

Walking the Line between Goals and Temptations:

Asymmetric Effects of Counteractive Control

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People rarely desire one thing at a time. Rather, the process of goal pursuit involves constantly prioritizing the many goals that a person wishes to pursue and resolving goal conflicts (e.g., navigating career, leisure, and family activities). In this chapter we focus on a specific type of goal conflict: *the self-control dilemma*. People face a self-control dilemma whenever the attainment of a high-order goal would come at the expense of a low-order, yet alluring temptation (Ainslie, 1992; Baumeister, Heatherton, & Tice, 1994; Loewenstein, 1996; Metcalfe & Mischel, 1999; Rachlin, 2000; Thaler & Shefrin, 1981). For example, a dieter's desire to finish a meal with a sweet dessert may not coincide with his desire to maintain a low-fat diet; a saver's wish to get the new gadget in stores may interfere with her saving plans; and a student's urge to procrastinate may not allow him to complete his assignments on time. Whenever these individuals contemplate the conflicting motives (i.e., goal vs. temptation), they experience a self-control dilemma. In response to self-control dilemmas, people exercise self control to facilitate the attainment of the more important goal (Ainslie, 2001; Baumeister & Vohs, 2004; Gollwitzer & Moskowitz, 1996; Kuhl & Beckmann, 1985; Mischel, Shoda, & Rodriguez, 1989; Rachlin, 2000).

Goals and temptations are both motivational states but they have different status. High-order motives (or "goals") serve central interests that are more important in the long-run, and low-order motives (or "temptations") serve peripheral interests that are beneficial in the short-term. In this view, self-control is a tool for pursuing goals that are given high priority in a person's subjective goal hierarchy. Thus, the processes of goal setting (determining the goal hierarchy) do not require self control. In addition, self control is rarely a goal in itself, in the sense that people do not have a goal to exercise self control. Instead, self control is an

instrumental response that improves goal striving when high-order goals are in conflict with low-order temptations.

Self-control problems are common and have a long history in human conduct and thought. Self-control problems have been documented and studied in philosophy, religion, and more recently in the social sciences, by researchers in economics (e.g., Becker, 1960; O'Donoghue & Rabin, 2000; Thaler & Shefrin, 1981), political science (e.g., Elster, 1977; Schelling, 1984), and psychology (e.g., Ainslie, 2001; Baumeister & Vohs, 2004; Kuhl & Beckmann, 1985; Rachlin, 2000). In light of this rich history and the various perspectives presented in this volume, the purpose of the current chapter is to shed light on the processes of self control from a structural point of view, proposed by *counteractive control theory* (Fishbach & Trope, 2005; Fishbach & Trope, 2007; Trope & Fishbach, 2000, 2005).

Counteractive control theory addresses the process by which people proactively *counteract* the threat that temptations pose to the attainment of goals. This threat arises only when important goals are in competition with similarly strong temptations and when external means are not in place to protect the goals. When people anticipate a self-control problem, they increase the motivational strength of pursuing a goal over giving in to temptations. Thus, the presence of tempting alternatives influences behavior in two opposing directions: Directly, it decreases the likelihood of adhering to goals; but indirectly, the perception of tempting alternatives triggers the operation of self-control, which acts to increase the likelihood of adhering to goals. By influencing the motivational strength of choice alternatives, counteractive control offsets the effect that the temptations may have on one's behavior.

In what follows, we define the structure of the counteractive process according to counteractive control theory and draw similarities between different self-control operations that

are documented in the literature. Our main proposition is that counteractive control works to resolve the tension between high-order and low-order motives by asymmetrically shifting their motivational strengths. 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 involve behavioral strategies (imposing penalties, rewards), or mental operations (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 divide our review into four major parts. We first lay the basic assumptions of counteractive control theory (*Instrumental Self-Control*) — namely that self control is an instrumental response to motivational conflicts. In the next section (*Asymmetries in Self Control*) we introduce the basic idea of counteractive control theory; that self control results in asymmetric shifts in motivational strength. We then address the specific self-control strategies that are documented in the literature (*The Strategies of Self Control*) and which follow the counteractive control process of increasing the motivational strength of goals relative to temptations. We end this review with a broader discussion of the conditions under which goals and temptations appear to be in conflict or not. In this section (*Self-Control Failure*) we propose that when people view these motivations as complementing each other, rather than conflicting with each other, they do not exercise self control.

Instrumental Self-Control

According to counteractive control theory, people exercise self-control only when a significant conflict is expected between their high-order goals and low-order temptations. That is, self-control is only needed when important goals are threatened by similarly strong temptations. For example, a trip down the buffet line will only engage self-control operations for someone who desires to enjoy delicious, but unhealthy tiramisu *and* to maintain a healthy diet. If the diner saw someone sneeze on the tiramisu, its value would be extremely weak compared to the health goal and the threat to the goal would be minimal. No counteractive strategies to devalue the tiramisu or to bolster the value of healthier alternatives would be necessary in this case. In addition, if the diner was not concerned with weight watching or healthy eating, the value of the delicious tiramisu would be extremely strong compared to the health goal. In this case, too, the conflict experience would be minimal, so counteractive control would not be used to boost the relative value of healthy options. More generally, if the relative value of goal compared to temptation is extreme then there is no need for self-control.

To test this assumption, research on counteractive control has varied the strength of the tempting alternative, the goal alternative, or both. Results indicate that when the cost of pursuing the goal is minimal (i.e., when temptations are weak), self-control activation is minimal. People increase their self-control efforts as the temptation to disengage from the goal increases. For example, participants exercised self-control by imposing potential fines on themselves in order to complete an academic task at an inconvenient, as opposed to a convenient, time (Fishbach, & Trope, 2005). In addition, when the perceived benefit of pursuing a goal is minimal (i.e., when goals are weak), self-control activation is also minimal. For example, only committed dieters (vs.

non-dieters) exercised self control when they were exposed to fatty food (Fishbach, Friedman, & Kruglanski, 2003).

Even in the presence of similarly valuable goals and temptations, self control only operates when it is needed to overcome a potential threat to important goals. If other means are in place, it is not needed. Thus, self control and external means of control are often substitutable (Fishbach & Trope, 2005), and possibly, self-control operations also substitute for each other. Back at the buffet, for example, if the weight-watching tiramisu lover had foreseen her potential dilemma and ordered the “\$6.99, soup and salad package” rather than the “\$10.99, all-you-can-eat package,” then there would be no need to enact other strategies of self control at the end of the meal.

In a series of studies that tested this substitutability assumption, Fishbach and Trope (2005) found a significant decline in self-control efforts such as bolstering the value of high-order goals when participants believed that an experimenter was monitoring their behavior, when they were primed with controlling individuals (e.g., parents, professors), or when they were offered a large amount of money in return for pursuing their personal goals. Each of these externally imposed control methods—social monitoring, primed controlling figures, and monetary compensation—was sufficient to secure goal pursuit in the absence of self-control.

Finally, as we will discuss later, the goal and the temptation must be perceived as competing options if self control is to be exercised. To the extent that people perceive these motivations as complementing one another, there is no need to exercise self control (Fishbach & Zhang, in press). For example, if the weight-watcher perceives unhealthy and healthy foods as complementing each other in a balanced meal, she would not exercise self control when offered

the unhealthy tiramisu because, presumably, she could compensate by choosing a healthier entrée.

Asymmetric Self Control

According to counteractive control theory, the route to self-control success (i.e., goal-congruent choice) can be divided into two distinct paths: Via one path, self-control operations bolster the motivational strength of goal pursuit, and via another path, self-control operations undermine the motivational strength of temptation pursuit. By asymmetrically responding to goals versus temptations, self-regulators can thus increase the relative strength of the goal and secure goal pursuit.

It is important to clarify that temptations and goals are defined within a given conflict situation and with respect to each other. This structural (as opposed to content-based) definition suggests that 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-order temptation. For example, “working out” may be perceived as interfering with the pursuit of higher-order academic objectives *and* it may be perceived as a goal that is interfered with by the pursuit of lower-order relaxation objectives. An asymmetric counteractive process means that when working out is a tempting alternative relative to the goal of studying in the library, self control acts to decrease its motivational strength. On the other hand, when working out is a high-order goal relative to the tempting alternative of lounging on the couch with a box of donuts, self control acts to increase its motivational strength.

Therefore, cues for a competing motivation can increase or decrease the strength of a focal motivation, depending on their relative status in the motivational conflict. Specifically, people may be working on a focal goal (e.g. exercising) when cues for a higher-order goal (e.g.

studying) or lower-order temptation (e.g. “couch”) manifest. In these situations, an accessible goal cue would undermine the motivational strength of a low-order temptation (studying undermines exercising), whereas an accessible temptation cue would augment the motivational strength of a high-order goal (“couch” augments exercising).

Self-control research has documented many of the specific operations that people employ to asymmetrically shift motivational strength. In what follows, we review the basic categories of self-control operations. We demonstrate how each of these operations creates asymmetric motivational shifts, working for goal pursuit and against temptation indulgence, as predicted by counteractive control theory.

The Strategies of Self Control

Asymmetric responses to goals and temptations have been observed in a number of forms. We discuss asymmetric changes to the choice situation, asymmetric expectations of future goal pursuit, and asymmetric construals of the psychological meaning of choice alternatives. We summarize these categories and the related self-control strategies in Table 1.

Changing the Choice Situation

People may increase the likelihood of goal-congruent choice by changing the situations in which choices occurs. For instance, the objective value of an option can be changed by attaching a penalty or a reward to it, the available choice set can be altered, or an implicit disposition to approach or avoid certain options can develop. Further, each situational change increases goal congruent choice by means of increasing the motivational strength of goals or, asymmetrically, undermining the motivational strength of temptations. For example, the value of a goal-consistent option can be increased by associating it with a contingent bonus, or the value of a temptation-related option can be decreased by associating it with a consumption penalty.

Similarly, the choice set can be altered to favor goal pursuit by increasing the number or availability of goal-consistent options or by decreasing the number or availability of temptation-consistent options. On an implicit level, people can develop implicit dispositions toward goals or away from temptations.

Rewarding goal pursuit and penalizing temptation pursuit. In a study that demonstrated self-imposed rewards, Trope and Fishbach (2000) examined participants' willingness to make a bonus contingent on goal-consistent behavior. Participants who indicated that health goals were important to them were given the opportunity to receive reliable and accurate feedback about their future heart-disease risks. The instrumentality assumption of counteractive control theory specifies that self-control will be activated only when there is conflict between similarly-valued goals and temptations. Thus, the temptation of avoiding this test was manipulated across conditions. Some participants were told that the medical test would be highly uncomfortable, requiring them to engage in an hour of strenuous exercise and a painful hormone sampling procedure. Other participants were told that the test would be comfortable, requiring them to engage in an hour of relaxing reading and an easy hormone sampling procedure. To assess self-imposed rewards, participants were given a choice between receiving their compensation before or after the test, thus making it non-contingent or contingent on test completion. As predicted, participants were more likely to make their compensation contingent on completing the uncomfortable medical procedure (strong temptation) than the easy medical procedure (weak temptation). By self-imposing this contingency, participants risked losing the bonus, but they also increased the value and, hence, the likelihood of completing the more painful cardiovascular test.

According to the asymmetry claim, people can achieve similar ends by imposing penalties that would be associated with temptation indulgence. Indeed, another study (Trope & Fishbach, 2000) investigated whether people impose penalties on themselves for giving in to temptations. Participants were offered an opportunity to take a test that required abstinence from food containing glucose. For some participants the period of required abstinence was only 6 hours, and thus the temptation to skip was relatively weak, whereas for others the period of required abstinence was 3 days, and thus the temptation to skip was relatively strong. Participants were then asked to indicate the amount of money they would be willing to pay as a penalty for failing to complete the test. Consistent with our argument, they chose to set higher penalties for failure to complete a long period of abstinence, than for failure to complete a short period of abstinence. Thus, it seems that the differing responses to goals and temptations can achieve comparable ends in terms of increasing goal-congruent choice. When there is some tension between the value of goals and the value of competing temptations, contingent bonuses change the choice set to favor goals, whereas contingent penalties change the choice set to disfavor temptations; both lead to increased pursuit of higher-order goals.

Pre-committing to pursue goals and avoid temptations. Individuals may pre-commit themselves to act according to their high-order goals by eliminating tempting alternatives or by adding goal alternatives to the choice set, thus biasing the choice set in favor of the goal (Ainslie, 1992; Green & Rachlin, 1996; Rachlin & Green, 1972; Schelling, 1984; Strotz, 1956; Thaler, 1991; Thaler & Shefrin, 1981). For example, students may choose to refrain from signing up for extracurricular activities to help ensure their study habits, and dieters may choose to buy only healthy options at the grocery store to increase healthy snacking later.

As an example of these asymmetric shifts of choice availability, Wertenbroch (1998) found that smokers prefer to buy their cigarettes by the pack, rather than in 10-pack saving cartons, to limit consumption. In another study (Ariely & Wertenbroch, 2002), students who were given the opportunity to set their own deadlines for class assignments committed themselves to due dates that were earlier than necessary. They did so at great potential cost (a grade penalty for being late) and no obvious benefit (e.g., extra feedback from the instructor) other than the increased motivation to complete their studies. By adopting this strategy, the smokers and the students eliminated their future freedom of choice, which people ordinarily seek to maintain (Brehm, 1966), for the sake of decreasing their exposure to temptations and securing the attainment of their higher-order goals. The students' behavior provides an example of a single act that simultaneously, and asymmetrically, affects goal and temptation pursuits. Their early deadlines both increased the probability, on any given day, of working on assignments and decreased the probability of pursuing tempting alternatives.

Approaching goals and avoiding temptations. Another way people increase the motivational strength of high-order goals is by keeping their distance from tempting objects and maintaining close physical proximity to objects that are associated with their goals (Ainslie, 1992; Schelling, 1984; Thaler & Shefrin, 1981). For example, foreseeing the problem that a previous romantic partner may impose, people sometimes move to a different city or job. The process of avoiding temptations may be deliberative and effortful, such as relocating, but at other times, it may need to be quick and efficient. For instance, the conflict between avoiding a long night of heartburn and finishing the rest of a delicious dessert may be resolved merely by pushing the half-eaten plate toward the center of the table without paying much attention to one's

actions. This act may be asymmetrically complimented by reaching for the check and pulling it closer, to bring the meal to a close.

As these examples demonstrate, explicit self-control operations are often accompanied by similar implicit responses. Recent self-control research has investigated a set of implicit self-control strategies (e.g., Fishbach et al., 2003; Fishbach & Shah, 2006; Fishbach & Trope, 2007; Gollwitzer, Bayer, & McCulloch, 2004; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999). It shows that the intentional self-control strategies described thus far are often accompanied by, or replaced with, some unconscious strategies that create implicit changes in the motivational strength of goals and temptations.

In many respects, implicit self control operates by principles similar to those described by research on unconscious goal pursuit (Aarts & Dijksterhuis, 2000; Bargh & Chartrand, 1999; Bargh & Ferguson, 2000; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001; Shah & Kruglanski, 2003). Although, whereas unconscious goal pursuit promotes behavior that corresponds to situationally primed goals, unconscious self control cancels out the influence of these primes if they are perceived as potential conflicts for one's higher-order goals. For instance, according to the basic principles of unconscious goal pursuit, priming an upstanding citizen with "sex," "drugs," and "rock 'n roll" should increase the likelihood that the citizen would engage in these iniquitous behaviors. Research on implicit self control, however, predicts that these primes would increase self control, and more conservative behavior, when they conflict with preexisting long-term goals. Thus, implicit self control is elicited by situational cues and, at the very same time, acts to offset the influence of these cues on behavior and regain personal control (for a review see Fishbach & Trope, 2007).

In terms of implicit counteractive changes to the choice situation, individuals who resist temptations explicitly and repeatedly may develop an implicit disposition toward approaching goals and avoiding temptations. A series of studies by Fishbach and Shah (2006) examined these implicit self-control tactics. Building from the finding that people are faster to pull a lever toward them to indicate an approach orientation and to push a lever away from them to indicate an avoidance orientation (Chen & Bargh, 1999; Markman & Brendl, 2005; Solarz, 1960), Fishbach and Shah found that participants automatically approached goal-related stimuli (through faster pulling responses) and avoided temptation-related stimuli (through faster pushing responses). For example, in one study, participants completed a lexical decision task with their own goals and temptations embedded in it, as well as control activities that they did not pursue (e.g., one participant listed *exercising* vs. *alcohol* vs. *internship*). In this task, participants had to identify a number of letter-strings as words or non-words by either pulling or pushing a joystick. The critical trials included response times for self-generated goals, temptations, and control activities. It was demonstrated that participants are faster to pull (approach) goals and push (avoid) temptations (see Figure 1).

Moreover, the tendency to automatically approach goals and avoid temptations facilitated goal attainment. For example, in one study, reaction times for pulling academic goals (e.g., *library*, *homework*) and pushing nonacademic temptations (e.g., *travel*, *party*) predicted student participants' GPA scores. Similarly, participants who were asked to pull (approach) academic-related concepts and push (avoid) nonacademic concepts planned to invest more time on their homework, compared with students who completed the opposite categorization task. Overall, the asymmetric response to goals and temptations seems to manifest even in these more implicit situational changes, and it plays an important role in adherence to high-order goals.

Changing Attainment Expectations

The aforementioned lines of research demonstrate how people secure the attainment of high-order goals by changing the choice situation. As a result of self control, people's expectation to achieve the goal increases. For example, a person may correctly assume that the objective likelihood of undergoing a medical checkup is higher if there is a penalty imposed on failing to complete the checkup or a reward contingent on completing the checkup. Whereas the objective likelihood of pursuing a goal may increase as a result of self-control operations, the subjective likelihood of goal achievement may serve a self-control function in itself.

Recent research on *counteractive optimism* explores this possibility. It documents asymmetric effects on people's anticipated goal- and temptation-pursuit, which in turn influence their actual motivation to pursue goals or temptations (Zhang & Fishbach, 2008). Specifically, counteractive optimism refers to a tendency to provide optimistic predictions of future engagement with goals and disengagement from temptations. For example, a student who has just received an invitation to next weekend's big party may make optimistic predictions about the amount and quality of studying that she will do before an upcoming exam. Asymmetrically, she may strategically underestimate how much time she will spend at the party. These estimates are instrumental when they act as performance standards to motivate studying over partying.

Previous research on goal-setting theory (Locke & Latham, 1990) and energization theory (Wright & Brehm, 1989) demonstrates that people adjust their effort to match their anticipated level of performance. High (i.e., more difficult) performance standards elicit greater motivation than low standards (Atkinson & Feather, 1966; Brehm & Self, 1989; Heath, Larrick, & Wu, 1999; Oettingen & Mayer, 2002; Taylor & Brown, 1988). Therefore, whenever optimistic predictions act as performance standards, they motivate actions that help to reach these

standards, whereas pessimistic predictions undermine one's motivation. Specifically, expectations of greater goal pursuit and lesser temptation indulgence can be two sides of the same adaptive strategy—motivating actions via expectations.

Notably, the tendency for people to be optimistic in their predictions is well documented. Research on the “planning fallacy” describes a common underestimation of how long it will take one to complete goal-related tasks (Buehler, Griffin, & Ross, 1994) and people routinely overestimate their performance on such tasks (Allison, Messick, & Goethals, 1989; Brown, 1986; Chambers & Windschitl, 2004; Kruger & Dunning, 1999; Kunda, 1987; Svenson, 1981; Windschitl, 2004). Although such optimistic tendencies do not always have a motivational origin or function, we next discuss the evidence that these biases do often provide strategic motivational benefits.

Increasing estimates of goal engagement and decreasing estimates of temptation engagement. Counteractive optimism predicts that when performance goals are important to people and they anticipate obstacles in goal pursuit, they become more optimistic about future goal attainment and temptation avoidance. But notably, predicting better performance in the face of great obstacles might mean that one's prediction is potentially less accurate. Hence, there is a trade-off between counteractive and accurate predictions. The pattern predicted by counteractive optimism holds as long as people are less concerned about the accuracy of their predictions. If people try to provide accurate (rather than motivating) predictions, anticipated obstacles should lead to more conservative predictions of goal attainment and temptation indulgence. Accurate (vs. motivating) predictions can, in this way, undermine the motivation to adhere to the goal.

To test these predictions, Zhang and Fishbach (2008) explored how students' anticipation of tempting alternatives affected their predictions about future coursework and leisure activities.

Participants were recruited for a study about college students' "time allocation," in which they indicated the average number of hours they expected to spend each day in the upcoming week on goal-related activities (*homework* and *class reading*) and tempting alternatives (*surfing the internet* and *hanging out with friends*).

Consistent with a structural definition, the motivation to study does not represent a high-order goal on its own. It is only a high-order goal in relation to tempting alternatives such as leisure activities. Similarly, leisure activities on their own do not represent a low-order temptation – they only become so in relation to high-order goals such as studying. Thus, a subtle order manipulation determined the presence or absence of conflict for predictions of goal pursuit and temptation pursuit. In terms of predicting goal pursuit, participants were aware of potential conflict if they predicted how much time they would spend on leisure activities before they predicted how much time they would spend on academic activities. As shown in Figure 2, when accuracy motivation was low, awareness of the leisure temptation led to more optimistic predictions about academic pursuits: Participants who were aware of potential conflict, compared with those who were unaware, predicted that they would spend more time studying.

According to the asymmetry claim, counteractive optimism would also be expected to operate by decreasing estimates of time spent pursuing temptations. In terms of predicting temptation pursuits, participants were aware of potential conflict if they predicted how much time they would spend on academic activities before they predicted how much time they would spend on leisure activities. As expected, when accuracy motivation was low, awareness of the academic goal led to more optimistic predictions about leisure pursuits: Participants who were aware of the potential conflict, compared with those who were unaware, predicted that they would spend fewer hours over the course of the week surfing the internet and hanging out with

friends. Thus, yet another asymmetry of counteractive control is observed. The perceived self-control dilemma enacts counteractive optimism via inflated expectations about future goal pursuit and via deflated expectations about future temptation indulgence.

Counteractive optimism does not influence predictions when people wish to be accurate. Accordingly, the aforementioned effects were not observed when participants were explicitly instructed to make accurate estimates. When accuracy motivation is high, awareness of the self-control conflict leads to more conservative predictions, expressed by less time anticipated for academic pursuits. There is a clear trade-off between people's desire to generate motivating predictions that secure a high level of performance when confronting obstacles and their desire to generate accurate predictions that account for these obstacles by decreasing performance expectations.

Optimism in action: Increasing performance as a result of optimistic predictions. Of course, optimistic predictions should not be considered adaptive self-control strategies unless they translate to goal-congruent choice and action. Several studies (Zhang & Fishbach, 2008) documented counteractive optimism in action. In one study, participants provided a rough prediction (i.e., they had low accuracy motivation) for the completion time of a take-home exam. Those who believed that it was going to be difficult, relative to those who believed it was going to be easy, expected to finish sooner and, importantly, ended up completing it sooner. As before, these effects were reversed when accuracy was emphasized and participants were not engaging in counteractive optimism. Participants who tried to be accurate and who believed the exam was going to be difficult, relative to those who believed it was going to be easy, provided more conservative predictions of completion time and ended up completing the exam later.

In another study, participants predicted how long they would persist at, and how well they would perform in a novel anagram task. Participants who wanted to motivate high levels of performance stated more optimistic predictions and persisted longer on a task when they expected distracting music to play than when they did not expect distractions. Taken together, these studies demonstrate that people make asymmetric predictions about future choice dilemmas and that these predictions motivate goal-congruent action in the face of tempting alternatives. Specifically, people strategically overestimate their engagement with goal-related activities and underestimate their engagement with temptation-related activities. These optimistic predictions translate to increased goal-congruent choice and improved performance.

Changing the psychological meaning of choice

Another strategy people employ to help protect their high-order goals from tempting alternatives involves changing the psychological meaning of future choices. People may selectively attend to, encode, and interpret information about the choice alternatives to bolster the value of high-order goals and, asymmetrically, discount the value of low-order temptations (Kuhl, 1986; Mischel, 1984). These changes in the psychological meaning of the choice situation can take several forms. For instance, people can attend to what makes their goal valuable while devaluing temptations (Fishbach, Zhang and Trope, 2008; Myrseth, Fishbach & Trope, 2008). Alternatively, they can employ a cool and abstract construal of tempting alternatives, which decreases their motivational strength (Fujita, Trope, Liberman, & Levin-Sagi, 2006; Kross, Ayduk, & Mischel, 2005; Metcalfe & Mischel, 1999). Presumably, they can also employ a hot and concrete construal of goals to increase their motivational strength. In addition, as an implicit and rudimentary form of self control, people can activate the representation of high-order goals

in the face of low-order temptations and, asymmetrically, inhibit low-order temptations in the face of high-order goals (Fishbach et al., 2003).

Bolstering goals and devaluing temptations. The likelihood of goal-congruent choice can be increased by bolstering the value of goals or by devaluing temptations. 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 important (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 important. This asymmetric bolstering and devaluation may take an explicit or implicit form.

In a study that tested for explicit counteractive evaluations (Myrseth et al., 2008), participants in a romantic relationship rated the sex appeal of several attractive members of the opposite sex, based on ostensible profiles from “facebook.com.” These target people were either listed as “single” or “in a relationship;” hence, they represented a potential threat to one’s relationship or not. As shown in Figure 3, participants evaluated people as less attractive when they were listed as single than when these same people were said to be in a relationship. The romantically involved participants devalued available “temptations.” In addition, when asked to rate the sex appeal of their own romantic partners, participants rated their partners as more attractive after evaluating single people, than after evaluating people said to be in a relationship. The romantically involved participants bolstered the value of the “goal-related object” (i.e., one’s own partner). Other studies have documented a congruent pattern of bolstering the value of academic tasks that were scheduled at an inconvenient (1 am) versus convenient (9 pm) time, or bolstering the value of studying for a test when competing social motives were primed versus not primed (Trope & Fishbach, 2000).

The evidence for implicit counteractive evaluations comes from a set of recent studies conducted by Fishbach, Zhang, and Trope (2008). Using an evaluative priming procedure (Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, Jackson, Dunton, & Williams, 1995; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Neely, 1977), Fishbach and colleagues found that making achievement goals highly accessible (vs. not making them accessible) lead to more negative, implicit evaluations of tempting constructs. For example, students to whom achievement goals had been made highly accessible implicitly expressed more negative evaluations of nonacademic tempting concepts, such as *television* and *beach*, than did students to whom achievement was not made highly accessible. It appears that goal accessibility is associated with spontaneous negative implicit evaluation of temptations—that is, accessible academic goals lead to implicit devaluation of non-academic temptation concepts.

Consistent with the asymmetry claim, it was also expected that the perceived presence of non-academic temptations would enhance the implicit evaluation of academic goals. In another study, some participants were asked to elaborate on how much they would enjoy engaging in a number of tempting activities that commonly threaten university students' studying (e.g. *watching movies, drinking alcohol*). These participants, relative to participants who did not elaborate on tempting alternatives, expressed more positive implicit evaluations of academic concepts such as *study* and *library*. Consistent with the asymmetry prediction, these results suggest that temptation accessibility is associated with positive evaluation of goals.

Taken together, these two studies demonstrate the asymmetry in counteractive evaluation. When goal-related activities such as studying and reading are made accessible to students who are tempted by various nonacademic alternatives, they respond by devaluing the tempting alternatives. Asymmetrically, when tempting activities such as partying and vacation are made

accessible to students with active academic goals, they respond by augmenting the value of their academic goals.

Heating up goals and cooling down temptations. Processing level is another variable that creates asymmetric shifts in motivational strength. Individuals may form a “cool,” abstract, or psychologically distanced representation of their motivations; or they may form a “hot,” concrete, or psychologically proximal representation of these goals. When confronting low-order temptations, one can attenuate the impact of these alternatives and secure overriding goal pursuit by employing a cool and abstract representation of the temptations (Fujita et al., 2006; Kross et al., 2005; Metcalfe & Mischel, 1999; Mischel & Ayduk, 2004). For example, congruent with the hot/cool systems analysis of self control (e.g. Metcalfe & Mischel, 1999), children are more likely to avoid eating tempting marshmallows by thinking of them as “white clouds” (Mischel and Baker, 1975). This cool and non-appetitive representation improves their ability to delay gratification. In another study (Fujita et al., 2006), adults were willing to pay a smaller premium for immediate, rather than delayed, attractive gifts when they were construing temptation in a high level, abstract fashion, as opposed to a low level, concrete fashion.

According to a counteractive control analysis, one could also increase goal-congruent choice by forming a “hot,” concrete, or psychologically proximal representation of the benefits from pursuing goals. This hypothesis is consistent with research on the self-regulatory benefits of setting concrete implementation intentions (e.g., Gollwitzer, 1999; Gollwitzer, & Brandstatter, 1997), and it follows from the assumption of asymmetry. Thus we predict that a goal stimulus would gain motivational strength if people thought of it in “hot” and concrete terms. For example, a student would be more likely to study if she considered the “hot” (e.g., pride) versus “cool” (e.g., good grades) features of academic success. Notably, this should be the case only if

the goal and the temptation represent distinct motivations (e.g., party versus study). At other times, in the delay of gratification paradigm for instance, the conflict is between small-and-immediate versus large-and-delayed goal fulfillment (e.g., small candy now vs. large candy later). In these situations, considering the appetitive, “hot” characteristics of the goal simultaneously activates the appetitive, “hot” characteristics of the temptation, and may induce impatience and a stronger desire to fulfill this motive by choosing the immediate, small reward (Metcalf & Mischel, 1999).

Activating goals and inhibiting temptations. Counteractive control also entails changes in the activation level of constructs related to goals and temptations. In particular, people can secure their high-order goals by activating related constructs in response to interfering temptations, and by inhibiting tempting constructs in response to cues for the overriding goal.

Research by Fishbach, Friedman, and Kruglanski (2003) found that subliminal presentation of a temptation-related construct facilitated the activation level of a construct representing a potentially obstructed goal. For example, one of these studies used participants’ self-reported goals and temptations to obtain goal-temptation pairs (e.g., *study-basketball*). Using a sequential priming procedure, these researchers found that goal-related keywords (e.g., *study*) were more quickly recognized following subliminal presentation of relevant temptation-related keywords (e.g., *basketball*) than following subliminal presentation of irrelevant temptation-related keywords (e.g., *chocolate*). As shown in Figure 4, this effect was asymmetric such that goal recognition was facilitated by temptation primes (e.g., academic targets were facilitated by nonacademic primes) and temptation recognition was inhibited by goal primes (e.g., nonacademic targets were inhibited by academic primes). Another subsequent study demonstrated that temptation-goal activation was further obtained under cognitive load; hence, it

was independent of available cognitive resources. This result further supports the implicit and resource-free nature of this self-control response.

In another study, temptation-related cues were primed supraliminally as incidental aspects of the situation (Fishbach et al., 2003). In this study, dieters spent time in one of three situations: a room with popular fatty foods (temptation prime), a room with weight-watching magazines (dieting prime), and a room with general interest magazines (neutral prime). These priming stimuli were allegedly irrelevant to the purpose of the experiment. Priming the temptation to consume fattening food, like priming the goal of dieting directly, facilitated recognition of the word 'diet' in a subsequent lexical decision task. Moreover, when offered a gift, participants in the temptation prime and in the diet prime conditions preferred to get an apple rather than a chocolate bar, whereas participants in the neutral condition preferred to get chocolate. Thus, asymmetric activation patterns seem to affect motivational strength to the extent of impacting choice outcomes. Temptations do so by facilitating the activation of high-order goals, whereas goals do so by inhibiting the activation of low-order temptations.

In sum, research reviewed in this section addresses the main self-control strategies that enable the counteractive control process. Counteractive control theory predicts that in response to a self-control dilemma, people employ a variety of strategies meant to increase the motivational strength of their high-order goals relative to their low-order temptations. In line with this premise, we reviewed several lines of research, demonstrating asymmetric shifts in motivational strength.

Self Control Failure

On the basis of our review, we propose that people do not confront temptations unguarded. Rather, they hold an array of strategies that help them secure the attainment of a

more important goal in the face of the obstacles and hindrances posed by temptations. The processes of self control allow people to pursue their long-term interests, such as achieving career goals, controlling body weight, suppressing the escalation of personal conflicts, and more. In general, people are rather effective at adhering to these goals. However, everyday observations suggest that self-control operations can also fail. Thus, even effective self-regulators sometimes fail to adhere to their self-selected goals.

A tacit assumption in the self-control literature is that the mutual presence of goals and temptations invariably activates a self-control conflict. But that assumption might not be warranted. As indicated before, people exercise self control when there are no substitutable, external means of control. In addition, as we discuss next, people exercise self control when they perceive goals and temptations as competing with each other, rather than as complementing each other, and when the goals clearly override the temptations in their goal hierarchy.

Failures to Recognize versus Failures to Exercise

Self-control research has traditionally referred to situations in which goals and temptations appear to be in competition. In this situation, researchers have assumed that people either exercise self control, and resolve the conflict in favor of the more valuable goal, or that they fail to exercise self control, and thus succumb to temptation (Baumeister et al., 1994). Relaxing this assumption, however, allows the possibility that some temptation-consistent choices do not result from a failure to exercise self control, but instead, from a failure to recognize a particular self-control dilemma as such. When people do not experience a conflict between goals and temptations, they may plan to balance between these motivations in the same way they balance between any equally central goals (e.g., career and family). Moreover, whereas cues for goals often remind people of the self-control problem and help them to guard against

competing desires, the presence of goal cues can have the opposite effect, liberating one to pursue desires or temptations in the present (see also Monin & Miller, 2001; Steele, 1988).

Research on the dynamics of self-regulation addresses the simultaneous pursuit of multiple goals, and it distinguishes between a dynamic of highlighting the more important goal by consistently choosing alternatives that are congruent with this motivation, and a dynamic of balancing between the goal and the temptation (or two equally important goals) by making successive choices that alternate between the two (Fishbach & Dhar, 2005; Fishbach, Dhar, & Zhang, 2006; Koo & Fishbach, 2008; Zhang, Fishbach, & Dhar, 2007). The need for self control emerges in a dynamic of highlighting, when people desire to focus on the goal and resist the temptation. But this pattern of highlighting is not the only way in which people approach their choices. In addition to highlighting the more important goal through consistent goal-congruent choice, people may also adopt a dynamic of balancing between goals and temptations by sampling from both goals and temptations over multiple choice opportunities. For example, most students do not choose the enlightened path at every turn – even the most studious will sometimes decide to relax with a movie or have some fun with friends, postponing their reading for later. In another domain, most health conscious people do not choose the nutritious path at every turn – even the most fit will sometimes choose the chocolate shake now, promising to opt for the wheatgrass smoothie later.

Highlighting and balancing produce different patterns of choice that unfold over time. These dynamics are further associated with a framing of any particular choice as signaling goal commitment versus goal progress. In a highlighting dynamic, a particular goal-congruent choice is interpreted as commitment to that goal and subsequently increases its priority over competing motivations (Aronson, 1997; Atkinson & Raynor, 1978; Bem, 1972; Feather, 1990; Festinger,

1957; Locke & Latham, 1990). In this framing of self-regulation, goals and temptations compete with each other. On the other hand, in a balancing dynamic, a particular choice is interpreted as progress toward that particular pursuit (e.g. Byrne & Bovair, 1997; Carver & Scheier, 1998; Higgins, 1989), which serves as justification for moving to other, neglected pursuits. In this framing of self-regulation, goals and temptations complement each other.

People only engage the self-control process when it is needed to protect high-order interests from low-order temptations. Thus, the usual asymmetry should be observed under the dynamic of highlighting. It is precisely when a goal seems to be in competition with a temptation that counteractive control should act to increase the likelihood of goal-congruent choice by increasing the relative attractiveness of goal pursuit. The motivational strength of goals should be increased and the motivational strength of temptations should be decreased. On the other hand, the dynamic of balancing should produce an opposite kind of asymmetry. When goals and temptations seem to complement each other, the immediate motivational strength of the temptation relative to the goal should be increased.

Specifically, when goals and temptations complement each other and a person wishes to balance between them, there are two possible patterns of choice: A person can first choose a goal option and later choose a temptation option, or the person can first choose a temptation option and later choose a goal option. Because goals offer delayed benefits and temptations offer immediate benefits (Ainslie, 1975; Loewenstein, 1996; Rachlin, 1997), under a balancing dynamic the latter sequence (temptation, then goal) is more advantageous. That is, people can expect to maximize the attainment from both by expressing an immediate preference for a tempting option with an intention to choose a goal option at the next opportunity. As such, they acquire the value of the temptation in the present and expect to obtain the value of the goal in the

future. It follows that when goals and temptations seem to complement each other in a dynamic of balancing, people should express an immediate preference for tempting items and expect to balance on the subsequent choice. In this case, the motivational strength to pursue goals will likely be less than the motivational strength to pursue temptations, yielding the reverse asymmetry.

In one study that assessed evaluation of goals and temptations under each of the self-regulatory dynamics, Fishbach and Zhang (in press) presented healthy and fatty food images in two separate images, to induce a sense of competition and a dynamic of highlighting; together in one image, to induce a sense of complementarity and a dynamic of balancing; or in two separate experimental sessions, as a control condition. For example, in one stimuli set, some participants evaluated separate images of healthy berries and unhealthy soda; others evaluated berries and soda in a single image that featured both; and the rest evaluated berries in one session and soda in another session. As shown in Figure 5, across all stimuli sets, when healthy and fatty items were presented apart, in two separate images, the value of healthy items was higher than unhealthy items. That is, consistent with the counteractive control process, when self control was needed to protect healthy options from the allure of unhealthy options, participants counteractively bolstered the value of the goal-consistent choices relative to the temptations. However, when healthy and unhealthy items were presented together and appeared complementing, the value of the fatty items was higher than the value of the healthy items. When the balancing dynamic was active and there was no need to protect healthy choices against unhealthy choices (because participants acted as if they would balance these competing goals over time), participants bolstered the value of the temptations relative to goal-consistent choices.

Finally, when the healthy and unhealthy items were evaluated in two separate experimental sessions (“single,” control condition), their value was similar.

A follow-up study demonstrated that these evaluation effects have implications for the choices that people make in potential self-control dilemmas. In this study, Fishbach and Zhang assessed choices between healthy snacks (carrots) and unhealthy snacks (chocolate bars) that were either presented together in one pile, and appeared to be complementing, or apart in two separate piles, and appeared to be competing. Participants were more likely to select unhealthy, tempting snacks when they were included in the same (vs. different) pile with healthy snacks, and appeared to complement rather than compete with each other.

Additional studies illustrated the full course of the different dynamics more explicitly by comparing immediate choices with future choices. As expected, when alternatives were presented together as complements, people tended to act according to a balancing dynamic, preferring temptations immediately and planning for goal-related choices in the future. On the other hand, when alternatives were presented apart as competitors, people tended to act according to a highlighting dynamic, preferring goal-related choices both immediately and for the future. For example, participants who chose two magazines from a mixed set of lowbrow (i.e., entertainment) magazines (e.g., *Maxim*, *Cosmopolitan*) and highbrow (i.e., news) magazines (e.g., *Time*, *The Economist*), preferred a lowbrow magazine immediately and a highbrow magazine for later reading; hence, they were balancing. In contrast, those who encountered the lowbrow and highbrow magazines in separate sets preferred highbrow magazines for both immediate and later readings; hence, they were highlighting and exercising self control.

By expressing an immediate preference for tempting items, people may end up repeatedly giving in to temptations. For example, a desire to balance between the chocolate shake and the wheatgrass smoothie could result in a consistent preference for the chocolate. However, this choice would not necessarily reflect a failure to exercise self control, because the person did not attempt to do so. When the goal seems to complement the temptation – that is, when one fails to recognize a potential self-control dilemma – self-control processes would not be instrumental and would not be evoked. One would feel justified to pursue attractive temptations.

Effects of Temptation Indulgence

To explain self-control failures, researchers have generally referred to an energy model of self control. Baumeister, Vohs, and colleagues documented a phenomenon they refer to as “ego depletion” – a failure at self control due to lack of resources. According to their theorizing, an act of prior self control results in subsequent depletion and increased likelihood of self-control failure (Baumeister et al., 1994; Muraven & Baumeister, 2000; Vohs & Heatherton, 2000; Vohs & Schmeichel, 2003). In our terms, when high-order goals are in conflict with low-order temptations, any action toward the high-order goal would result in a weakened ability to pursue other congruent actions. For example, after studying for an upcoming exam a student may fail to adhere to her other goals, including exercising, eating healthy, or studying for other classes, because she lacks the resources to do so.

If the pursuit of goals depletes self-control resources, does this imply that the pursuit of temptations replenishes them? Research by Converse and Fishbach (2008) addressed this possibility, assessing whether fulfilling temptation experiences result in increased adherence to goal pursuit. This research finds that people’s lay theories are consistent with this expectation, but that their actual goal pursuit is not. Specifically, Converse and Fishbach manipulated the

quality of the temptation experience (fulfilling vs. unfulfilling), and then measured participants' expectations to revert to the goal following this experience and their actual goal pursuit. For instance, in one study, participants indicated their expected and actual motivation to return to academic pursuits after a good (vs. mediocre) weekend break during the term. Although participants expected a good (vs. mediocre) weekend to leave them more motivated for their studies, they were actually no more motivated following a good break than following a mediocre break. Thus, whereas goal actions are depleting, giving in to temptation is not replenishing.

Giving in to temptations may alter people's priorities in favor of tempting activities at the expense of goal-congruent activities. As a result, a person's goal hierarchy may change such that the person values "temptations" more than the competing "goals." When the conventionally tempting activity acquires the status of a high-order goal, one could fail to adhere to a previously defined goal because the person does not recognize it as such. For example, students who have a pleasant vacation may change their priorities. Whereas academic success once trumped vacation vices for these students, world travel could become a high-order goal relative to their school work. Just as goal-temptation complementarity can alleviate the instrumentality of self-control, so too can changes in the goal hierarchy. When conventional temptations are no longer recognized as such, counteractive control will not be enacted to combat their influence.

Conclusions

Research on counteractive control explores the processes that individuals employ to increase the motivational strength of their high-order goals and decrease the motivational strength of their low-order temptations. It identifies a variety of strategies that lead to this asymmetric motivational shift by operating on the choice situation, one's performance expectations, and the psychological representation of choice alternatives. It further distinguishes

between explicit self-control operations that rely on conscious processing, and implicit operations that do not require explicit consideration.

Whereas research on counteractive control focuses on adaptive self-control operations, there are several reasons why people may nonetheless fail at self control. First, there is motivational depletion following goal pursuit and, in addition, temptation pursuit can change one's goal hierarchy in favor of the temptation. Second, a potential self-control conflict can go unrecognized, resulting in lesser attempts to exercise self control. A failure to recognize a self-control conflict is expected if goals and temptations seem to complement (rather than compete with) each other, or if people do not relate a single tempting episode (e.g., smoking one cigarette) with a pattern of giving in to temptations (e.g., being a smoker; Rachlin, 2000). Possibly, there are also other factors that prevent people from recognizing a self-control conflict or exercising self control. One of the challenges of future self-control research will be to account for people's failures to exercise self control as opposed to their failures to recognize particular situations as requiring self control. A better understanding of the different causes of self-control failures can further advance the research on successful and adaptive self-control operations.

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	Temptations	Goals
Changing the choice situation	<ul style="list-style-type: none"> ▪ Self-imposed penalty ▪ Pre-commitment to forgo ▪ Avoidance 	<ul style="list-style-type: none"> ▪ Self-imposed rewards ▪ Pre-commitment to pursue ▪ Approach
Changing expectations and standards	<ul style="list-style-type: none"> ▪ Low performance 	<ul style="list-style-type: none"> ▪ High performance
Changing the psychological meaning	<ul style="list-style-type: none"> ▪ Devalue ▪ Inhibit ▪ Cool and abstract construal 	<ul style="list-style-type: none"> ▪ Bolster ▪ Activate ▪ Hot and concrete construal

Table 1: Asymmetric self-control strategies

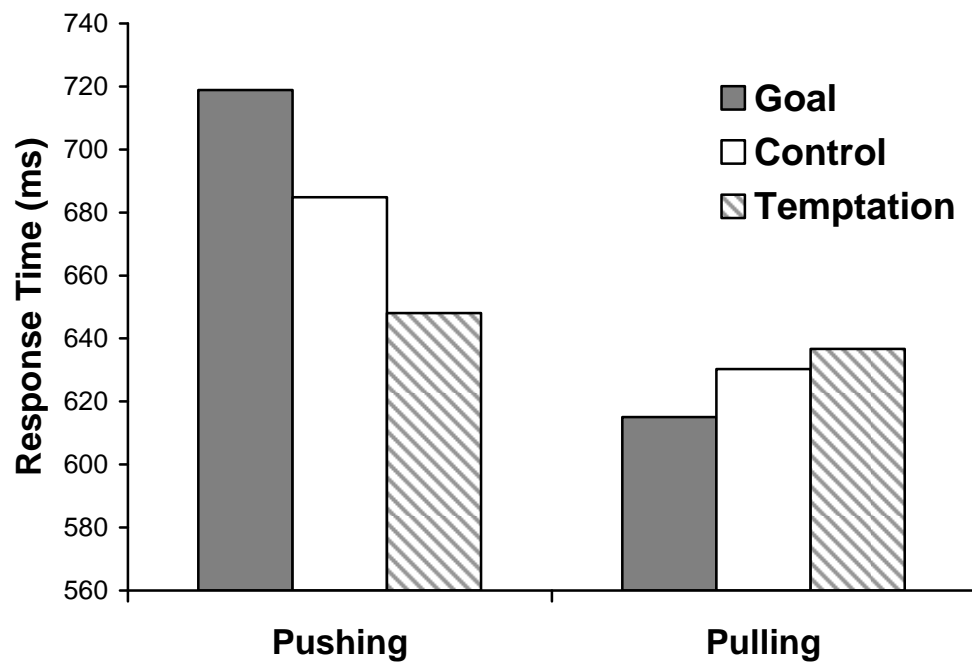


Figure 1: Response times for pushing versus pulling self-generated goal, control, and temptation targets

Note. Lower values indicate stronger predisposition.

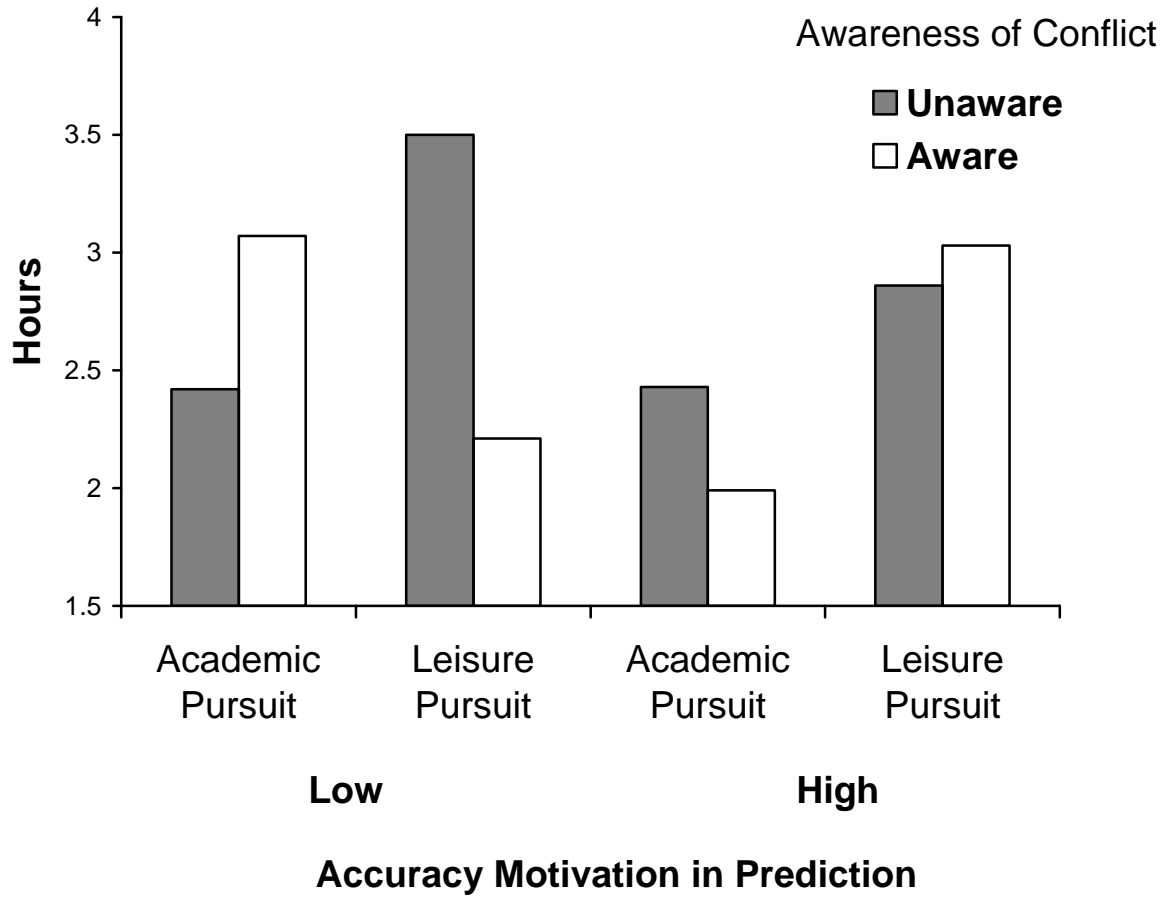


Figure 2: Predicted academic pursuit and leisure pursuit as a function of awareness of the self-control conflict and accuracy motivation

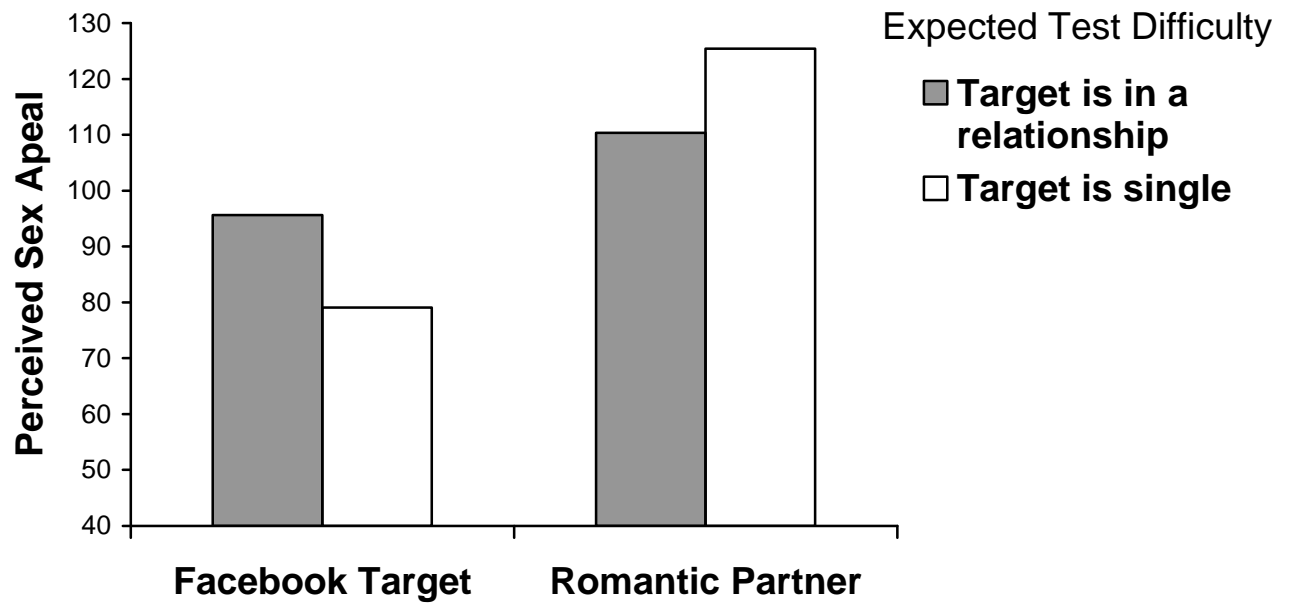


Figure 3: Perceived sex appeal of Facebook targets and participants' romantic partners as a function of Facebook targets' availability

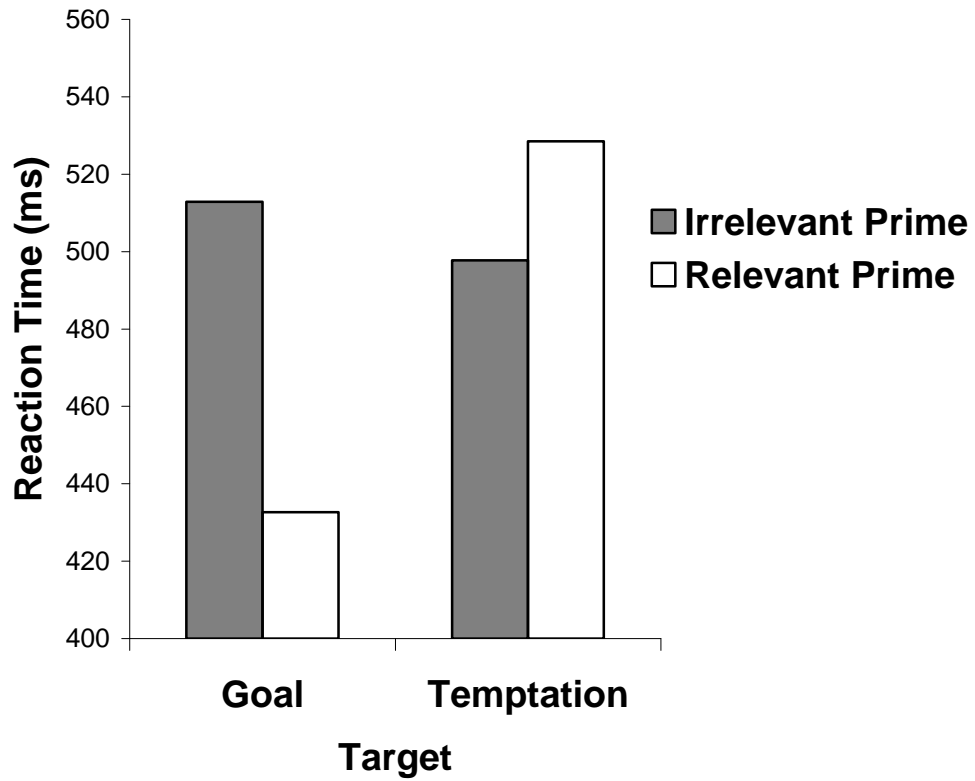


Figure 4. Reaction time for recognizing self-entered temptations and goals, following relevant versus irrelevant primes.

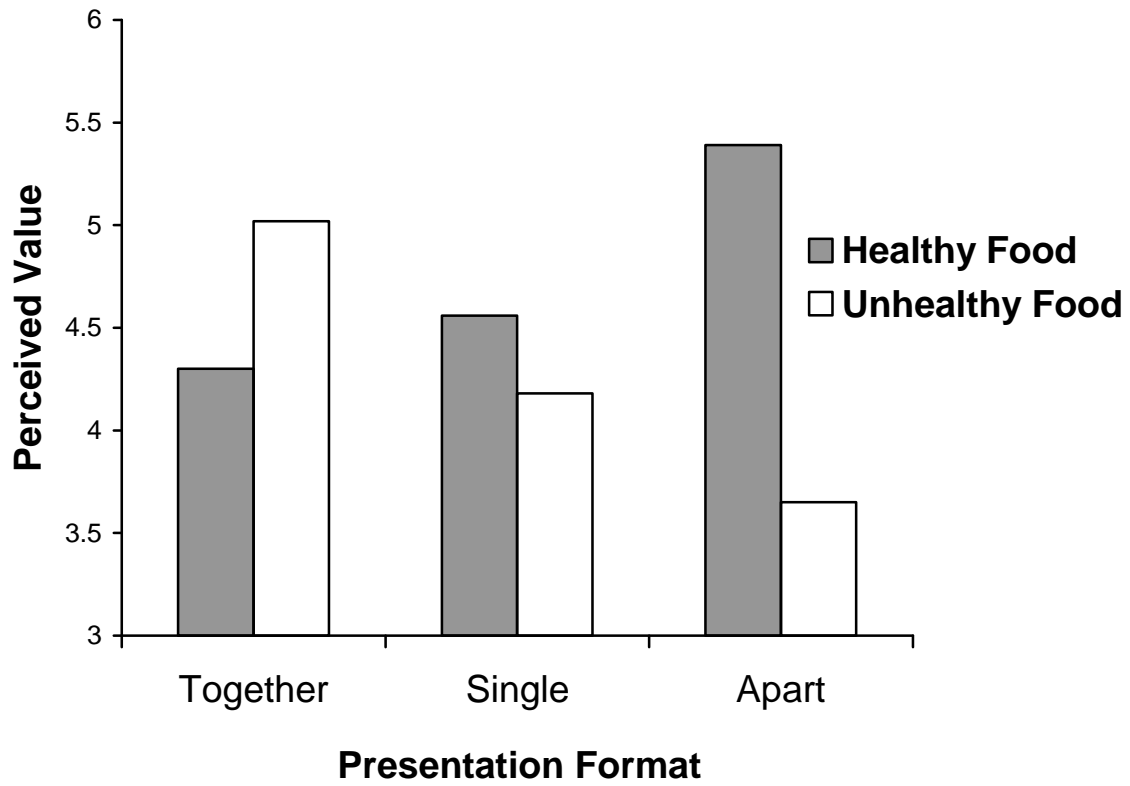


Figure 5: Perceived value of healthy and unhealthy food as a function of presentation format