Identifying and Battling Temptation

Ayelet Fishbach

Benjamin A. Converse

University of Chicago

Despite knowing well that "you can't have your cake and eat it too," people still want many conflicting things at once. That is, people want to fulfill short-term desires and they want to do so without obstructing their long-term interests. Thus, weight watchers wish to eat many delicious cakes and they also wish not to look like they have eaten many delicious cakes. Similarly, professionals wish for early leave on Friday afternoon, and they also wish for early promotions at year-end reviews. And feuding partners want to maintain their innocence in every battle, and they also want to maintain their relationship through every battle. In a world where people want to have it both ways – to enjoy the moment and to prosper in the long run – how do they protect long-term interests from the allure of short-term desires?

An individual faces a self-control dilemma whenever the attainment of an alluring desire or temptation would conflict with more important, longer-term goals (Ainslie, 1992; Loewenstein, 1996; Rachlin, 2000; Thaler, 1991; Trope & Fishbach, 2000). Despite the pervasiveness of self-control dilemmas, identifying that a situation poses one can be surprisingly difficult. Thus, when people choose to pursue short-term desires, it is not always as a result of bad judgment defeating good judgment in the archetypal battle. In many cases, people choose the tempting option because they do not realize it will hurt them in the long run. For example, the professional may leave work early because she does not consider that leaving early on a single Friday afternoon will put her promotion at risk, just as the smoker may light up without considering that a single cigarette poses a health risk. It is only when one has identified a potential conflict that resolution in favor of higher-order goals hinges on effective employment of self-control strategies.

This article reviews our research on identifying and counteracting temptations. First, it is useful to define *temptations* versus *goals*. We define these conflicting motivations within a given

context and with respect to each other (Fishbach & Shah, 2006; Leander, Shah, & Chartrand, 2009). A stimulus can only represent a temptation with respect to another, higher-order goal, which the individual believes is more important. According to this definition, temptations do not have specific content. Rather, any personal motivation can potentially constitute an interfering temptation with respect to a higher-level goal, or it can constitute an overriding goal with respect to a lower-level temptation. For example, "making friends" may be perceived as a temptation that interferes with the pursuit of "going to class" and it may be perceived as a goal that is interfered with by the pursuit of "being competitive." Similarly, drinking and smoking interfere with the pursuit of healthy lifestyle (hence, they are temptations) but at the same time, they promote social acceptance to certain social groups (hence, they are goals). Effective self control operates on the focal activity in a way that depends on its relative status in the present motivational conflict. Self control increases the strength of goals and decreases the strength of competing impulses or temptations.

Conflict Identification

Success at self control depends first on identifying a conflict. When observing a behavior that resembles self-control failure, it is safe to assume that a conflict was identified only if the long-term costs of indulgence are clear and high. Cheating on one's spouse, for example, may carry extreme long-term costs, such that a person choosing this path has likely considered the possible devastating consequences and tried, but failed, to resist. As the long-term costs of a single temptation indulgence decrease, however, it becomes less certain that one will identify a potential self-control conflict. For example, the net impact of a single jelly donut is probably negligible to a person's overall health. Temptations like this one, for which a single consumption experience has negligible negative consequences, are pervasive. We term them

"epsilon-cost temptations" (Myrseth & Fishbach, 2009a). It is only through repeated consumption that the cost of these kinds of indulgences becomes consequential.

The question of conflict identification further becomes trivial whenever external agents (e.g., parents, educators, experimenters) identify the conflict for the individual and explicitly demand restraint. For example, in ego-depletion research, participants are specifically instructed to avoid some impulse (e.g., to eat radishes rather than cookies, to suppress emotions in response to some evocative stimulus; Baumeister, Bratslavsky, Muraven, & Tice, 1998). And in delay-of-gratification paradigms, children are explicitly told to resist short-term rewards in favor of long-term payoff (e.g., 1 marshmallow now in favor of 2 marshmallows later; Mischel & Baker, 1975). In these situations the researchers identify the conflict for the individual, so any success or failure necessarily reflects the person's attempts to resist that temptation.

What then facilitates identification of conflict for epsilon-cost temptations? We suggest that viewing an action opportunity with *width*—that is, in relation to future opportunities—facilitates conflict identification. Framing a single opportunity to act in isolation may not cue the presence of a conflict, whereas framing the opportunity in relation to other opportunities is more likely to cue conflict. The person who says "one jelly donut won't kill me," perceives the temptation in isolation, notes that there are trivial costs associated with eating it, and likely does not experience a conflict between this breakfast and his more important health goals. The person who is planning a new morning routine, however, may be more likely to perceive today's choice of a donut in relation to many future breakfast choices, and may be more likely to identify a self-control conflict.

In addition, conflict identification also requires *consistency*. The individual must expect the present decision to be replayed in future opportunities. When setting a morning routine, for

example, the diner will only feel conflicted about his donut if he expects it to set a precedent for future mornings. If today is a special donut day, whereas future days will be fruit days instead, then the donut will not pose a threat to long-term health goals and conflict will not be identified. We next summarize the evidence that the frame necessary for conflict identification is one that meets both conditions of *width* and *consistency.*

Width – Perceiving current choices in relation to future choices

A failure to identify a self-control conflict occurs when individuals respond to contextual cues or opportunities rather mindlessly, without considering a pattern of responses or a large "bracket" (Rachlin, 2000; Read, Loewenstein, & Rabin, 1999). For example when habitual smokers light up a cigarette in response to contextual cues (e.g., "gin and tonic") they often fail to consider a pattern of behaviors that would undermine their long-term interests (Wood & Neal, 2007). Making decisions within wider brackets, in contrast, encourages people to consider multiple opportunities together, thus increasing the likelihood of identifying a potential self-control conflict. In one illustrative study (Read, Loewenstein, & Kalyanaraman, 1999), students who chose three video rentals simultaneously chose more highbrow over lowbrow movies (e.g., *Schindler's List* over *My Cousin Vinny*) than did students who chose the videos on the days they would watch them. The simultaneous condition induced students to consider a choice pattern, thus making self-control conflicts between pleasurable but not thought-provoking lowbrow movies and difficult but enriching highbrow movies more salient, and leading students to choose more highbrow movies.

In our research, we find that even subtle cues for a wide versus narrow frame are sufficient to influence conflict identification and success at self control. For example, in one study, we (Myrseth & Fishbach, 2009a) set up a free food stand in an area of campus that

commonly provides such amenities. The stand featured an assortment of carrots and chocolates, and a large sign invited passersby to help themselves, "in celebration of the lighter and warmer times ahead." In the wide-frame condition, the sign indicated this was the "Spring Food Stand," whereas in the narrow-frame condition, the sign indicated it was the "April 12th Food Stand." Accordingly, participants consumed fewer chocolates and more carrots when the sign implied wide versus narrow framing.

Extant work on choice bracketing and more recent work exploring the conflict experience thus illustrate the first necessary condition for self-control conflict identification. Low-cost temptations do not seem problematic in narrow frames or on special occasions—they only introduce conflict when they are considered in relation to future choices. Wide frames therefore promote conflict identification.

Consistency – Expecting future choices to be similar to current choices

Even when one considers current and future choices in relation to each other, conflict identification further requires that current choices are expected to be consistent with future choices. This depends on which of two dynamics, or choice patterns, an individual expects to follow when considering a sequence of actions. Our research has helped to draw the distinction between sequences that balance between goals and temptations over time and sequences that highlight goals (Fishbach, Dhar, & Zhang, 2006; Fishbach & Zhang, 2008; Koo & Fishbach, 2008). In a balancing dynamic, individuals will plan to alternate between goals and temptations in successive choices. One can therefore give in to temptation without identifying a conflict if she expects that tomorrow she will switch to pursuing the goal instead. If one plans to choose fruit tomorrow, then choosing cake over fruit today does not pose a threat to long-term health goals. This pattern of behaviors contrasts with a choice dynamic of highlighting. In a

highlighting dynamic, individuals plans to pursue the same motive on each opportunity. In this dynamic, a choice between cake and fruit will arouse the conflict that is characteristic of a self-control dilemma.

In one study of the consequences of these opposing choice dynamics (Fishbach & Zhang, 2008), healthy versus unhealthy food choices were presented to participants in one of two formats. Some participants encountered one bowl with packets of baby carrots and a separate bowl with chocolates. Presenting these options apart induced a sense of competition between them, which was expected to invoke a highlighting dynamic (eat healthy now and later). Other participants encountered one big bowl with carrots and chocolates interspersed. Presenting these options together induced a sense of complementarity, which was expected to invoke a balancing dynamic (eat unhealthy now and compensate later). Accordingly, participants chose carrots more frequently when the items were presented apart than when they were presented together. We assumed that the highlighting dynamic increased the likelihood of identifying a self-control conflict and therefore led participants in this condition to exercise self control. Indeed, consistent with our interpretation, individual differences in the strength of the weight-watching goal (i.e., how much participants wanted to lose weight) predicted healthy food choices when the options were presented apart, but not when they were presented together. We can therefore conclude that presenting options apart helped individuals identify a self-control problem and as a result, their actions were more closely associated with the strength of their desire to eat healthy.

The balancing dynamic threatens the engagement of self-control because choices consistent with short-term rather than long-term goals can be made at each opportunity, without the experience of conflict. When one plans to switch between goals and temptations, this will tend to promote a "temptation now, goal later" plan, which provides instant gratification and

continually postpones goal pursuit. Temptation indulgence thus ensues not as a result of self-control failure, but as a repeated failure to identify self-control conflict in the first place.

This inconsistent pattern of choices is illustrated in full by another study of immediate and delayed choices. In that study, we (Fishbach & Zhang, 2008) asked participants to choose a full two-course meal, consisting of an entrée (immediate choice) and a dessert (delayed choice). Some participants chose from a menu that presented the unhealthier fare on one page and the healthier fare on a separate page, to induce a sense of competition and a highlighting dynamic. Other participants chose from a menu that presented the unhealthy and healthy fare mixed up together across the two pages, to induce complementarity and a balancing dynamic. As expected, those who chose from separate menus were better able to identify and resolve the self-control conflict: They tended to prefer healthy entrees and desserts. Those who chose from one menu, in comparison, planned to choose healthy desserts for later, but opted to indulge in more unhealthy entrees up front. We can thus conclude that perceiving multiple action opportunities (*width*) is a necessary but insufficient condition for identifying a self-control conflict. In addition, one must see the potential for consistent actions that correspond to either temptation or the more important goal.

Given that conflict has been identified upon encountering temptation, the individual is likely to exert self-control efforts. In what follows, we address our research on counteractive control, which describes the process by which individuals offset the influence of temptation on goal pursuit.

Counteractive Control: Asymmetric Responses to Goals and Temptations

Self-control works to resolve the tension between goals and temptations. According to *counteractive control theory* (Fishbach & Trope, 2005; Trope & Fishbach, 2000), the essence of

this process involves asymmetrically shifting the motivational strengths of conflicting

motivations. High-order goals are strengthened so they may override low-order temptations.

Low-order temptations are weakened so they may be overridden by high-order goals. These

asymmetric shifts in motivational strength may be achieved by modulating the situation (e.g.,

imposing penalties, rewards) or by modulating mental representations of the situation (e.g.,

devaluing or bolstering the value of activities). These shifts may further involve explicit

operations that require conscious awareness and planning, or implicit processes that operate with

minimal awareness and conscious planning. Regardless of the specific type of self-control

operation, its function is similar: It either increases the tendency to operate on a personal motive

or decreases the tendency to operate on it, depending on the status of the motive as a goal or

temptation. We summarize the various self-control operations in Table 1 and we elaborate on

them in this section.

Importantly, each operation increases proportionally as the strength of the temptation

increases, to diminish the impact of temptation on one's behavior. Thus, when people anticipate

strong (vs. weak) temptation, they increase their self-control efforts proportionally. As a result,

their likelihood of adhering to their long-term interests remains intact despite the presence of

strong temptations. Notably, there can also be variation in the degree to which individuals expect

particular temptations to pose a risk. Thus, two individuals can face the same identical

temptation and vary in their successful self-control toward the temptation depending on

expectations. The person who expects strong interference will be more likely to exercise self-

control and adhere to her goals than will the person who does not anticipate such strong

interference. In these situations, the anticipation of a temptation not only counteracts its impact

on behavior but further improves goal adherence, because those who expect interference counteract it and work harder to pursue their long-term goals.

To demonstrate the impact of anticipated obstacles or temptations, we (Sheldon & Fishbach, 2009) studied people's cooperation in mixed motive interactions (e.g., social dilemmas; Dawes, 1980; Messick & Brewer, 1983). Mixed motive interactions pose a self-control conflict, because people recognize that the long-term benefits of cooperation outweigh the short-term payoffs of competition but nonetheless feel tempted to compete for an immediate benefit (DeWitte & DeCremer, 2001). In our studies, we found that participants more likely cooperated when they anticipated barriers to successful outcomes (e.g., when they expected doing well to be difficult) than when they did not anticipate barriers, as long as they were imbued with a strong sense of personal control. This pattern is indicative of counteractive self-control.

Modulating Choice Situations

If people identify a potential conflict in advance, they can essentially resolve it before it occurs by changing the choice set so it no longer presents a conflict. This pre-commitment strategy restricts their options, but increases goal-consistent behavior. Alternatively, people may strategically affect the value of available options. By attaching bonuses to goals or penalties to temptations, they can tip the value scales to favor goal-consistent behavior. In addition, people may distance themselves from temptations and approach goals. Implicit dispositions toward goals and away from temptations that develop over time can increase the probability of goal-pursuit. In this section, we explicate each of these strategies.

Pre-commitment. When potential conflicts between goals and temptations loom in the future, proactive self regulators may diverge from the common pattern of seeking to maintain available options (Brehm, 1966), and instead restrict future choice sets to favor goal pursuit

(Ainslie, 1992; Schelling, 1984; Strotz, 1956; Thaler & Shefrin, 1981; Wertenbroch, 1998). Specifically, self-regulators eliminate tempting alternatives and increase the share of goal alternatives in future choice sets. Many gamblers, for example, leave their wallets in the hotel room, taking only a set amount of cash into the casino with them. When the money is gone, the temptation to gamble more has already been eliminated. Similarly, grocery-shopping dieters may fill their carts with only healthy foods, limiting their own (and their unsuspecting families') snacking options later. In one illustrative study (Ariely & Wertenbroch, 2002), students committed themselves to earlier-than-necessary class deadlines when given the option to set them in advance. By pre-committing, these students took on unnecessary potential costs, such as grade penalties for late submissions, but they also limited their pursuit of temptations and increased the motivational strength of their academic pursuits.

Penalties and rewards. Another way to change the situation in favor of goals is to asymmetrically affect the relative value of goals and temptations. One way people can proactively stack the deck against temptations is to bolster the value of goal pursuit by attaching contingent bonuses. When people wager with friends that they can finish a marathon, promise themselves a new outfit for losing 10 pounds, or let themselves leave an hour early from work if they can complete their to-do list, they are using contingent bonuses to make their goals more valuable. In one experimental demonstration of this behavior (Trope & Fishbach, 2000), students were given the opportunity to receive reliable and accurate feedback about their future health risks. Some of the students learned that the necessary medical test would be highly uncomfortable, thus making it tempting to avoid the test and lose the long-term benefits of receiving the results. Other students learned that the medical test would be very easy, thus posing no risk to deter them from pursuing the long-term benefits. Students who faced an

uncomfortable (vs. easy) medical test and who thought the feedback was important more frequently opted to make their study compensation contingent on completing the exam. By self-imposing this contingency, they were exercising self control, risking their compensation, but making it more likely that they would follow through on the action providing long-term benefits.

The asymmetry of counteractive control suggests that people can similarly stack the deck against temptations using self-imposed penalties. This popular self-control tool recently became available at stickK.com, a website that relies primarily on the principle of self-imposed penalties. Here, people can write contracts to help them stick to their goals, pre-authorizing certain punishments for temptation indulgence. An aspiring marathoner might take the joy out of an extra hour of sleep, for example, if she has contracted to forfeit money to a despised charity for missing her workout. In support of this principle, one study demonstrated that the strong temptation to interrupt a three-day glucose fast (compared with the weaker temptation of interrupting a six-hour glucose fast) led people to set higher monetary penalties for themselves (Trope & Fishbach, 2000). By agreeing to penalize themselves, these people increased their likelihood of persisting through the long-term fast despite the strong temptation to give in. When there is tension between the value of goals and competing temptations, contingent bonuses tip the scales toward goals and contingent penalties tip the scales away from temptations. Both changes to the choice situation increase the relative value, and therefore the pursuit of, higher-order goals.

Approach and avoidance. When choice sets feature goals and formidable temptations, people might increase the motivational strength of high-order goals by keeping their distance from the temptations and establishing their proximity to objects associated with their goals (Ainslie, 1992; Schelling, 1984; Thaler & Shefrin, 1981). Diners often usher waiters to clear

their half-eaten plates, just to help them stop picking at meals that have already satisfied them. Motivated students may deliberately select rooms that are closer to the library and further from frat row to help facilitate studying and avoid partying. And on the interpersonal level, people keep distance from those who are believed to exert "bad influence" (e.g., an ex-boyfriend), while maintaining proximity to those that are helpful for pursuing long-term interests (Fitzsimons & Shah, 2008). Actions like these, by which effective self-regulators explicitly and routinely resist temptations, may develop into implicit dispositions to approach goals and avoid temptations. These dispositions can be acted on effortlessly upon encountering temptation.

Self-control research has investigated a variety of implicit self-control strategies that often accompany, or sometimes replace, explicit, deliberative control (e.g., Fishbach, Friedman, & Kruglanski, 2003; Fishbach & Shah, 2006; Fishbach & Trope, 2007; Fujita & Han, 2009; Gollwitzer, Bayer, & McCulloch, 2004; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999). Implicit self-control differs from other mechanisms of unconscious goal pursuit (Aarts & Dijksterhuis, 2000; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001; Shah & Kruglanski, 2003) in that it counteracts the influence of situationally primed goals that conflict with other, higher-order goals. For example, according to unconscious goal priming, cues about one's boyfriend (e.g., seeing his name) can activate the goal to think carefully about the behavior of social targets (Fitzsimons & Bargh, 2003). To the extent, however, that this goal to think about others' behavior conflicts with a higher-order goal (e.g., when trying to pay attention in class rather than check for Twitter updates), according to work on implicit self control, this same prime could increase efforts to ignore this social target.

In a series of studies, we (Fishbach & Shah, 2006) examined the implicit analog to explicit approach and avoidance self-control strategies. The main prediction was that

13

participants would adopt an automatic approach tendency to goal-related stimuli and an avoidance tendency to temptation-related stimuli. In one study, participants completed a lexical decision task, deciding whether letter strings represented words or non-words. On some trials, they indicated words by pushing a joystick away from themselves and on other trials they indicated words by pulling the joystick toward themselves. An approach orientation enables faster pulling of a lever whereas an avoidance orientation enables faster pushing away of a lever (Chen & Bargh, 1999; Markman & Brendl, 2005; Solarz, 1960). Embedded in the words were participants' own idiosyncratic goals (e.g., *exercise*), temptations (e.g., *alcohol*), and control activities (e.g., *internship*). This study found that participants were faster to pull goal-related (than temptation-related) words and faster to push temptation-related (than goal-related) words. A follow-up study found that a tendency to approach academic goals and avoid nonacademic temptations related to higher grade point averages. Thus, this very simple implicit action disposition is associated with real self-regulatory benefits.

When self control changes the situation, people are affecting objective features of the choice sets that are available to them. Contingent bonuses actually make goal pursuit more attractive and contingent penalties actually increase the objective price of indulgence. Pre-commitment works by increasing the availability of goal-relevant options and decreasing the availability of options that could tempt one away. And by approaching goals and avoiding temptations, people physically draw closer to goal-relevant objects and create distance from tempting objects. In the next section, we discuss how self control can operate without exerting an objective influence on the choice set or the environment.

Modulating Mental Representations

Self control strategies can also operate purely through mental representations. By bringing goal-related options and actions to mind, and inhibiting thoughts about temptations, people increase the likelihood of goal pursuit. By focusing on the positive aspects of goal-related objects and the negative aspects of temptation-related objects, people can inflate the subjective value of goals and increase the likelihood of their pursuit. Similarly, reflecting on the cool, abstract features of a temptation, rather than the hot, concrete features, affects the motivational strength in favor of goal-pursuit. Additionally, people can modulate their future plans to increase goal-pursuit. By setting optimistic expectations for future choices (i.e., more goal engagement, less temptation engagement), people can motivate increased goal pursuit. We discuss each of these changing mental representations in turn.

Activation/Inhibition. Earlier, we discussed self-control strategies that operate by changing relative availabilities in the choice situation. Expecting future self-control conflict, people pre-commit to choice sets that have more goal-related options and fewer temptation-related options, like the dieter who stocks the house with fruit and strips the house of cookies. Our research suggests that people have developed other strategies that similarly affect availability, but solely at the level of mental representations (Fishbach, et al., 2003). That is, counteractive control also entails changes in the activation level of goal- and temptation-related constructs. By activating constructs related to high-order goals in response to reminders of interfering temptations, people increase the relative mental "availability" of goal-consistent behavior. Alternatively, by inhibiting temptation-related constructs in response to reminders of overriding goals, people decrease the relative mental "availability" of temptation-related

behavior. These asymmetric mental operations on goal and temptation constructs increase the likelihood that one will secure high-order goals.

Specifically, we found that subliminal presentation of a temptation-related construct facilitated the activation of constructs related to a potentially threatened goal. In one study, participants first indicated their own goal-temptation pairs (e.g., *class-sleep, save-spend*). In a sequential priming paradigm, goal-related words (*class*) were more quickly recognized following subliminal presentation of relevant temptation-related words (*sleep*) than irrelevant temptation-related words (*spend*). Consistent with work on "goal shielding" (Shah, Friedman, & Kruglanski, 2002), we also documented the asymmetric effect on temptations. In particular, we found that it took longer for participants to recognize temptation-related words (*sleep*) following subliminal presentation of relevant goals (*class*) than irrelevant goals (*save*). Thus, counteractive control influenced mental availability in favor of goals (by activating them in response to temptations) and against temptations (by inhibiting them in response to goals). The resource-independence of this strategy was demonstrated in a subsequent study, which found these same effects even under cognitive load.

Similar strategies can be set in motion by supraliminal primes as well. In another study (Fishbach et al., 2003), dieters were influenced by (supposedly) incidental aspects of the situation in which they made food choices. Specifically, the dieters either spent time in a room scattered with fatty food items and gourmet magazines, or with health magazines and dieting fliers, or with general interest magazines, before completing a lexical decision task. Those who spent time in the temptation-related, food room were faster to recognize '*diet*' and, later, were more likely to choose apples than chocolates as a free gift. Thus, the presence of temptations in the environment activated concepts associated with overriding goals and affected subsequent

16

choice consistently. As with implicit activation and inhibition, the presence of these implicit

responses characterizes successful self-regulators more than unsuccessful self-regulators (Papies,

Stroebe, & Aarts, 2008).

Value. Self-control strategies affect the objective value of options in the choice situation,

such that in anticipation of a self-control conflict, people often bundle goal-pursuit with bonuses

and temptation indulgence with penalties. While these contingent bonuses and penalties change

objective features of the choice situation, people can also alter the perceived value of goals and

temptations simply through changing mental representations. People may bolster the value of

high-order goals by linking the attainment of these goals to their self standards (Bandura, 1989)

or by elaborating on what makes them positive (e.g., important, appealing, attractive,

etc.;Beckmann & Kuhl, 1985; Fishbach, Shah, & Kruglanski, 2004; Kuhl, 1984). They may

further devalue temptations by disassociating these motives from the self, or ignoring aspects

that make temptations positively valued. This asymmetric bolstering and devaluation may then

take an explicit or implicit form.

The availability of temptations should then affect judgments of their subjective value.

When potential temptations are available, they pose a threat to higher order goals. The Atkins

diet devotee, for instance, will experience great conflict upon wandering by a wafting bakery.

Assuming the dieter identifies this threat, he should engage counteractive control processes to

protect the long-term goal. One way to protect the diet is to devalue the bread ("The bread in the

window doesn't look very good today"). However, if the temptations are not available (if the

bakery is closed for the day) there is no need for self control, and their perceived value should

not be impacted ("That bread in the window looks delicious"). Thus, because of counteractive

control, making temptations available should make them less tempting.

Our research (Myrseth, Fishbach, & Trope, 2009) put this hypothesis to the test by presenting exercisers on their way out of the gym with a choice between health bars and chocolate bars. Almost everybody chose a health bar to take home with them and we examined how they evaluated their two available options. Specifically, some of the choosers evaluated the foods before choosing the health bar. For these people, the chocolates represented a tempting alternative to the food option that was consistent with their long-term health goals. As predicted, they counteracted this temptation by dampening their positive evaluations of the chocolates relative to the health bars. A separate group of choosers evaluated the foods after choosing the health bar. Once this choice was made, the chocolates no longer represented a threat to long-term goals. For these people, there was no evidence of counteractive evaluation—the health bars and chocolate bars were evaluated as equally attractive. The dampened evaluations were in the service of promoting higher-order goals, and they followed a pattern opposite of the "sour grapes" effect (i.e., devaluation of unavailable options) that dissonance theory would predict (Festinger, 1957). Instead, they reflected a "reverse" spreading of alternatives (Brehm, 1956; Aronson, 1997). Rather than preserving the integrity of one's decision by increasing post-choice evaluations of the chosen option, counteractive control led people to protect their high-order goals from alluring temptations by increasing the chosen option's evaluation before choice.

Notably, these counteractive evaluations manifest in implicit judgments as well. In one study (Fishbach, Zhang, & Trope, in press), participants completed an evaluative priming procedure (Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, Jackson, Dunton, & Williams, 1995), in which they categorized affective words as positive (e.g., *peace*, *love*) or negative (e.g., *evil*, *cancer*). Subliminal primes preceded the affective target words. Sometimes the primes were healthy foods (e.g., *apple*, *broccoli*) and other times they were unhealthy foods (e.g., *bacon*,

fries). Evaluations of the healthy and unhealthy food primes were thus indexed by the relative facility of categorizing the positive versus negative words that followed them. For example, more positive evaluations of healthy foods would be reflected by subsequently faster categorization of *peace* and *love*, and slower categorization of *evil* and *cancer.*

Importantly, before beginning the evaluative priming task, all participants first viewed a series of images as part of an ostensible visual perception task. In a highly accessible temptation condition, a number of the images were of unhealthy temptations such as fried chicken and ice cream. In the low accessibility condition, these images were replaced with mundane control images, such as hammers and lamps. This study found that healthy concepts were evaluated more positively and unhealthy concepts more negatively in the high accessibility than the low accessibility condition. Thus, only when people considered the various foods that threatened to tempt them away from their goals, they counteractively devalued unhealthy foods and bolstered healthy foods.

Levels of construal. Another mental operation that people employ to strategically shift the motivational strength of goals and temptations is to change the processing level at which these competing motivations are construed. A tempting double-mocha, extra whipped cream latte, for example, can be viewed in a "cool," abstract, psychologically distanced way; or in a "hot," concrete, psychologically proximal way. A cooler, abstract, and more distanced view of this temptation should attenuate its threat to overriding goals (Fujita & Han, 2009; Fujita, Trope, Liberman, & Levin-Sagi, 2006; Kross, Ayduk, & Mischel, 2005; Metcalfe & Mischel, 1999). Consistent with this logic, children who were striving to avoid eating marshmallows now (in favor of more marshmallows later), were more successful at waiting if they thought of the marshmallows in cool, non-appetitive terms such as "white, puffy clouds" or "round, white

moons," rather than as "sweet and chewy and soft" (Mischel & Baker, 1975). In another study (Fujita et al., 2006), adults who construed a temptation in a high level, abstract fashion (rather than a low level, concrete fashion), were willing to pay a smaller premium to receive attractive gifts sooner rather than later.

The asymmetry assumption of counteractive control suggests that goal-congruent choice could also be increased by forming a "hot," concrete, or psychologically proximal representation of the benefits of goal pursuit. This hypothesis is consistent with the demonstrated benefits of concrete implementation intentions (Gollwitzer, 1999). For example, in a study on the regulation of academic goals, students formed concrete behavioral plans to facilitate pursuit of their academic goals (Gollwitzer & Brandstaetter, 1997).

Expectations. The mental operations we have discussed so far act directly on representations of the goals and temptations that are in competition. Representations of goal constructs are increasingly activated, their values are bolstered, and they are considered in more hot, concrete or proximal ways. Similarly, representations of temptation constructs are inhibited, their values undermined, and they are construed in more cool, abstract, or distanced ways. The mental representations of goal pursuit, however, include constructs other than those directly related to the motivation itself or to related objects. Mental representations also include, for instance, plans of action (e.g., implementation intentions; Gollwitzer, 1999) and performance standards (Locke & Latham, 1990; Wright & Brehm, 1989). Indeed, research has identified counteractive control strategies that operate on these aspects of goal representations as well.

The strategy of counteractive optimism asymmetrically affects people's anticipated goal- and temptation-pursuit, which in turn influence their actual motivation to pursue goals or give in to temptations (Zhang & Fishbach, 2009). Specifically, *counteractive optimism* refers to a

tendency to provide optimistic predictions of future engagement with goals and disengagement from temptations. These optimistic predictions act as higher performance standards that elicit greater motivation than low performance standards because people adjust their effort to match their anticipated level of performance (Atkinson & Feather, 1966; Brehm & Self, 1989; Heath, Larrick, & Wu, 1999; Locke & Latham, 1990; Oettingen & Mayer, 2002; Taylor & Brown, 1988).

For example, in one study (Zhang & Fishbach, 2009), participants predicted their performance on a task that they were to complete either in the presence or absence of clear obstacles to goal attainment. Specifically, they were asked to predict how well they would do on an anagram task to be completed while listening to music. The music was portrayed as potentially helpful to performance or as potentially harmful to performance. Participants who were motivated to perform well made predictions that would counteract the obstacle to their goal attainment: They predicted better performance when they thought the music would hurt rather than help their performance. Thus, when needed to overcome a performance obstacle, people set higher standards to motivate more goal striving.

Notably, this pattern of optimism resembles prediction effects attributed to other non-motivational mechanisms, such as the planning fallacy (Buehler, Griffin, & Ross, 1994), or general optimism biases (Brown, 1986; Chambers & Windschitl, 2004; Kruger & Dunning, 1999; Kunda, 1987). Predictions that result from counteractive optimism, however, would have motivationally functional origins and, therefore would result only when high-order goals are threatened by low-order temptations. Demonstrating this point, another study (Zhang & Fishbach, 2009) found that optimistic predictions in the face of more (vs. less) challenging tasks actually led to increased effort investment on the more challenging task. Anticipated obstacles

alone, without an opportunity to make performance predictions, did not increase effort investment. Specifically, participants in this study expected to complete an anagram task that was presented as either difficult or easy. Those who stated performance predictions expected to do better when they anticipated a difficult rather than easy task. Consequently, they persisted longer. As in previous studies, we found that anticipating obstacles actually improved performance compared to when people faced the same level of challenge but without anticipating an obstacle (or, temptation) in advance.

In another study, we examined whether counteractive optimism would manifest when predicting risk likelihoods in the same way that it did when setting performance standards. To the extent that more optimistic predictions (i.e., lower subjective risk levels) motivate prevention behaviors that can reduce objective risk levels, they could be instrumental in counteracting temptation-related behavior and encouraging goal-related behavior. In this study, participants estimated their likelihood of suffering from high cholesterol, with the "knowledge" that their gender was either at a lower risk (no obstacle) or higher risk (obstacle) of having high cholesterol. When cholesterol was described as an acquired, relatively controllable disease, participants made more optimistic predictions in the presence of obstacles. Those who "learned" that their sex was at a higher risk than the opposite sex, rather than a lower risk, predicted that their own likelihood of ending up with high cholesterol was lower.

Taken together, the strategies described in this section reveal an asymmetric process of counteractive control. These strategies generate an increase in the motivational strength of goals and a decrease in the motivation strength of temptations. They can operate by modulating the actual choice situation or mental representations of the choice situation. They involve explicit, more planned and effortful processes (see also Muraven & Baumeister, 2000; Trope & Neter,

1994; Vohs, Baumeister, & Ciarocco, 2005), as well as an implicit mode of operations that is nonconscious and requires fewer psychological resources.

Conclusions

Self control is a two-stage process. To succeed at goal pursuit, individuals facing temptations must first identify the conflict between those temptations and their goals. If and only if they have identified the conflict, they will then have the opportunity to draw on self-control strategies to promote goal-pursuit. We have described the conditions for identifying a self-control conflict, namely width and consistency. Conflict identification is more likely when a person considers multiple opportunities to act and expects to make consistent choices at each opportunity. We further portray the process of self-control. Self-control is a process of asymmetric response to goals and temptations, such that self-control strategies either increase the motivational strength of goals or decrease that of temptations.

One implication of our model is the etiological distinction between the failure to identify a self-control problem and the failure to exercise self-control. One can only fail at exercising self control, per se, if one attempts to resist temptation. We believe that a large proportion of the variance in apparent self-control success depends on whether the individual was able to identify a problem in the first place. We therefore call for a more thorough investigation of the variables that influence identification. Our model further offers remedies for overindulgence and lack of self-control employment. We suggest that individuals should strive to identify potential self-control conflicts, even before exercising self-control strategies. For example, the dieter faced with the opportunity to indulge should think about similar future consumption opportunities and avoid thinking about the opportunity as unique or special. Similarly, the smoker should not consider the question of having one cigarette alone but consider instead the prospect of regularly

smoking, to activate self-control strategies associated with quitting. In addition, educators and policymakers should consider measures that promote interrelated decision frames, and that discourage the presentation of potential temptations as special opportunities.

In terms of exercising self-control, it is useful to consider how each self-control operation can act both on the goals and the temptations. It is possible that acting on one of these elements is at times more adaptive and executable than acting on the other. For example, research on thought suppression (e.g., Wegner, 1989) suggests that inhibiting temptations may be a harder task overall than activating concepts related to the overriding goals. It follows then that self-regulators may be better off directing efforts toward focusing on their goals rather than inhibiting temptations. It is also possible that making penalties contingent on giving in to temptations is more effective than making rewards contingent on goal adherence, because people are more averse to prospective losses than gains (e.g., Kahneman & Tversky, 1979). Our research on implicit self-control strategies further raises the questions of when implicit strategies accompany more explicit ones, when they substitute for explicit strategies, and which tend to be more effective. Finally, given the richness of self-control operations that individuals display and that we have documented in this review, it would be beneficial to study what enables self-control success as a path to better understanding why people so often fail.

References

Aarts, H., & Dijksterhuis, A. (2000). Habits as knowledge structures: Automaticity in goal-directed behavior. *Journal of Personality and Social Psychology, 78*(1), 53-63.

Ainslie, G. (1992). *Picoeconomics: The strategic interaction of successive motivational states within the person*. Cambridge, England: Cambridge University Press.

Ariely, D., & Wertenbroch, K. (2002). Procrastination, deadlines, and performance: Self control

      by precommitment. *Psychological Science, 13*(3), 219-224.

Aronson, E. (1997). The theory of cognitive dissonance: The evolution and vicissitudes of an

      idea. In C. McGarty & S. A. Haslam (Eds.), *The message of social psychology:*

      Perspectives on mind in society (pp. 20–35). Cambridge, MA: Blackwell.

Atkinson, J. W., & Feather, N. T. (1966). *A theory of achievement motivation*. New York: Wiley.

Bandura, A. (1989). Self-regulation of motivation and action through internal standards and goal

      systems. In L.A. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp.

      19-85). Hillsdale, NJ: Erlbaum.

Bargh, J. A., Chaiken, S., Govender, R., & Pratto, F. (1992). The generality of the automatic

      attitude activation effect. *Journal of Personality and Social Psychology, 62*(6), 893-912.

Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Troetschel, R. (2001). The

      automated will: Unconscious activation and pursuit of behavioral goals. *Journal of*

      Personality and Social Psychology, 81(6), 1014-1027.

Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego-depletion: Is the

      active self a limited resource? *Journal of Personality and Social Psychology*, *74*(5),1252-

      1265.

Beckmann, J., & Kuhl, J. (1985). *Action Control: From Cognition to Behavior*. Berlin, Germany:

      Springer-Verlag.

Brehm, J.W. (1956). Postdecision changes in the desirability of alternatives. *Journal of*

      Abnormal and Social Psychology, *52*, 384–389.

Brehm, J. W. (1966). *A theory of psychological reactance*. New York: Academic Press.

Brehm, J. W., & Self, E. A. (1989). The intensity of motivation. *Annual Review of Psychology,*

40, 109-131.

Buehler, R., Griffin, D., & Ross, M. (1994). Exploring the "planning fallacy": Why people underestimate their task completion times. *Journal of Personality & Social Psychology, 67*(3), 366-381.

Brown, J.D. (1986). Evaluations of self and others: Self-enhancement biases in social judgments. *Social Cognition*, 4, 353-376.

Chambers, J. R., & Windschitl, P. D. (2004). Biases in social comparative judgments: The role of nonmotivated factors in above-average and comparative-optimism effects. *Psychological Bulletin*, *130*, 813-838.

Chen, M., & Bargh, J. A. (1999). Consequences of automatic evaluation: Immediate behavioral predispositions to approach or avoid the stimulus. *Personality & Social Psychology Bulletin, 25*(2), 215-224.

Dawes, R. M. (1980). Social dilemmas. Annual Review of Psychology, *31*, 169-193.

Dewitte, S., & De Cremer, D. (2001). Self-control and cooperation: Different concepts, similar decisions? A question of the right perspective. *The Journal of Psychology*, *135*(2), 133-153.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobstrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, *69*(6), 1013-1027.

Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.

Fishbach, A., Dhar, R., & Zhang, Y. (2006). Subgoals as substitutes or complements: The role of goal accessibility. *Journal of Personality and Social Psychology, 91*(2), 232-242.

Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not unto temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology, 84*(2), 296-309.

Fishbach, A., & Shah, J. Y. (2006). Self control in action: Implicit dispositions toward goals and away from temptations. *Journal of Personality and Social Psychology, 90*(5), 820-832.

Fishbach, A., Shah, J. Y., & Kruglanski, A. W. (2004). Emotional transfer in goal systems. *Journal of Experimental Social Psychology, 40*, 723-738.

Fishbach, A., & Trope, Y. (2005). The Substitutability of External Control and Self-Control in Overcoming Temptation. *Journal of Experimental Social Psychology, 41,* 256-270.

Fishbach, A. & Trope, Y., (2007). Implicit and explicit mechanisms of counteractive self-control. In J. Shah and W. Gardner (Eds.), *Handbook of Motivation Science*, (pp. 281-294), NY: Guilford.

Fishbach, A., & Zhang, Y. (2008). Together or apart: When goals and temptations complement versus compete with each other. *Journal of Personality and Social Psychology*, *94*(4), 547-559.

Fishbach, A., Zhang, Y., & Trope, Y. (in press). Counteractive evaluation: Asymmetric shifts in the implicit value of conflicting motivations, *Journal of Experimental Social Psychology*.

Fitzsimons, G. M. & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology*, *84*(1), 148-164.

Fitzsimons, G. M. & Shah, J. (2008). How goal instrumentality shapes relationship evaluations. *Journal of Personality and Social Psychology*, *95*(2), 319-337.

Fujita, K., & Han, H.A. (2009). Moving beyond deliberative control of impulses: The effect of construal levels on evaluative associations in self-control conflicts. *Psychological Science*, *20*(7), 799-804.

Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self control. *Journal of Personality and Social Psychology, 90*(3), 351-367.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist, 54*, 493-503.

Gollwitzer, P. M., Bayer, U. C., & McCulloch, K. C. (2004). The control of the unwanted. In J. A. Bargh, J. Uleman & R. Hassin (Eds.), *The New Unconscious*. NY: Oxford University Press.

Gollwitzer, P. M., & Brandstaetter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology, 73*, 186-199.

Heath, C., Larrick, R. P., & Wu, G. (1999). Goals as reference points. *Cognitive Psychology, 38*(1), 79-109.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, *47*(2), 313-327.

Koo, M., & Fishbach, A. (2008). Dynamics of self-regulation: How (un)accomplished goal actions affect motivation. *Journal of Personality and Social Psychology, 94*(2),183-195.

Kross, E., Ayduk, O., & Mischel, W. (2005). When asking "why" does not hurt: Distinguishing rumination from reflective processing of negative emotions. *Psychological Science, 16*(9), 709-715.

Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing

    one's own incompetence lead to inflated self-assessments. *Journal of Personality and*

    Social Psychology, *77*(6), 1121–34.

Kuhl, J. (1984). Volitional aspects of achievement motivation and learned helplessness: Toward

    a comprehensive theory of action control. In B. A. Maher (Ed.), *Progress in experimental*

    personality research (Vol. 13, pp. 99-171). New-York: Academic Press.

Kunda, Z. (1987). Motivated inference: Self-serving generation and evaluation of causal

    theories. *Journal of Personality & Social Psychology*, *53*(4), 636-647.

Leander, N.P., Shah, J., & Chartrand, T. L. (2009). Moments of weakness: The implicit context

    dependencies of temptations. *Personality and Social Psychology Bulletin*, *35*(7), 853-

    866.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*. Upper

    Saddle River, NJ: Prentice-Hall.

Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational*

    Behavior & Human Decision Processes, 65(3), 272-292.

Markman, A. B., & Brendl, C. (2005). Constraining Theories of Embodied Cognition.

    Psychological Science, 16(1), 6-10.

Messick, D. M., & Brewer, M. B. (1983). Solving social dilemmas: A review. In L. Wheeler &

    P. Shaver (Eds.), *Review of Personality and Social Psychology, 4,* 11-44.

Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification:

    Dynamics of willpower. *Psychological Review, 106*(1), 3-19.

Mischel, W., & Baker, N. (1975). Cognitive appraisals and transformations in delay behavior.

    Journal of Personality and Social Psychology, *31*(2), 254-261.

Moskowitz, G. B., Gollwitzer, P. M., Wasel, W., & Schaal, B. (1999). Preconscious control of

    stereotype activation through chronic egalitarian goals. *Journal of Personality and Social*

    Psychology, 77(1), 167-184.

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources:

    Does self-control resemble a muscle? *Psychological Bulletin*, *126*, 247–259.

Myrseth, K. O. R., & Fishbach, A. (2009a). Self-control: A function of knowing when and how

    to exercise restraint. *Current Directions in Psychological Science, 18,* 247-252.*.*

Myrseth, K. O. R., & Fishbach, A. (2009b). *Activating self control: Isolated versus interrelated*

    temptation. Unpublished manuscript, University of Chicago.

Myrseth, K. O. R., Fishbach, A., & Trope, Y. (2009). Counteractive self-control: When making

    temptation available makes temptation less tempting. *Psychological Science*, *20*(2), 159-

    163.

Oettingen, G., & Mayer, D. (2002). The motivating function of thinking about the future:

    Expectations versus fantasies. *Journal of Personality & Social Psychology, 83*(5), 1198-

    1212.

Papies, E. K., Stroebe, W., & Aarts, H. (2008). The allure of forbidden food: On the role of

    attention in self-regulation. *Journal of Experimental Social Psychology, 44,* 1283-1292.

Rachlin, H. (2000). *The science of self control*. Cambridge, MA: Harvard University Press.

Read, D., Loewenstein, G., & Kalyanaraman, S. (1999). Mixing virtue and vice: Combining the

    immediacy effect and the diversification heuristic. *Journal of Behavioral Decision*

    Making, *12*(4), 257-273.

Read, D., Loewenstein, G., & Rabin, M. (1999). Choice Bracketing. *Journal of Risk and*

    Uncertainty, *19*(1-3), 171-197.

Schelling, T. C. (1984). Self-Command in Practice, in Policy, and in a Theory of Rational Choice. *American Economic Review, 74*(2), 1-11.

Shah, J. Y., Friedman, R., & Kruglanski, A. W. (2002). Forgetting all else: On the antecedents and consequences of goal shielding. *Journal of Personality & Social Psychology, 83*(6), 1261-1280.

Shah, J. Y., & Kruglanski, A. W. (2003). When opportunity knocks: Bottom-up priming of goals by means and its effects on self-regulation. *Journal of Personality and Social Psychology, 84*(6), 1109-1122.

Sheldon, O. J., & Fishbach, A. (2009), *Resisting the temptation to retaliate: Self-control in overcoming barriers to cooperation,* Unpublished manuscript, University of Chicago.

Solarz, A. K. (1960). Latency of instrumental responses as a function of compatibility with the meaning of eliciting verbal signs. *Journal of Experimental Psychology, 59,* 239-245.

Strotz, R. H. (1956). Myopia and inconsistency in dynamic utility maximization. *Review of Economic Studies, 23*, 166-180.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*(2), 193-210.

Thaler, R. H. (1991). *Quasi rational economics*. New York: Russel Sage Foundation.

Thaler, R. H., & Shefrin, H. M. (1981). An economic theory of self control. *Journal of Political Economy, 89*, 392-406.

Trope, Y., & Fishbach, A. (2000). Counteractive self control in overcoming temptation. *Journal of Personality and Social Psychology, 79*(4), 493-506.

Trope, Y., & Neter, E. (1994). Reconciling competing motives in self-evaluation: The role of

    self-control in feedback seeking. *Journal of Personality and Social Psychology*, *66*, 646-

    657.

Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-regulation and self-presentation:

    Regulatory resource depletion impairs impression management and effortful self-

    presentation depletes regulatory resources. *Journal of Personality and Social Psychology*,

    88, 632–657.

Wegner, D. M. (1989). *White bears and other unwanted thoughts: Suppression, obsession, and*

    the psychology of mental control. New York: Viking.

Wertenbroch, K. (1998). Consumption self-control by rationing purchase quantities of virtue and

    vice. *Marketing Science*, *17*(4), 317-337.

Wood, W., & Neal, D. T. (2007). A new look at habits and the habit-goal interface.

    Psychological Review, *114*(4), 843-863.

Wright, R. A., & Brehm, J. W. (1989). Energization and goal attractiveness. In L. A. Pervin

    (Ed.), *Goal concepts in personality and social psychology* (pp. 169-210). Hillsdale, NJ,

    England: Lawrence Erlbaum.

Zhang, Y., & Fishbach, A. (2009). *Counteractive optimism in overcoming obstacles,*

    Unpublished manuscript, University of Chicago.

Table 1. Self-control strategies that create asymmetric change in motivational strength of goals and temptations

	Temptations	**Goals**
Changing the choice situation	Self-imposed penalties	Self-imposed rewards
	Pre-commitment to forgo	Pre-commitment to pursue
	Avoidance	Approach
Changing the psychological meaning of choice options	Devalue	Bolster
	Cool and abstract construal	Hot and concrete construal
	Setting low expectations	Setting high expectations
	Inhibit	Activate