Individuals face a self-control problem when the attainment of their overriding long-term interests comes at the expense of short-term but influential outcomes. For example, the boredom that is often associated with studying long hours is a price students have to pay in order to attain academic success, and the discomfort that is often associated with dieting or undergoing a medical checkup is a price people often have to pay in order to maintain good health. In many cases, individuals fail to pursue their goals because those goals do not seem sufficiently important, or because they feel they lack the means that are required to achieve those goals. Self-control problems represent a special type of motivational conflict. Individuals may want to pursue their goals. They may also have the prerequisite knowledge, skill, and opportunity. Nevertheless, short-term outcomes may tempt those individuals to act against their long-term interests. For example, a dieter may want to lose weight and know what is required to achieve this goal. Nevertheless, the smell of baking cake may lead this person to break the diet. Similarly, a student may want to study for an important exam, know how to study for the exam, and possess the required materials. Nevertheless, a beautiful spring day may be sufficiently tempting to prevent the student from studying for the exam and achieving the academic goals he or she has set. As these examples demonstrate, self-control problems arise when the pursuit of high-order goals with long-term benefits does not coincide with the pursuit of low-order goals (i.e., desires and temptations) with short-term benefits.

Self-control phenomena have been studied by theoreticians and researchers across different behavioral science disciplines, including 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; Mischel & Patterson, 1976; Rachlin, 2000). In recent years, there has been an upsurge in interest in self-control failures, the antecedents of such failures, and their maladaptive psychological consequences (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister & Heatherton, 1996; Baumeister, Heatherton, & Tice, 1994; Loewenstein, 1996). Surprisingly, there has been a relatively small amount of research on the strategies individuals employ to overcome temptation. Walter Mischel’s seminal research on delay of gratification has demonstrated that the cognitive strategies children employ when facing a conflict between immediate and delayed rewards (e.g., distraction, abstract representation of the immediate reward) determine their ability to wait for the larger delayed reward (Mischel & Mischel, 1999; Mischel, 1974; Mischel, Shoda, & Rodriguez, 1989). However, beyond the delay-of-gratification paradigm, there has been little systematic research on self-control strategies, the conditions that give rise to the use of those strategies, and the consequences of their use for the attainment of one’s goals.

To address these issues, we have conducted a program of research on counteractive control—namely, on how people protect their high-order goals against the influence of low-order temptations. Based on counteractive control theory (CCT—Fishbach & Trope, 2005; Trope & Fishbach, 2000), this research assumes that when low-order temptations threaten the attainment of high-order goals, people proactively employ counteractive control designed to offset the influence of low-order temptations on their behavior. Counteractive control is often an intentional process of committing to high-order goals and eliminating tempting alternatives. For example, dieters may deliberately plan to impose real and mental sanctions on themselves for failure to follow their self-imposed dietary constraints. Counteractive control may also be an unconscious process. For example, the temptation to have fatty food may automatically bring to mind thoughts about the goal to lose weight, which in turn may alter the dieter’s motivation to order this food in a restaurant. The present chapter describes a program of research on these deliberative and implicit counteractive control processes. We start with a general description of the process of counteractive control. Next, we describe research on specific counteractive control strategies, what activates them, and how they help people overcome temptation. We end with a review of research bearing on the goal-directedness and flexibility of counteractive control processes.

### Counteractive Control

In order to accomplish high-order goals, individuals need to resist the momentarily salient, yet lower-priority, desires or temptations with which these goals are in conflict. CCT assumes that temptations are defined within a given situation and with respect to the overriding goals at hand. This context-specific definition of temptations suggests that any personal goal can potentially constitute an interfering temptation with respect to another higher-level goal. For example, while “working out” may be perceived as interfering with the pursuit of higher-order academic objectives, this activity may in itself represent a goal that is disrupted by other low-order enticements, such as the consumption of unhealthy food. Thus the immediate cost of studying is that one has to give up on a workout, whereas the immediate cost of keeping in shape is that one has to give up on one’s favorite foods.

In response to temptations, individuals engage in self-control operations designed to protect their long-term interests (Dhar & Wertenbroch, 2000; Gollwitzer, 1999; Kivetz & Simonson, 2002; Kuhl, 1986; Metcalfe & Mischel, 1999; Muraven & Baumeister, 2000; Trope & Fishbach, 2000). Specifically, the presence of temptations influences behavior in two opposite directions. Directly, temptations act to decrease the likelihood of acting according to high-order goals. However indirectly, temptations elicit counteractive control operations, which in turn act to increase the likelihood of acting in line with goals. For example, an invitation to go out on the night before an important exam directly decreases the likelihood of studying, but it may further set into action counteractive bolstering of the value of studying, which increases the likelihood of engaging in this activity. On a cold winter night, the perceived attractiveness of going out is small, and little or no counteractive control will be exercised. However, on a beautiful spring night, the greater threat to studying may elicit more intensive counteractive control efforts. As a result, a student who is tempted to go out on a beautiful spring night may study at
least as much as a student who is not tempted
to go out on a cold winter night. In itself, the
attractiveness of going out acts to diminish the
motivation to study. However, the counterac-
tive control efforts elicited by the anticipated
pleasure of this activity may prevent the antici-
pated pleasure from actually affecting the time
that a student devotes to studying.

CCT assumes that counteractive control is a
flexible, goal-directed process. Counteractive
control therefore depends on the value of the
high-order goal and on the absence of alter-
native means of overcoming temptation and
shielding one's long-term interests. It is only
when low-order motives are expected to inter-
face with the attainment of important goals,
and when external controls over one's behav-
iors are absent, that counteractive control pro-
cesses are set into action and determine the at-
tainment of high-order objectives.

Self-control dilemmas are often experienced
as an internal conflict that is resolved by em-
ploying a variety of metacognitive strategies
such as precommitments (Green & Rachlin,
1996; Rachlin & Green, 1972; Thaler, 1991),
self-imposed penalties and rewards (Ainslie,
1975; Becker, 1960), and the formation of
implementation intentions (Gollwitzer, 1990;
Gollwitzer & Brandstätter, 1997). CCT ac-
knowledges the contribution of these high-level
self-control strategies to the resolution of self-
control dilemmas. However, CCT further pro-
poses that self-control dilemmas may be re-
solved outside of conscious awareness and
without intentional planning. In this respect,
CCT is consistent with past research on auto-
matic goal pursuit (e.g., Aarts & Dijksterhuis,
2000; Bargh & Chartrand, 1999; Bargh &
Ferguson, 2000; Bargh, Gollwitzer, Lee-Chai,
Barndollar, & Troetschel, 2001; Moskowitz,
Gollwitzer, Wasel, & Schaal, 1999; Shah &
Kruglanski, 2003), which has demonstrated that
individuals are sometimes unaware of the
origins of their goals, their choice of means,
and the actual pursuit of these goals. CCT goes
beyond this research by proposing that implicit
counteractive control may be elicited by situ-
tional cues and at the same time may act to off-
set the influence of these cues on behavior (e.g.,
Fishbach, Friedman, & Kruglanski, 2003;
Fishbach & Shah, 2006; Gollwitzer, Bayer, &
McCulloch, 2005; Moskowitz et al., 1999). In
what follows, we describe some of the deliber-
ate and implicit counteractive control strategies
our research has explored.

Deliberate Counteractive Control

Self-Imposed Penalties

Individuals may attempt to ensure that they
pursue their high-order interests by imposing
on themselves penalties ("side bets") for failing
to do so (Ainslie, 1975; Becker, 1960). These
self-imposed penalties may then actually pre-
vent individuals from deviating from their goal
pursuits. We investigated this strategy in a
study that manipulated the short-term costs of
undertaking an activity that had long-term
benefits. The question we addressed in this
study was how short-term costs affect the mag-
nitude of self-imposed penalties (Trope &
Fishbach, 2000, Study 1). We offered partici-
pants an opportunity to take a diagnostic test
that required abstinence from food containing
glucose for either a short period of time (6
hours) or a long period of time (3 days). The
period of abstinence manipulated the costs of
completing the test. 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. In line with CCT, they
came to set higher penalties for failure to com-
plete a long period of abstinence than a short
period of abstinence. Since in itself, a long per-
iod of abstinence increases the likelihood of
failure and thus the likelihood of having to pay
the monetary penalty, we concluded that par-
ticipants used the penalties to ensure that the
abstinence did not prevent them from attaining
the useful feedback.

Self-Imposed Reward Contingencies

Individuals may change choice situations by
making a reward contingent on performing an
activity. We examined this strategy by assess-
ing participants' interest in making a bonus con-
tingent upon completing a test (Trope &
Fishbach, 2000, Study 2). Participants were of-
fered an opportunity to take part in a study on
the risk of heart disease that included a cardio-
vascular test, which was said to be highly diag-
nostic but to involve either a low or high degree
of physical discomfort. The participants were
also offered an extra course credit for undergo-
ing the test, and were asked to indicate whether
they preferred to receive the credit before or af-
after completing the test. Delaying the bonus
made it contingent on completing the test. As
predicted, those who expected the more painful
test showed a greater preference to receive the
bonus after the test—that is, to make the bonus contingent on actual completion of the test. By self-imposing this contingency, participants risked losing the bonus, but they also motivated themselves to complete the more painful cardiovascular test.

Self-imposed penalties and self-imposed contingencies for receiving a reward change the choice situation. By adopting these strategies, individuals precommit themselves to acting according to their long-term interests (Brickman, 1987). Individuals may precommit themselves more directly by eliminating action alternatives and thus making their decision to act irreversible (Ainslie, 1975; Green & Rachlin, 1996; Rachlin & Green, 1972; Schelling, 1978, 1984; Strotz, 1956; Thaler, 1991; Thaler & Shefrin, 1981). For example, people may choose to eliminate the presence of cigarettes, alcohol, or high-calorie food in order to increase the likelihood of pursuing a healthy lifestyle. By adopting this strategy, people eliminate their future freedom of choice, which they ordinarily seek to maintain (Brehm, 1966), in order to secure the attainment of high-order interests.

**Bolstering the Value of an Activity**

Other counteractive control strategies change the meaning of choice alternatives. People may selectively process information about these alternatives in order to increase the value of adhering to high-order goals and decrease the value of low-order temptations (e.g., Kuhl, 1986; Mischel, 1984). The value of high-order goals is increased by linking the attainment of these goals to self-standards. Failure to pursue these goals is then construed as a violation of important values and a threat to people's sense of self-worth (Bandura, 1989). In addition, people may bolster the value of attaining their goals by elaborating upon what makes attainment of these goals important and emotionally gratifying (Beckmann & Kuhl, 1985; Fishbach, Shah, & Kruglanski, 2004; Kuhl, 1984).

In a study that tested for counteractive evaluations (i.e., individuals' tendency to bolster the importance and perceived interest of an activity that serves a high-order goal but has immediate costs), participants were offered to take a test of the influence of glucose intake on their cognitive functioning (Trope & Fishbach, 2000, Study 3). As in our previous study, the test was described as requiring abstinence from food containing glucose for either a long or a short period (3 days vs. 6 hours). We then found that participants evaluated the test more positively when it required a long period of glucose abstinence than when it required a short period of abstinence. Furthermore, this study also assessed participants' intention to take the test. A series of path analyses conducted on behavioral intentions revealed that in itself, a long versus short period of abstinence directly decreased participants' interest in taking the test. But indirectly, a long versus short period of abstinence elicited bolstering of the value of the test, which in turn increased participants' interest in the test. These direct and indirect effects canceled each other out, suggesting that counteractive bolstering of the value of a costly test prevented the physical discomfort of the test from diminishing participants' interest in undergoing the test.

The counteractive control processes described thus far proactively change the motivational givens of choice situations, thereby increasing the likelihood of adhering to long-term interests. These processes are deliberate and may require some level of conscious awareness, intentionality, and processing resources. As such, they may depend on cognitive load, time pressure, mood, fatigue, and prior self-control efforts (see also Baumeister et al., 1998; Mischel, 1996; Muraven & Baumeister, 2000; Trope & Neter, 1994; Vohs & Heatherton, 2000). In the rest of this section, we explore the possibility that deliberate counteractive control strategies are supplemented and even supplanted by more implicit forms of counteractive control, which are elicited automatically and are less susceptible to depleted mental resources.

**Implicit Counteractive Control**

Individuals may engage in counteractive control without realizing that they are trying to overcome temptation. They may be aware of the presence of a temptation and consciously try to bolster the value of their higher-order goal, without recognizing the relationship between the temptation and the bolstering responses. For instance, students may not fully recognize the relationship between an enhanced evaluation of an upcoming exam and the presence of their favorite television show, which poses a temptation to give up studying. Individuals may thus see their biased evaluations as reflecting the inherent value of differ-
ent choice alternatives rather than as a mechanism that directs their choice among these alternatives. In these cases, the temptations and the overriding goals are processed consciously. It is possible, however, for the temptation to elicit counteractive control automatically without conscious awareness. The studies described below were designed to test this possibility.

**Implicit Counteractive Activation**

CCT proposes that when a temptation is made salient, individuals may respond by directing their attention to the overriding goal. Consistent with this proposal, we found that students who were asked to describe their favorite social activities subsequently elaborated on the value of studying, and as a result were more likely to study for their exams (Troepe & Fishbach, 2000, Study 3). A similar process of goal activation by temptation may take place more implicitly when people are unaware of the presentation of temptation-related primes. Moreover, not only temptations elicit automatic goal activation (i.e., greater goal accessibility); the presentation of goal-related primes can elicit inhibition of concepts related to temptations (i.e., weaker temptation accessibility) (Fishbach et al., 2003; Shah, Friedman, & Kruglanski, 2002).

These processes were explored in a series of studies that assessed (1) the activation level of a construct representing a potential goal after a subliminal presentation of a construct representing a potentially obstructive temptation, and (2) the activation of temptation constructs after presentation of goal constructs (Fishbach et al., 2003). These studies found that temptation-related concepts facilitated the activation level of goals (as indicated by faster lexical decision times), whereas goal-related concepts inhibited the activation of temptations (as indicated by slower lexical decision times). For example, one of these studies used participants’ self-reported goals and temptations to obtain goal–temptation pairs such as *study–basketball* or *faithful–sex*. It was then found that goal-related keywords (e.g., *study*) were more quickly recognized following subliminal presentation of temptation-related keywords (e.g., *basketball*), whereas temptation recognition was inhibited by goal primes (Fishbach et al., 2003, Study 1). This was taken as evidence for implicit counteractive control, because participants were unaware of the subliminally presented goal and temptation stimuli.

Using a similar sequential priming procedure, another study (Fishbach et al., 2003, Study 2) found that this temptation-elicited goal activation was independent of cognitive load (memorizing a nine-digit number). Participants under cognitive load and participants under no load were equally likely to activate concepts representing a goal after being primed with concepts representing temptation, and they were also equally likely to inhibit concepts representing temptation after being primed with goal concepts. For example, independent of load conditions, temptation primes (e.g., *drugs*) facilitated the activation level of targets related to religious goals (e.g., *bible*), whereas religious primes inhibited the activation of targets related to temptations.

Other studies (Fishbach et al., 2003, Studies 4–5) found a direct link between implicit activation patterns of this sort and successful resolution of a self-control dilemma. These studies found, for example, that dieters activated concepts related to dieting in response to fatty food primes. As a result, after being exposed to food primes, dieters were more likely to choose a healthy snack over a fatty snack in a subsequent choice task. It seems likely, then, that as a result of counteractive control individuals associate temptations with concepts related to an overriding goal, and these associative patterns may then shield them against the detrimental effect of temptations.

**Implicit Counteractive Evaluation**

Keeping an overriding goal at the forefront of attention diminishes the value of acting according to short-term preferences. However, people may also directly decrease the value of succumbing to a temptation by attending to its negative affective aspects and by attending to the positive aspects of an overriding goal. These counteractive evaluations may take an explicit form when, for instance, individuals elaborate upon what makes the attainment of some goals important and emotionally gratifying (Fishbach & Trope, 2005; Kuhl, 1984; Trope & Fishbach, 2000). They may also be expressed more implicitly in the form of an implicit evaluation.

We used an evaluative priming procedure to investigate implicit counteractive evaluations (e.g., Bargh, Chaiken, Govender, & Pratto, 1992; Fazio, Jackson, Dunton, & Williams, 1995; Fazio, Sanbonmatsu, Powell, & Kardes,
1986). We predicted that counteractive evaluations would produce asymmetrical shifts in subjective value: Accessible goal-related constructs would undermine the value of temptation, whereas accessible temptation-related constructs would augment the value of the goal.

In one study (Fishbach, Zhang, & Trope, 2007, Study 1), we manipulated goal accessibility by asking participants to unscramble sentences that included words related to achievement (e.g., ambitious, excellent) or not (Bargh & Chartrand, 2000; Srull & Wyer, 1979). We then measured the implicit evaluation of academic and nonacademic concepts in a second task that assessed the time for categorizing positive and negative target words after subliminal academic (e.g., study) and nonacademic (e.g., movie) primes. As expected, when achievement goals were accessible (vs. the control condition), subliminal nonacademic primes facilitated the categorization of negative targets, whereas subliminal academic primes facilitated the categorization of positive targets. For example, nonacademic primes facilitated categorization of cancer, whereas academic primes facilitated love.

Another study (Fishbach et al., 2007, Study 4) manipulated the accessibility of temptations, this time in the domain of healthy eating. Participants, who were all weight watchers, evaluated pictures depicting unhealthy food items (e.g., chocolate cake, ice cream) versus neutral pictures in the control condition. We then measured the implicit evaluation of unhealthy versus healthy food concepts (e.g., pizza vs. salad), using a similar evaluative priming procedure. In the condition of accessible temptations, we found a counteractive boost in the implicit value of healthy foods. Furthermore, a greater accessibility of unhealthy foods undermined the implicit value of these foods. These results further demonstrate that when faced with self-control conflicts, individuals engage in implicit counteractive evaluations that increase the value of the goal in response to temptation-related cues, and decrease the value of temptation in response to goal-related cues.

Implicit Dispositions toward Goals and away from Temptations

While exercising self-control, individuals often choose to keep tempting objects out of sight and far from reach, while maintaining a close proximity to other objects that are more closely associated with their long-term objectives (Ainslie, 1992; Rachlin & Green, 1972; Schelling, 1984; Thaler & Shefrin, 1981; Wertensbroch, 1998). For example, foreseeing the self-control problems that the presence of cigarettes, alcohol, or culinary delights may induce, people sometimes choose to eliminate these objects from their houses; or, foreseeing the problems that a previous romantic partner may impose, a person sometimes moves to a different city or job.

A series of studies by Fishbach and Shah (2006) examined a more implicit form of these counteractive tactics. The method was based on the finding reported by Solarz (1960), and then by Bargh and his colleagues (Chen & Bargh, 1999; Duckworth, Bargh, Garcia, & Chaiken, 2002), that people are faster to pull a lever toward them to indicate an approach orientation and to pull a lever away from them to indicate an avoidance orientation. Fishbach and Shah found that while participants tended to automatically approach stimuli related to goals (through faster pulling responses), they avoided temptation stimuli (through faster pulling and pushing responses). Interestingly, the participants' tendency to avoid temptations increased in direct proportion to their explicit evaluation that these temptations were indeed attractive for them, and it had instrumental value in offsetting individuals' original tendency to approach tempting stimuli. For example, successful (vs. less successful) student participants responded faster with pulling (i.e., approaching) when presented with academic stimuli (e.g., studying), and with pushing (i.e., avoiding) when presented with nonacademic stimuli (e.g., partying). These tendencies increased with the perceived attractiveness of nonacademic temptations during a break in the academic schedule, when they did not pose a threat for goal attainment (Fishbach & Shah, 2006, Study 3).

Moreover, the tendency to automatically approach goals and avoid temptations facilitated the attainment of high-order interests. For example, in another study (Fishbach & Shah, 2006, Study 4), reaction times for pulling academic goals (e.g., library, homework) and pushing nonacademic temptations (e.g., travel, party) predicted student participants' grade point averages. Similarly, participants who were asked to pull (i.e., approach) in response to academic-related concepts, and to push (i.e.,
avoids) in response to nonacademic concepts, were planning to invest more time in their homework than were students who completed the opposite categorization task. These findings suggest that implicit approach and avoidance predispositions of this sort may play an important role in adhering to high-order goals.

Taken together, the studies described in this section shed light on the counteractive control strategies people employ when they anticipate situations that pit low-order temptations against high-order goals. These strategies change the motivational givens of the choice situation in order to secure the attainment of high-order goals. The greater the temptation to abandon the goals, the more likely people are to exercise counteractive control, and as a result to remain committed to pursuing their goals. The research described in this section further demonstrates that counteractive boosting of high-order goals and the resulting resistance to temptation may be implicit processes. These implicit operations are important, since they enable people to successfully implement their goals under conditions of depleted resources and whenever there is an advantage for responding quickly. Implicit counteractive control of this sort produces an implicit inoculation against situations that pose a threat to people's long-term objectives. This implicit inoculation mechanism may then free the individuals to set high-level goals without having to exert much effort in resisting immediate temptations.

THE FLEXIBILITY OF COUNTERACTIVE CONTROL

CCT assumes that counteractive control is a flexible, goal-directed mechanism that is set into action when low-order temptations interfere with individuals' pursuit of their high-order interests. The research described in the earlier section supports this assumption by showing that counteractive control processes are contingent on exposure to low-order temptations that interfere with pursuing goals. In this section, we explore two additional hypotheses that follow the assumption that counteractive control is a flexible self-control process. The first is that counteractive control is goal-dependent. That is, individuals will exert more counteractive control when low-order desires threaten important rather than unimportant goals. Once a goal is achieved, counteractive control will cease. The second hypothesis is that counteractive control is substitutable. That is, counteractive control will be exerted when it is necessary for achieving goals. When other, external means of control are in place, counteractive control will cease.

Goal-Dependent Counteractive Control

CCT assumes that counteractive control efforts are means to the end of attaining long-term interests. One could argue, however, that these efforts have intrinsic value—that overcoming temptations is challenging in and of itself (Atkinson & Feather, 1966; Brehm & Self, 1989; Brehm, Wright, Solomon, Silka, & Greenberg, 1984). One could also argue that temptations activate counteractive evaluations inflexibly, regardless of people's goals. Our findings that counteractive control actually helps individuals attain their goals indirectly support the goal-directedness assumption of CCT. Several studies, described below, provide a more direct test of this assumption.

Goal Importance

If counteractive control is goal-dependent, then it should depend on the importance individuals place on the threatened high-order goal. This hypothesis was originally tested in the study on the self-imposed contingencies for receiving a reward (Trope & Fishbach, 2000). Recall that in that study, participants made a bonus contingent upon completion of a cardiovascular test when the test was described as physically painful. This study also assessed the importance participants placed on maintaining good health, before the information about the cardiovascular test was handed out. We found that only participants to whom maintaining good health was an important value preferred the bonus to be contingent on completing the painful test. The rest of the participants, to whom health was a less important value, tended to choose according to simple economic considerations—accepting the bonus before rather than after completing the test. It seems, then, that short-term costs do not elicit counteractive control unless they threaten central values.
Goal Completion

If counteractive control is goal-dependent, then it should be employed before rather than after goal completion. We tested for this hypothesis by assessing counteractive bolstering of the value of studying for an important exam before and after the exam, and as a function of priming social motives that interfere with studying (Troepe & Fishbach, 2000, Study 5). Before an exam, bolstering the value of studying may have instrumental value in helping students prepare for the exam. After the exam, studying is no longer a goal, and bolstering its value can only reduce the dissonance created by what the students had to sacrifice in order to pursue this activity (Aronson, 1997; Cooper & Fazio, 1984; Festinger, 1957; Shultz & Lepper, 1996).

Participants in this study were students 1 week before or after taking a midterm exam in an introductory psychology course. A temptation to abstain from studying was primed by asking half of the students to elaborate on their social lives. These questions were followed by questions regarding the value and importance of the exam, which assessed counteractive bolstering of studying. Consistent with our predictions, we found that priming of competing social motives led students to bolster the importance of studying before taking the exam, but not after taking it. After the exam, social priming had no effect on evaluations, which were generally low. Moreover, a series of path analyses indicated that evaluative bolstering enhanced students’ performance on the upcoming exam. Specifically, before the exam, social priming directly impaired performance on the exam, but indirectly this priming manipulation led participants to bolster the value of studying, which in turn predicted relatively high grades on the exam. These opposite effects of social priming canceled each other out, so that overall counteractive control prevented social priming from impairing grades on the exam. This pattern of results was not obtained 1 week after the exam, when counteractive bolstering of the value of studying no longer had any instrumental value. Consistent with the goal-directedness assumption, these findings suggest that counteractive control is exercised only when there is an important goal at stake.

Goal-Dependent Implicit Counteractive Control

Is implicit counteractive control goal-dependent? Does it depend on the importance of the over-riding goal? Recent studies have found evidence for flexibility and goal dependency in automatic evaluations (e.g., Ferguson & Bargh, 2004; Mitchell, Nosek, & Banaji, 2003). Does this also hold true for implicit counteractive control? To address this question, we examined whether an implicit devaluation of temptations depends on the presence of an accessible goal (Fishbach et al., 2007); as indicated earlier, only those who were primed with an achievement goal expressed an implicit negative evaluation of nonacademic temptations along with an implicit positive evaluation of the goal.

In yet another study, we tested for individual differences in chronically holding a goal. We predicted that only committed individuals (e.g., committed dieters) would express an implicit negative evaluation of temptations (e.g., fattening foods). This study assessed commitment to dieting by using a subset of the Restraint Eating Scale (Polivy, Herman, & Warsh, 1978; Ruderman & Besbeas, 1992), and it used an evaluative priming task similar to that of Fazio and colleagues (1995): It assessed the speed of categorizing negative and positive targets following subliminal presentation of concepts related to high-calorie food versus weight-watching primes. In support of the goal dependency assumption, subliminal food primes (e.g., candy, cake) facilitated the categorization of negative (vs. positive) targets, and subliminal weight-watching primes (e.g., diet, slim) facilitated categorization of positive (vs. negative) targets, but only for committed dieters. These effects were not observed among participants who were not trying to lose weight and therefore did not exhibit an implicit negative evaluation of temptations and positive evaluation of goals. Another study examined the effect of commitment to dieting on participants’ implicit dispositions toward approaching weight-watching concepts and avoiding food-related concepts (Fishbach & Shah, 2006, Study 2). As expected, participants showed faster response times for pulling (i.e., approaching) words related to weight watching, and pushing (i.e., avoiding) words related to high-calorie food, but only to the extent that they were concerned with watching their weight.

Commitment to dieting may also moderate the goal-activation-by-temptation effect. In a study that tested for this idea, participants completed a subliminal priming lexical decision task in which the targets were words related to dieting and the subliminal primes were either related to high-calorie food or not
18. Implicit and Explicit Counteractive Self-Control

(Fishbach et al., 2003, Study 4). Participants also indicated how important weight watching was for them, and how successful they were at watching their weight. It was then found that the more important weight watching was to participants, the faster successful (but not unsuccessful) self-regulators were to recognize diet-related targets following fattening food primes (but not control primes). In other words, only committed dieters who were successful at controlling their body weight associated food temptations with dieting. This pattern suggests that successful, more than unsuccessful, self-regulators developed implicit counteractive controls in direct proportion to their goal commitment.

In sum, the present studies on goal dependency provide consistent support for the assumption that counteractive control is a goal-directed process—a means to the end of securing the pursuit of long-term interests. Interestingly, both implicit and more deliberate forms of counteractive control show goal dependency. Individuals seem to exercise implicit or deliberate counteractive control only when important goals are at stake.

The Substitutability of Self-Control

The assumption that counteractive controls are goal-directed suggests that they are substitutable—namely, that they are set into action only in the absence of alternative, external means of control. Such alternatives often take the form of social controls, such as family members, employers, and other social agents that impose incentives, social norms, and rules designed to help individuals overcome temptations. Media censorship, and laws prohibiting substance abuse and gambling, are common examples of externally imposed controls. Organizations may encourage and even require their members to maintain their health by refraining from cigarette smoking, engaging in physical exercise, and undergoing periodic medical checkups. At a more informal level, individuals sometimes criticize their friends or family members for eating fattening food or overspending.

These external means of control may be sufficient to maintain a high probability of acting according to high-order goals, and may thus substitute for self-control. For example, the presence of social incentives to complete a boring drill may render counteractive bolstering of this activity unnecessary. In general, CCT predicts that in the absence of external control, counteractive self-control will be exercised, because it determines the likelihood of pursuing one's goals. However, in the presence of external control, counteractive self-control may become superfluous, as external control may be sufficient to maintain a high probability of acting according to high-order goals. External control may thus substitute for self-control.

Take, for instance, the effects of externally imposed controls on counteractive evaluation and actual choice of an option with long-term value. In the absence of externally imposed controls, self-control will be exercised and the option will be evaluated more positively when it is expected to have higher short-term costs. These prechoice counteractive evaluations in turn will offset the impact of the higher expected short-term costs on actual choice of the option. Thus, by eliciting greater counteractive control efforts, the higher expected short-term costs of an option should indirectly act to increase the likelihood of choosing the option. In contrast, in the presence of externally imposed controls, self-control efforts will not be exerted; as a result, the evaluation of the option will reflect its expected short-term costs. That is, in the presence of externally imposed controls, an option will be evaluated more negatively when it has higher short-term costs. However, externally imposed controls will prevent this evaluation from decreasing the likelihood of actually choosing the option. Thus, as is in the absence of externally imposed controls, the likelihood of choosing the option will not be diminished by its higher expected short-term costs.

These substitutability predictions were tested in a study that presented participants with an opportunity to take a diagnostic test of their cognitive functioning at night (Fishbach & Trope, 2005, Study 3). The immediate cost of taking the test was varied by scheduling the test either at a convenient early-night time (9:00 P.M.) or an inconvenient late-night time (1:00 A.M.). We further manipulated social control by either offering or not offering a large payment (approximately $20) for taking the test. Two forms of counteractive control were assessed. First, to assess self-imposed fines, participants were asked to indicate the amount of money they were preparing to pay as a cancellation fee if they failed to complete the test. Second, evaluative bolstering was assessed by the perceived value of the test. Finally, participants were asked to decide whether they actually intended to take the test.
Analysis of the self-imposed fines yielded the expected pattern, indicating that the fines unpaid participants imposed on themselves were higher when the test was scheduled at an inconvenient late-night time than when the test was scheduled at a convenient early-night time. In contrast, the fines paid participants imposed on themselves were unaffected by the time of the test. It appears that payment eliminated the need to use the fines as a self-control strategy. In other words, externally imposed control substituted for self-imposed penalties. Analysis of participants’ evaluations of the test yielded a similar pattern. Unpaid participants evaluated the test more positively when it was scheduled at an inconvenient time, whereas paid participants evaluated the test more positively when it was scheduled at a convenient time. Unlike unpaid participants, the evaluations by paid participants showed a more conventional effect of temporary inconvenience—that is, a less positive evaluation of the inconvenient test than of the convenient test. Paid participants apparently allowed the inconvenience of the test to diminish their evaluation of the test. As with self-imposed penalties, the promised payment substituted for evaluative bolstering of the inconvenient test.

In another study, external controls were instituted via social monitoring (Fishbach & Trope, 2005, Study 1). The study offered participants the opportunity to take a diagnostic test of their reading skills and assessed their evaluation of the test. The immediate price of taking the test was manipulated by describing the test as involving reading boring versus interesting short paragraphs. Social monitoring was manipulated by having the experimenter present or absent while participants made their decision whether or not to complete the test. As expected, participants bolstered the value of the boring (rather than interesting) test only in the absence of an experimenter in the room. Similar results were obtained in a study that primed social controls (Fishbach & Trope, 2005, Study 2). Participants were either primed or not primed with representations of others who expected the participants to study (e.g., a parent or a teacher). In addition, participants were either primed or not primed with activities that would interfere with studying (e.g., watching television, going to movies). We found that when external controls were not primed, the priming (vs. no priming) of distracting activities elicited more positive evaluation of studying. In contrast, when external controls were primed, the priming of distracting activities elicited more negative evaluation of studying. Thus, consistent with the substitutability assumption, priming social controls eliminated counteractive bolstering of studying, so that studying seemed less attractive when its immediate costs came to mind.

Overall, the results of these studies are consistent with the idea that self-control and external control are substitutable. An immediate temptation steers people away from activities that serve an overriding goal. In the absence of external means of control, individuals exercise counteractive control in order to overcome this temptation. The presence of external controls (e.g., representations of others, social monitoring, and external rewards) secures the attainment of important goals regardless of immediate temptations. As a result, in the presence of external controls, individuals’ evaluations of activities reflect, rather than counteract, the presence of those costs.

CONCLUSIONS

The research reviewed in this chapter has important implications regarding goal activation and hedonic conceptions of human motivation. A simple goal activation rule would suggest that activating a goal promotes its pursuit and inhibits activation and pursuit of conflicting goals (see e.g., Bargh & Chartrand, 1999; Bargh & Ferguson, 2000; Kruglanski et al., 2002; Shah et al., 2002). By this rule, activating social goals (e.g., partying) should increase the pursuit of social goals and inhibit achievement goals (e.g., studying). The research reviewed in this chapter suggests that this is not always the case. For example, we found that priming social goals before an exam promoted rather than weakened students’ commitment to studying and actually improved their performance on the exam (Trope & Fishbach, 2000, Study 5). It seems, then, that to predict how the activation of a goal affects behavior, it is necessary to take into account the relationship of that goal to one’s high-order, overriding interests. When a given goal (partying) interferes with the attainment of one’s high-order interests (doing well on an exam), activating the interfering goal promotes the pursuit of these interests rather than the interfering goal.
Similar considerations apply to hedonic conceptions of motivation. A simple hedonic rule would suggest that behavior is a function of the pleasure and pain with which it is associated. Attaching pleasurable outcomes to a behavior should increase its probability, and attaching negative outcomes to the behavior should decrease its probability. By this rule, nice weather should increase the likelihood that a student studying for an exam will abstant from studying. Similarly, the painfulness of a medical procedure should decrease the likelihood that it will actually be undertaken. The research on counteractive control suggests that behavior often violates this simple hedonic rule. For example, we found that describing a medical checkup as more painful increased participants’ commitment to undergoing the checkup (Trope & Fishbach, 2000, Studies 1–3). Thus attaching pleasurable outcomes to a behavior may reduce its attractiveness when the behavior is in conflict with high-order goals, and attaching painful outcomes to a behavior may increase its appeal when the behavior serves high-order goals.

These seemingly paradoxical exceptions to simple goal activation and hedonic rules may reflect the same counteractive control logic. Without counteractive control, an action becomes less attractive when it is implicitly or explicitly associated with high short-term costs. The sacrifices that are associated with weight watching, undergoing medical checkups, or studying act to reduce the attractiveness of engaging in these activities. Counteractive control, in both its implicit and deliberate forms, serves to increase the attractiveness of such activities in direct proportion to their short-term costs. As a result, counteractive control helps maintain a high probability of pursuing high-order goals, despite the short-term costs this may entail. This enables people to set goals and formulate plans for achieving them, with a sense of assurance that they will not be tempted to deviate from their plans in a way that they will later regret.

Our research suggests that counteractive control is a flexible, goal-directed process. First, people seem to exercise counteractive control when situational temptations threaten their ability to pursue important rather than unimportant high-order goals. Second, counteractive control decreases following the pursuit of a goal-related activity. Before performing an activity, counteractive control can help people choose and carry out the activity, whereas after performing the activity, counteractive control has no instrumental value and can only reduce dissonance and regret (Aronson, 1997; Cooper & Fazio, 1984; Festinger, 1957). Third, counteractive control is substitutable. People exercise self-control when it is necessary for achieving their high-order goals. When other means of control are in place (e.g., social agents or material rewards), counteractive control becomes superfluous and ceases.

The flexibility of counteractive control processes does not mean that they are necessarily based on deliberate reasoning. Past self-control research has been primarily concerned with high-level evaluative processes (Baumeister et al., 1998; Beckmann & Kuhl, 1983; Gollwitzer, 1990; Gollwitzer & Brandstätter, 1997; Mischel, 1984; Mischel, Cantor, & Feldman, 1996). The present research adds to this work by demonstrating more implicit forms of counteractive control that, like deliberate counteractive controls, shield high-order goals from low-order temptations. We believe that counteractive controls, like any other mental operation, may become automatized after being repeatedly and successfully employed in resolving self-control problems. As a result, individuals may need to engage in very little conscious deliberation in carrying out some or all of the steps of counteractive control.

The research described in this chapter may help shed new light on the processes of counteractive control, but important questions regarding the origins of counteractive controls, the relationships among different kinds of counteractive controls, and their consequences remain unexplored. One such question is how implicit controls develop. It seems plausible to suggest that these controls develop over repeated experiences at deliberate self-control attempts. Alternatively, implicit and deliberative counteractive controls may develop in parallel, as two independent sets of distinctive control systems that complement each other. Another question concerns the relationship between different counteractive control strategies, and specifically between deliberate and implicit controls. It is possible that different counteractive control strategies can substitute for each other or serve as a "backup system" in relation to each other. Alternatively, it is also possible that only a combination of counteractive control strategies enables successful pursuit of long-
term interests. We know very little about the operation and consequences of counteractive control when individuals are stressed, fatigued, or emotionally aroused. Does unavailability or underutilization of counteractive controls predict the self-control failures that have been documented in the self-control literature (see, e.g., Baumeister et al., 1994, 1998; Muraven & Baumeister, 2000)? We also know very little about how individuals assess their ability to control themselves, how perceived self-control is related to the availability and use of counteractive controls, and how perceived self-control affects specific outcome expectations and individuals’ general sense of self-efficacy. Future research addressing these questions would help advance our understanding of self-control as a unique facet of human motivation.

REFERENCES


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18. Implicit and Explicit Counteractive Self-Control


III. MOTIVATIONAL PROCESSES AND DIFFERENCES