaction time task that provided a measure of information accessibility. We told participants that they would now perform an attention task aimed at measuring how sharp their attentional capabilities were. We told participants to focus their attention on a fixation point (an X) on the center of the computer screen. Their goal was to identify letters on the screen as being words or nonwords. The fixation point disappeared in an interval varying between 0 and 2 seconds (randomly determined), after which it was replaced by a letter string. Participants were instructed to press 1 on the keyboard if the letter string was a word and 0 if it was not. They were also told to make a decision as quickly and accurately as possible. After 10 practice trials, participants responded to 10 words related to self-control (calories, slim, regimen, fresh, weight, control, fit, health, exercise, and workout), 10 neutral words (cartoon, spoon, picture, flower, sink, forest, notes, computer, binder, and printer), and 20 nonwords (e.g., squince, dondge, jorche) for a total of 40 trials. We measured the time it took participants to press the appropriate key.

**Results**

**Reaction Times.** Reaction times of correct identifications of a letter string as a word were log transformed. Those that exceeded three standard deviations from their cell mean (.7%), as well as incorrect identifications (4.3%), were eliminated from the analysis (Bargh and Chartrand 2000; Fazio 1990). The average reaction times for each type of information for each participant were used in the analysis. Means are presented in figure 2. A repeated-measures ANOVA revealed a three-way interaction of the information prime, time frame, and word type factors ($F(1,209) = 17.12, p < .01$). There was a time frame by word type interaction in the indulgence information prime condition ($F(1,210) = 9.28, p < .01$). In the present condition, participants were slower to recognize words related to self-control than neutral words ($M_{self-control} = 758$ milliseconds, $M_{neutral} = 683$ milliseconds; $F(1,209) = 5.84, p < .05$). In the future condition, participants were faster to recognize words related to self-control than neutral words ($M_{self-control} = 677$ milliseconds, $M_{neutral} = 758$ milliseconds; $F(1,209) = 3.90, p = .05$).

There was also a time frame by word type interaction in
the self-control information prime condition ($F(1, 210) = 7.90, p < .01$). In the present condition, participants were faster to recognize words related to self-control than neutral words ($M_{selfcontrol} = 664$ milliseconds, $M_{neutral} = 724$ milliseconds; $F(1, 209) = 4.23, p < .05$). In the future condition, participants were slower to recognize words related to self-control than neutral words ($M_{selfcontrol} = 753$ milliseconds, $M_{neutral} = 680$ milliseconds; $F(1, 209) = 3.86, p = .05$).

**Listed Snacks.** Each snack that participants listed was coded as healthy or fatty, and a value of 1 (2) was assigned when a given participant listed more healthy than fatty (fatty than healthy) snacks. Two judges performed the coding task, and agreement was above 85% (inconsistencies were resolved through discussion). Means are presented in figure 2. A binary logistic regression indicates an interaction between the information prime and time frame factors ($\chi^2(1) = 21.10, p < .01$). In the indulgence information prime condition, participants were less likely to list healthy snacks in the present time frame (35.5%) than in the future time frame condition (61.1%; $\chi^2(1) = 6.05, p = .01$). In the self-control information prime condition, participants were more likely to list healthy snacks in the present time frame (80.6%) than in the future time frame condition (41.9%; $\chi^2(1) = 17.99, p < .01$).
Mediation. We conducted a mediated moderation analysis to examine to which degree information accessibility predicted preference for fatty versus healthy snacks. This analysis used a series of regression equations to test the hypothesis that the effect of the interaction between information prime and time frame on food preference was mediated by information accessibility (Baron and Kenny 1986; MacKinnon, Fairchild, and Fritz 2007; Muller, Judd, and Yzerbyt 2005). In order to perform the analysis, we subtracted the average reaction time of self-control words from the average reaction time of neutral words for each participant, generating a self-control inhibition index. The interaction of information prime and time frame predicts both inhibition of the self-control concept (F(1, 209) = 9.73, p < .01) and the preference for healthy snacks (F(1, 209) = 11.72, p < .01). The inhibition of the self-control concept predicts the preference for healthy snacks (F(1, 213) = 6.88, p < .01). However, when both inhibition of the self-control concept and the interaction are used as predictors of preference for healthy snacks, inhibition of the self-control concept remains significant (F(2, 209) = 6.03, p < .01), while the interaction becomes nonsignificant (F(2, 209) = 1.44, p > .15). A Sobel test confirmed that the mediation was significant (z = 1.99, p < .05). This is evidence that the effect of the interaction of information prime and time frame on preference for healthy snacks is fully mediated by the inhibition of the self-control concept.

Discussion

Study 2 compared the activation of the self-control concept to baseline (i.e., neutral words) to test our propositions. Primed information became less active than neutral information when people thought about the future. This finding is especially eloquent in that it shows that the simple thought of a future purchase episode produces information inhibition. In addition, the inhibition of the self-control concept mediated the effect of information prime and time frame on the preference for healthy snacks. These results attest the role that information activation and inhibition processes may play in decisions for the future. It seems that people represent decisions for the future as a way to reach a balance between indulgence and self-control. Study 3 provides additional insight into this process in a different self-control domain.

STUDY 3

Study 3 is similar to study 2 in that it uses information accessibility evidence to support our process propositions. Because we wanted to investigate the operations of our account in a different domain, this study investigates people’s tendency to spend versus save money. In addition, we compare the activation level of primed information to the activation level of competing information. This design allows us to verify accessibility of both information related to indulge (i.e., spending money) and information related to self-control (i.e., saving money).

Method

Participants and Design. Three hundred and forty-three students (49.0% female) participated in the experiment for extra credit. The design was a 3 (information prime: spending, saving, neutral) by 2 (time frame: present vs. future) by 2 (word type: spending vs. saving) mixed design. The information prime and time frame factors were manipulated between subjects, while the word type factor was manipulated within subjects.

Procedure and Stimuli. The procedure consisted of three tasks. The first task was a scrambled sentence task similar to that of study 1. Participants were presented with 10 sets of five words and asked to form sentences by using four of those words. Eight out of the 10 sentences contained a word related to one type of information. In the spending information prime condition, the words were quality, fine, superior, impress, wealth, classic, luxurious, and prestige. In the saving information prime condition, the words were cheap, price, save, economic, frugal, bargain, value, and deal. The second task had the goal of influencing the activation and inhibition of the primed information. Participants were given the following instructions in the present (future) time frame condition: “Imagine that you need a few products and you decided to go shopping today (a month from now). Imagine yourself going to the mall. What would you do? What are the things that you would buy? We will give you a minute for this task.” In order to cover the real purpose of the task, participants were told that we were investigating how hard it was to imagine the act of shopping without actually purchasing anything. We then asked them to indicate how intense the consumer imagination task was.

The third task was again a reaction time task that provided a measure of information accessibility. Participants responded to 10 words related to spending (upscale, costly, great, luxury, spend, excellent, noble, quality, precious, and money), 10 words related to saving (bargain, savings, deal, tight, price, cheaper, discount, sales, promotion, and coupon), 10 neutral words, and 30 nonwords, for a total of 60 trials presented in random order. Finally, among control questions participants answered at the end of the experiment (e.g., gender, age), participants were asked whether they thought about saving or spending money during the consumer imagination task.

Results

Reaction Times. Means are presented in figure 3. A repeated-measures ANOVA revealed a three-way interaction of the information prime, time frame, and word type factors (F(2, 337) = 20.64, p < .01). There was a time frame by word type interaction in the spending information prime condition (F(1, 339) = 19.11, p < .01). In the present condition, participants were faster to recognize words related to spending than words related to saving (Mspending = 664 milliseconds, Msaving = 718 milliseconds; F(1, 337) = 6.84, p < .01). In the future condition, the participants were slower to recognize
words related to spending than words related to saving ($M_{\text{spending}} = 745$ milliseconds, $M_{\text{saving}} = 647$ milliseconds; $F(1, 337) = 13.12, p < .01$).

There was also a time frame by word type interaction in the saving information prime condition ($F(1, 339) = 20.71, p < .01$). In the present condition, participants were slower to recognize words related to spending than words related to saving ($M_{\text{spending}} = 712$ milliseconds, $M_{\text{saving}} = 631$ milliseconds; $F(1, 337) = 12.31, p < .01$). In the future condition, participants were faster to recognize words related to spending than words related to saving ($M_{\text{spending}} = 633$ milliseconds, $M_{\text{saving}} = 717$ milliseconds; $F(1, 337) = 9.37, p < .01$). There was not a time frame by word type interaction in the neutral prime condition ($F < 1$). Participants were equally fast to recognize words related to spending and saving in the present time frame condition ($M_{\text{spending}} = 675$ milliseconds, $M_{\text{saving}} = 678$ milliseconds; $F < 1$) and in the future time frame condition ($M_{\text{spending}} = 687$ milliseconds, $M_{\text{saving}} = 672$ milliseconds; $F < 1$).
**Saving versus Spending.** The responses participants gave at the end of the experiment as to whether they had thought about spending or saving were coded as 1 (2) when a participant responded “saving” (“spending”). Means are presented in figure 3. A binary logistic regression indicates an interaction between the information prime and time frame factors (Wald $x^2(2) = 27.94, p < .01$). In the spending money information prime condition, participants were less likely to think about saving money in the present time frame (38.8%) than in the future time frame condition (66.7%; $x^2(1) = 7.66, p < .01$). In the saving money information prime condition, participants were more likely to think about saving money in the present time frame (21.1%; $x^2(1) = 22.35, p < .01$). In the neutral information prime condition, participants were as likely to think about saving money in the present time frame (45.3%) as they were in the future time frame condition (52.2%; $x^2(1) < 1$).

**Mediation.** We conducted a mediated moderation analysis similar to that of study 2 to examine to which degree information accessibility predicted preference for saving versus spending money. In order to perform the analysis, we subtracted the average reaction time of saving words from the average reaction time of spending words for each participant, generating a saving inhibition index (i.e., larger numbers indicate slower reaction times, more inhibition of saving information). The interaction of information prime and time frame predicts both inhibition of the saving concept ($F(2, 337) = 28.27, p < .01$) and the preference for saving money ($F(2, 337) = 16.46, p < .01$). The inhibition of the saving concept predicts the preference for saving money ($F(1, 341) = 10.34, p < .01$). However, when both inhibition of the saving concept and the interaction are used as predictors of likelihood of saving money, inhibition of the saving concept remains significant ($F(2, 337) = 10.43, p < .01$), while the interaction becomes nonsignificant ($F < 1, p > .46$). A Sobel test confirmed that the mediation was significant ($z = 2.37, p < .05$). This is evidence that the effect of the interaction of information prime and time frame on preference for saving money is fully mediated by the inhibition of the saving concept.

**Discussion**

Study 3 provides additional process evidence for our propositions. The extent to which people thought about saving (vs. spending) money was fully mediated by the inhibition of information about saving compared to information about spending. These findings support the idea of balancing in the pursuit of self-control. Thinking about the future does not simply bring information about self-control and indulgence to similar activation levels. Rather, thinking about the future provides an opportunity for the performance of competing behaviors, which is facilitated by the activation of information related to these behaviors.

**STUDY 4**

Eating fatty food and spending money are both indulgent behaviors. Eating healthy food and saving money are both virtuous behaviors. Therefore, these two concepts seem to be related at a superordinate level. The main goal of study 4 is to understand whether consumers have this superordinate representation of self-control and indulgence and how it can influence the pursuit of multiple behaviors. In order to investigate this issue, we activate information about spending (vs. saving money) and look at whether information accessibility can influence choices of indulgent versus healthy food items.

**Method**

**Participants and Design.** Five hundred and eighty-six students (54.1% female) participated in the experiment for extra credit. The design was a 3 (information prime: spending, saving, neutral) by 2 (time frame: present vs. future) by 2 (word type: spending vs. neutral) mixed design. The information prime and the time frame factors were manipulated between subjects, while the word type factor was manipulated within subjects.

**Procedure and Stimuli.** The procedure was the same as that of study 3 with two exceptions. First, words related to saving in the reaction time task were replaced with neutral words. Second, the third task involved the choice of a snack in which participants were led to believe that they were making a real choice. They were led to believe that they would get the snack they chose either at the end of the experimental session (present time frame condition) or at the end of the semester (future time frame condition).

**Results**

**Reaction Times.** Means are presented in figure 4. A repeated-measures ANOVA revealed a three-way interaction of the information prime, time frame, and word type factors ($F(2, 580) = 22.89, p < .01$). There was a time frame by word type interaction in the spending information prime condition ($F(1, 582) = 27.29, p < .01$). In the present condition, participants were faster to recognize words related to spending than neutral words ($M_{spending} = 641$ milliseconds, $M_{neutral} = 679$ milliseconds; $F(1, 580) = 12.69, p < .01$). In the future condition, participants were slower to recognize words related to spending than neutral words ($M_{spending} = 675$ milliseconds, $M_{neutral} = 648$ milliseconds; $F(1, 580) = 15.12, p < .01$).

There was also a time frame by word type interaction in the saving information prime condition ($F(1, 582) = 19.69, p < .01$). In the present condition, participants were slower to recognize words related to spending than neutral words ($M_{spending} = 675$ milliseconds, $M_{neutral} = 649$ milliseconds; $F(1, 580) = 10.88, p < .01$). In the future condition, participants were faster to recognize words related to spending than neutral words ($M_{spending} = 640$ milliseconds, $M_{neutral} = 663$ milliseconds; $F(1, 580) = 7.66, p < .01$).
FIGURE 4
STUDY 4 RESULTS

A. Information Prime: Spending Money

B. Information Prime: Saving Money

C. Information Prime: Neutral

D. Choice of Healthy Snack

Participants were equally fast to recognize words related to spending and neutral words in the present (651 milliseconds, 655 milliseconds; $F < 1$) and in the future time frame condition (654 milliseconds, 656 milliseconds; $F < 1$).

**Choices.** Choice shares are presented in figure 4. A binary logistic regression indicates an interaction between the information prime and time frame factors (Wald $\chi^2(2) = 25.84, p < .01$). In the spending information prime condition, participants were less likely to choose a healthy snack in the present (31.5%) than in the future time frame condition (61.2%; $\chi^2(1) = 13.52, p < .01$). In the saving information prime condition, participants were more likely to choose a healthy snack in the present (64.6%) than in the future time frame condition (38.4%; $\chi^2(1) = 13.39, p < .01$). In the neutral information prime condition, participants were as likely to choose a healthy snack in the present (50.5%) as they were in the future time frame condition (50.4%; $\chi^2 < 1$).

**Mediation.** We conducted a mediated moderation analysis to examine to which degree inhibition of the spending
concept predicted food choices. In order to perform the analysis, we subtracted the average reaction time of spending words from the average reaction time of neutral words for each participant, generating a spending inhibition index. The interaction of information prime and time frame predicts both inhibition of the spending concept \((F(2, 580) = 15.13, p < .01)\) and choice of snack \((F(2, 580) = 13.92, p < .01)\). The inhibition of the spending concept predicts choice of snack \((F(1, 584) = -2.05, p < .05)\). When both inhibition of the spending concept and the interaction are used as predictors of choice of snack, inhibition of the spending concept is significant \((F(2, 580) = -6.12, p = .01)\), as is the interaction \((F(2, 580) = 5.38, p = .01)\). A Sobel test indicated that the coefficient of the interaction effect drops significantly when inhibition of the spending concept is added to the model \((z = 1.89, p < .05)\). Thus, the effect of the interaction of information prime and time frame on choice of snack is partially mediated by the inhibition of the spending concept.

**Discussion**

Activation of information associated with spending and saving influenced choices in the food domain in a similar way that information associated with food indulgence and self-control did. This implies that different domains in which self-control and indulgence operate are represented within the same superordinate structure (Wadhwa, Shiv, and Nowlis 2008). Once information in the environment activates this “indulgence” or “self-control” structure, the managing of multiple behaviors is not restricted to particular behaviors directly associated with the active information, but rather to an array of behaviors associated with a higher-level indulgence and self-control representation. To the best of our knowledge, this is the first study showing how people balance across seemingly unrelated behaviors in the pursuit of self-control.

**GENERAL DISCUSSION**

Consumers’ preferences evolve over time. Environments and personalities change, and consumers learn that their tastes may not be the same as time passes. This article investigated how consumers predict their future preferences. In particular, we explored decisions involving self-control in the domains of food choices and money spending. Self-control decisions for the future may be shaped by information activation and inhibition. When self-control information is currently active, people tend to make indulgent decisions for the future (study 1). An activated construal (i.e., concrete or abstract) influences a decision when no specific information type is highly active but not when self-control information is highly active (study 1). These effects hold for both choices between vices and virtues (studies 1 and 2) and decisions about saving versus spending money (study 3). Finally, these effects are partially or fully mediated by inhibition of currently active information when people think about the future (studies 2, 3, and 4).

**Theoretical Implications**

These results complement several previous findings. The delay of gratification and immediacy effects predict that decisions that are close in time tend to be more indulgent than decisions that are distant in time (e.g., Metcalfe and Mischel 1999; Read et al. 1999). If a decision for the present is focused on indulgence, as indicated by these findings, it is reasonable to conjecture that indulgence information becomes less active than self-control information when the temporal focus shifts to the future, which decreases the value of the indulgent option. Other findings show that people protect themselves from excessive self-control or excessive indulgence when making choices for the future (Kivetz and Simonson 2002; Wertenbroch 1998). If a consumer is concerned about avoiding excessive self-control (indulgence) in the future, it is reasonable to assume that information about self-control (indulgence) is highly active in the present, which may lead to activation of indulgence (self-control) information before a decision for the future is made, resulting in decisions congruent with these information types.

The interplay between implicit self-control processes and more explicit strategies in decisions for the future is deserving of further research. For example, if long-term goals, such as “I want to lose 15 pounds in 3 months,” are carefully weighted when people make a decision for the future and they have developed habitual behavior in this direction (Fishbach, Friedman, and Kruglanski 2003), people may predict regulatory behavior under any circumstance. In this case, the more active the self-control goal is, the more likely it is that the individual will make decisions for the future that are regulatory in nature. In addition, there might be situations in which currently active information gets inhibited when people make decisions for the present. For example, a compulsive shopper in treatment may avoid thoughts about spending a lot of money when passing by the mall. The sight of the mall tends to activate “spending” information, which leads to counteractive inhibition of this sort of information and activation of competing, “saving” information in the present. Is it the case that, if a consumer is then exposed to a decision environment that requires a decision for the future, the consumer will make a decision that is indulgent and oriented toward spending more money? Future research is needed to investigate this sort of reversal in which active information gets inhibited in the present, which may rebound to high activation levels when people face a decision for the future.

**Practical Implications**

Marketers may be able to use the operations of these processes to their advantage. Making a certain type of information currently active and then framing a decision as having consequences for the present or for the future may have a powerful influence on behavior. For example, a retailer may use the store environment to activate information about saving money but then motivate people to make purchases for a certain occasion (e.g., anniversary, child’s birthday) in advance. A store environment that has information...
about saving money may attract more customers, but these customers may end up spending a lot of money rather than saving money when making purchases for the distant future.

Limitations

As briefly discussed in study 1, a limitation of our procedure is that it does not allow, in the neutral prime conditions, for mechanisms previously found to influence future decisions to operate. In general, we would expect healthier food choices for the future than for the present. We believe there are three possible reasons why choices in the neutral prime conditions are not different between the present and the future. First, the neutral prime conditions still featured a scrambled sentence task. The sentences used in those conditions (e.g., “they had a great trip”) may have activated different, inconsistent goals for different participants, creating noise and overriding the influence of time frame. Second, Goal Systems Theory (Kruglanski et al. 2002) posits that means to goal achievement present in the environment are capable of activating goals and influence behaviors (Shah and Kruglanski 2003). Because participants were presented with eight healthy food items and eight tasty food items, goals associated with both types of food may have become activated in the absence of a previous information prime, which motivated thoughts about both indulgence and self-control independently of the time frame of the choice. Third, offering 16 options in the set is more subject to preference heterogeneity than a simple choice between a virtue and a vice, commonly used in intertemporal choice research.

Of course, these results in no way imply that other mechanisms will not operate in the absence of information primes. The question is whether the results were obtained simply because the choice task is not conducive to the operation of other mechanisms. This does not seem to be the case. When we made the environment conducive to an alternative mechanism, by making certain construals salient in study 1, we showed that construal levels do operate in the absence of information primes, as shown in previous research, but that information activation and inhibition operate in the presence of information primes, as we have conceptualized. Therefore, our results in the information prime conditions are not limited to our specific procedure, and hold even in the presence of alternative mechanisms. Nevertheless, future research should make an effort to address these issues by having control conditions that do not involve a scrambled sentence task and a simpler choice task, one less subject to the preference heterogeneity issue. This procedure would allow for the generalization and investigation of the boundary conditions of our proposed mechanism in different consumer environments.

REFERENCES


TEMPORAL DISTANCE AND SELF-CONTROL


