Emotion
2007, Vol. 7, No. 2, 415–428

1528-3542/07/$12.00 DOI: 10.1037/1528-3542.7.2.415

Harnessing the Need for Immediate Gratification: Cognitive Reconstrual Modulates the Reward Value of Temptations

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Many of us succumb to temptations, despite knowing that we will later regret doing so. How can such behavior be avoided? In three studies, the authors tested the hypothesis that reconstruing temptation as a test of a valued internal quality ("willpower") would decrease the tendency to succumb by reducing the appeal of the temptation. In Study 1, participants who construed a challenging handgrip task as a test of willpower resisted the temptation to terminate the painful task longer than participants who did not. In Study 2, participants performed a handgrip task twice. Only participants who changed their construal of the task into a test of willpower improved their performance. In Study 3, participants took a timed math test while being tempted by comedy clips. Participants who reconstrued the situation as willpower test compared with participants who did not, (a) enjoyed the videos less, and (b) were better able to resist the tempting videos. These studies demonstrate that cognitive reconstrual can be used to modify reward contingencies, so that succumbing to temptation becomes less appealing, and resisting temptation becomes more appealing.

Keywords: delay of gratification, willpower, self-control, self regulation, temptation, construal, reconstrual, emotion regulation, individual differences

> . . .to set affection against affection, and to master one by another; even as we used to hunt beast with beast. . . For as in the government of states it is sometimes necessary to bridle one faction with another, so it is in the government within.
>
> —Sir Francis Bacon (1561–1626)

Temptations surround us. Sugar-coated donuts, unprotected sex, distracting TV shows, and mind-altering substances all promise immediate pleasure—and delayed suffering. Subtler temptations are also potential sources of harm to ourselves and others—driving too fast, speaking angrily, stopping our workout too early, and procrastinating are behaviors that many of us encounter (and perform) all too frequently. Our struggle against temptations is constant, and success is far from assured.

Few would dispute the claim that improved self-control would greatly enhance the quality of our lives. Chronic lack of self-control is a central feature in many clinical disorders (Heiby & Mearig, 2002; Strayhorn, 2002; Tangney, Baumeister, & Boone, 2004) and a good predictor of psychopathologies and problematic behaviors in children (Eisenberg et al., 2001; Krueger, Caspi, Moffitt, White, & Stouthamer-Loeber, 1996). Even outside the clinical realm, the ability to cope with temptation is a major predictor of important outcomes such as school performance, health behaviors, and substance abuse (Mischel, Shoda, & Rodriguez, 1989; Tangney et al., 2004). Yet despite the enormous importance of this topic, precious little is known about the methods that allow us to deliberately resist temptations. In this article, we review the techniques of deliberate self-control that have been studied to date and test a novel method of resisting temptations, which involves a single simple intervention.

Temptations

Many of the dilemmas we face in everyday life involve uncertainty about the future implications of our choices. However, in some dilemmas, we are certain that the thing we would like to do is something we will later regret. Indeed, a study by Fishbach, Friedman, and Kruglanski (2003) suggests that tempting objects may serve as reminders for the very goals they threaten to disrupt. In the context of the present work, we define "temptation" as "the desire to behave in a way that is expected to be regretted at a later time." Although people frequently behave in ways that are potentially regrettable, our focus is on the subset of behaviors that people fully expect to regret, even before they perform them.

It is important to emphasize that this definition does not include an element of probability ("maybe I'll regret it, and maybe I won't")—instead, one is certain that the desired behavior will lead to regret. In other words, the value of the delayed reward is acknowledged to be greater than the value of the immediate reward. When Hal is considering watching a late-night TV comedy instead of studying for tomorrow's early morning math exam, fully

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This research was supported by NIH Grant MH58147. We thank the members of WiP Lab (http://psych.stanford.edu/~wip_lab/) for their dedicated and meticulous work, and the members of the Stanford Psychophysiology Lab (http://psych.stanford.edu/~psyphy/) for their continued support and helpful advice. Special thanks also go to Carol Dweck, Maya Tamir, and two anonymous reviewers for their help with the preparation of this article. The first author also wishes to express his gratitude to his mother, whose wisdom, strength, and patience made this research (and, indeed, everything else in his life) possible.

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realizing that the former course of action will lead to a miserable morning and a poor grade and that the choice to watch TV will seem foolish in retrospect, Hal is facing a temptation. Another important feature of temptations is that they are person- and situation-specific: if Hal had no interest in the outcome of the exam, or if there were no exam to be taken, watching late-night TV would simply be an option, rather than a temptation.

The Need for Immediate Gratification

Succumbing to temptation (e.g., watching TV instead of studying) leads to immediate gratification (e.g., improved mood), but also to delayed negative outcomes (e.g., anxiety and poor performance on the exam). Conversely, resisting temptation (e.g., studying for the exam) does not necessarily feel good in the moment, but leads to delayed positive outcomes (e.g., the satisfaction of performing well on the exam). This schema of a "prototypical" temptation is depicted in Figure 1A. The problem such choices pose was captured by Thorndike's "Law of Effect" (1911) nearly a century ago, which states that actions

> . . .which are *accompanied or closely followed* by satisfaction. . . will be more likely to recur; those which are *accompanied or closely followed* by discomfort. . . will be less likely to occur. The greater the satisfaction or discomfort, the greater the strengthening or weakening of the bond [emphasis added].

Despite the lesser objective value of the immediate reward, the influence it exerts over our present choice is often greater than that of the objectively greater delayed reward. Time plays a critical role in our appreciation of future rewards, and it is now generally agreed by economists and psychologists that delayed rewards are discounted at a hyperbolic rate (Ainslie, 2001; Frederick, Loewenstein, & O'Donoghue, 2003; Kirby et al., 2002; Kirby & Guastello, 2001), a phenomenon that is known as "delay discounting." Simply put, we have a preference for immediate gratification:

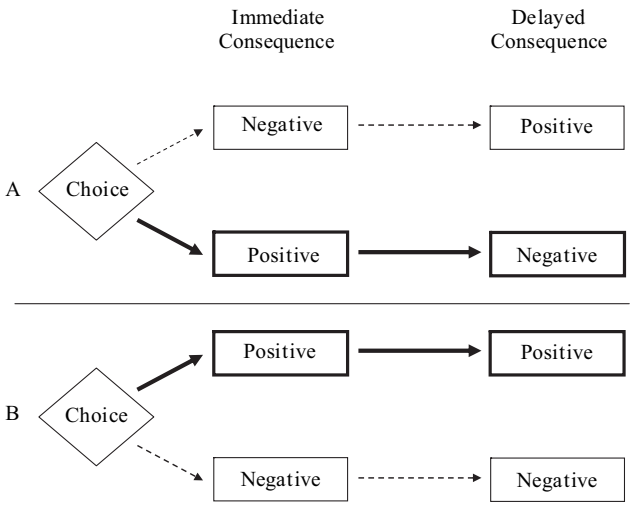

Figure 1. Schematic depiction of immediate versus delayed consequences of choices. The bold arrows represent a tendency to give greater weight to immediate consequences, despite possible delayed price. (A) Prototypical temptation situation; (B) Following successful cognitive reconstrual.

when a reward is immediately available to us, it may dwarf the larger, delayed reward, in much the same way that a person standing right in front of us may seem larger than a distant cathedral, despite the objective height difference between the two. In this way, behaviors that offer an immediate reward and a delayed punishment may seem more appealing than behaviors that offer only a delayed reward—and thus temptation is born.

Resisting the Need for Immediate Gratification

Self-control has been defined variously as the ability to override prepotent responses (Vohs, Baumeister, & Ciarocco, 2005), to overcome threats that short-term goals pose to long-term goals (Fishbach & Trope, 2005), or to act in accordance with perceived self-interests (Loewenstein, 1996). In the present context, we will use the term to denote the ability to resist temptations. Note that, in and of itself, the term "self-control" does not explain how a person may resist temptation; instead, it refers to the end result, the ability to make the "right choice" or to behave in the "right way." Two prominent lines of empirical research on human participants have addressed mechanisms that underlie self-control, and we turn to them next.

Classic studies of delay of gratification by Mischel and colleagues have identified attention-control as a key component of self-control (Metcalfe & Mischel, 1999; Mischel & Shoda, 1995; Mischel, Shoda, & Rodriguez, 1989). According to Mischel and colleagues, the ability to withhold attention from cues of the immediately available reward (e.g., the taste of the cookie) can help in resisting temptation, by preventing overarousal of the "hot" or "go" system (Mischel & Ayduk, 2004). Control of attention can be performed in various ways, ranging from physical removal of the tempting object to mental manipulations performed on its representation (e.g., by pretending that the object is really a picture). Thus, the successful control of attention decreases the salience of the immediate reward, thereby preempting the temptation. If Hal were able to pretend that the TV is broken and turn his attention away from the potentially rewarding TV, he would be successfully implementing this technique of self-control.

In a second line of investigation, Baumeister and colleagues have suggested that self-control relies upon a general and limited self-regulatory resource (Baumeister, Muraven, & Tice, 2000; Muraven & Baumeister, 2000; Muraven, Collins, & Neinhaus, 2002; Muraven, Tice, & Baumeister, 1998). This resource becomes depleted through use, resulting in a reduced capacity for resisting subsequent temptations. Using the self-regulatory resource allows one, despite the clear pull of the temptation, to ". . .inhibit, override, or alter responses that may arise as a result of physiological processes, habit, learning, or the press of the situation" (Schmeichel & Baumeister, 2004, p. 86). In applying this method of self-control, Hal would grind his teeth, turn to his desk, and practice for the math exam despite his desire to watch the TV show, quite literally willing himself to study.

Although the two approaches outlined above differ in many ways, both strive to resist temptations by using the same strategy: working against the need for immediate gratification, either by attempting to prevent its occurrence (through attentional control) or by overriding it (through the expenditure of self-regulatory resources). Although these methods can be effective, it is clear that

they come at a cost, demanding constant vigilance and sustained effort.

Harnessing the Need for Immediate Gratification

But what if we could use a different strategy altogether? What if, instead of combating our need for immediate gratification, we could harness its power to help us make the right choice? In order to be aided by our need for immediate gratification, the immediate rewards would have to be aligned with the delayed rewards, thus making the "right choice" more immediately appealing and the "wrong choice" less immediately appealing (see Figure 1B).

Although this proposition may seem unlikely at first pass, action identification theory (Vallacher & Wegner, 1987) suggests that people are capable of thinking about the same act in relation to different goals. A certain behavior (e.g., watching TV) may be highly beneficial in relation to one goal (e.g., feeling amused), but deleterious in relation to another (e.g., feeling prepared for an exam). Therefore, shifting attention between goals can have a profound effect on the perceived desirability of a behavior (Carver, 2004; Carver & Scheier, 1982). But if simply thinking about the delayed costs could turn the temptation into an unappealing choice, why do people still procrastinate, break diets, or fail to exercise regularly? The phenomenon of delay discounting can explain such failures. When goals cannot be achieved immediately, their subjective value is easily overwhelmed by an opportunity to satisfy an immediately attainable (though less important) goal. In order to change the immediate reward value of available behaviors, one must attend to a goal that can be achieved immediately.

We propose that by thinking about the situation in a different way (i.e., through cognitive reconstrual), it should be possible to modulate the immediate reward contingencies of each response, in a manner that would align the immediate reward with the delayed reward (see Figure 1B). If we were to think of behavior in the face of temptation as a source of information about an important aspect of the self (Carver & Scheier, 1982), we would expect to see a reversal (or, at the very least, a modulation) of the immediate reward contingencies related to succumbing and resisting.

This method of overcoming temptation through cognitive reconstrual is different from the two methods we reviewed in the previous section. The attention-control methods that Mischel and colleagues have explored aim to remove attention from the gratifying aspects of the temptation at hand, without necessarily changing the meaning of possible responses to temptation. By contrast, cognitive reconstrual aims to change the meaning of possible responses to the temptation at hand, in order to make succumbing less appealing, while making resisting more appealing. The self-regulation methods that Baumeister and colleagues have explored call for effortful resistance to a strong impulse to succumb to temptation. By contrast, successful reconstrual should result in a reduced impulse to succumb to the temptation at hand, or a stronger impulse to resist it.

One important aspect of the self that the response to temptation could provide information about is one's perception of one's willpower. Thus, if Hal were to reconstrue his dilemma as a test of willpower, turning to the TV may suddenly seem less appealing because it would instantly imply a weakness of will. Similarly, studying for the math exam may become more rewarding due to the immediate sense of accomplishment that would follow. In this way, the need for immediate gratification can be harnessed to help us make the "right" choice.

The Present Studies

In the present studies, we test the efficacy of cognitive reconstrual in resisting temptations, using "a test of willpower" as the alternative construal.[1] Study 1 tests the hypothesis that construal influences performance in a challenging physical task. Study 2 replicates and extends the findings from Study 1, testing the within-participants effect of changes in construal on repeated performance. Study 3 tests the between- and within-participants effect of cognitive reconstrual in an entirely different setting, in which sustained attention, rather than physical exertion, is required of participants. In addition, the last two studies test the mechanism underlying this phenomenon by examining the way in which reconstrual influences the immediate reward-value of choices related to temptation.

Study 1: Construal and Physical Effort

The goal of our first study was to examine the relation between task construal and task performance in the context of a physically demanding task. Participants were instructed to maintain their grip on a hand dynamometer for as long as they were able to, at a threshold set to 70% of their maximum grip strength. Participants then reported what they believed the task measured. This task, though simple, requires self-control on the part of participants, since pain and muscle fatigue both tempt the participants to release their grip, and bring an end to their discomfort.[2] As an initial exploration of manipulating task construal, we suggested to half of the participants that this task is "used often as a test of willpower," since it is ". . .custom-tailored to each participant's strength."

According to our proposed framework, construing an unpleasant task as a measure of a desirable internal quality (either due to a natural inclination or as a result of an external suggestion) should modulate the immediate reward value of choices and behaviors that relate to this task. In this way, the "naturally unpleasant" choice becomes more rewarding (as it now signifies possession of the desirable quality), and the "naturally pleasant" choice loses some of its appeal (as it now signifies a lack of the desirable quality). Therefore, we hypothesized that participants who construed the maintained grip task as a test of a desirable quality (willpower) would maintain their grip for a longer duration than participants who construed the task as a measure of more common

[1] We chose this construal after pretesting revealed that "willpower" is regarded as a highly desirable internal quality in the population from which we were sampling. There are, of course, many possible construals that might be used, and we make no claims about the relative advantages and disadvantages of using this particular construal over another (e.g., "test of willpower," vs. "opportunity to show compassion").

[2] We take the fact that virtually all participants maintained their grip for longer than a few seconds (at which point the task becomes painful) as evidence for participants' motivation to maintain their grip despite discomfort. Since this motivation (aiming at a relatively long-term outcome) is opposed by the urge to terminate the painful experience (driven by the need for immediate gratification), this simple situation can be used as an example of temptation.

qualities, which are presumably less valued (e.g., forearm strength).

Method

Participants

Thirty-eight undergraduate students (16 males) participated in this experiment in return for partial fulfillment of a course requirement. Participants ranged in age from 18 to 28 years ($M = 19.2$, $SD = 1.7$). Ethnically, the sample consisted of 40% Caucasians, 18% African Americans, 11% Asians, 8% Hispanics, and 10% who identified as multiethnic. The remaining 13% declined to state their ethnic background.

Materials

Hand dynamometer. In order to perform the challenging physical task, participants used a Lafayette Instrument Company hand dynamometer (Model 78010). The device consists of a handgrip and a dial that indicates the force with which the handgrip is squeezed. In all grip tasks, participants squeezed the dynamometer with their palm facing down, while the experimenter positioned the dial end of the dynamometer so that it was parallel to the floor and facing up.

Maximum grip strength. In order to control for individual variation in strength, we measured individual strength by instructing participants to squeeze the dynamometer as hard as they could, for 3 seconds, prior to the maintained grip task.

Maintained grip task. Participants were instructed to squeeze the dynamometer and keep the indicator above a target threshold (indicated by red mark) for as long as they were able to. The threshold was set at 70% of their maximum grip strength.

Construal of maintained grip task. In order to assess participants' construal of the maintained grip task, participants were asked to complete in writing (after performing the maintained grip task) the following sentence: "In my opinion, the ability to squeeze a handgrip for a long time is a good measure of. . . (you may write more than one thing, if you wish)." Two coders, who were blind to participants' group membership and performance, independently judged whether or not the answer referred to "willpower" or a similar construct. The rate of initial agreement between the two coders was 86%, and the remaining responses were agreed upon by discussion.[3] Responses were divided into two construal groups: participants who mentioned willpower or related constructs in their answers ("Construed WP"), and participants who did not mention willpower or related constructs in their answers ("Construed nWP").

Procedure

Sessions were conducted individually. After signing consent forms, participants performed the maximum grip task and were given the instructions for the maintained grip task. Participants were then randomly assigned to a willpower ("WP") reconstrual group, or to a no reconstrual group. Participants in the "WP reconstrual" group were told that this procedure is often used as a test of willpower, "since it is custom tailored" to each participant's strength, and ". . .really measures how long you can exert 70% of your own maximum effort." Participants in the "no reconstrual" group were not provided with any further explanation about the maintained grip task. The experimenter recorded the time (in seconds) that participants maintained their grip on the dynamometer at or above the target level, taking care that participants were unable to see the stopwatch while they were performing the task. Participants then completed the construal measure, were debriefed, thanked, and dismissed.

Results[4]

Manipulation Check

About 60% of participants in the "WP reconstrual" group and 40% of the participants in the "no reconstrual" group indicated that they believed the task measured "willpower" or related constructs, $\chi^2(1, N = 38) = 1.69$, *ns*. There was no reliable difference between the groups in the extent to which participants construed the task as a test of willpower, suggesting that participants' initial (spontaneous) construal is fairly robust and relatively resistant to a simple spoken suggestion.

Construal and Performance

Since our manipulation did not have a significant effect on participants' construal of the task, we tested the relationship between task performance and task construal, collapsing across the manipulation groups. To this end, we conducted a single-factor analysis of covariance (ANCOVA: "WP reconstrual" vs. "No reconstrual") on participants' maintained grip duration, controlling for maximum grip strength.[5] This analysis revealed that, as predicted, participants in the "Construed WP" group maintained their grip for a significantly longer duration (Estimated Marginal $M =$ 28.47 sec, $SD = 11.20$) than participants in the "Construed nWP" (Estimated Marginal $M = 18.54$ sec, $SD = 11.17$), $F(1, 29) = 6.06$, $p = .01$, $d = 0.89$.

Discussion

Participants who construed the maintained grip task as a test of willpower maintained a painful grip for significantly longer than participants who did not, despite the fact that all participants performed at a similar level of physical difficulty. This outcome suggests the possibility of improved self-control (in this case, persistence despite pain and physical fatigue) on the basis of cognitive reconstrual. Still, since the manipulation we employed in this study was not successful and the study was analyzed as a correlational study, it is impossible to determine the direction of

[3] Most participants who did not construe the task as a measure of willpower believed that it measured strength and physical endurance. Others were more creative, indicating "stress level" and "frustration" as possibilities, while a few indicated simply "my ability to squeeze a handgrip."

[4] Due to the strongly directional nature of the hypotheses, all p values are reported for one-tailed tests.

[5] Data from 32 participants were available for this analysis. One participant's data were excluded from this analysis due to extreme performance (more than 2 SDs from the entire sample's mean). Including the data from this participant would make the effect appear larger, and we chose to exclude these data as a conservative measure. The performance data of 5 additional participants were not recorded, due to experimenter error.

causality on the basis of these results alone. However, the failure of our manipulation provided us with an important advantage: it allowed us to determine that the difference in performance is not due to simple demand characteristics, since participants' performance did not differ on the basis of their exposure to the manipulation. Instead, it is participants' own construal of the task that predicted their performance, independent of the way that the task was presented by the experimenter.

Given that task construal was measured after the maintained grip task, it is possible that participants expressed a belief that the task measures willpower because they performed well, instead of the other way around. Conversely, it is possible that participants who did not perform well did not wish to regard the task as a measure of a desirable quality as a defensive reaction or as a method of reducing cognitive dissonance. According to this line of reasoning, it is performance that determines construal, rather than construal influencing performance. This interpretation does not seem likely since criteria for evaluating performance were not readily available. Still, it is conceivable that participants could feel whether they exerted themselves to full capacity despite the temptation to end the discomfort. In order to address these alternative interpretations and assert a causal relationship between construal and the ability to resist temptation, construal will need to be experimentally manipulated and indicated by participants prior to task performance. In addition, in order to verify that construal and performance are not codetermined by a third variable, changes in construal would need to be related to changes in performance.

Study 2: Reconstrual and Physical Effort

Our goals in Study 2 were to investigate the within-participants effect of reconstrual on performance and on the immediate reward value associated with perceived success in the task. The same maintained grip procedure was used, but this time participants performed it twice: the first time was prior to the reconstrual manipulation, and the second following it. After completing each maintained grip task, participants indicated how well they believed they performed, as well as how proud they were feeling. In this manner, we were able to compare changes in the performance of participants to changes in their construal of the task. Our aim was to replicate the findings of Study 1 by assessing the effect of initial construal on initial performance. In addition, we sought to extend our understanding of this phenomenon by examining the effect of reconstrual on the change in performance of participants and testing whether construal modulates the reward value of the task.

We hypothesized that participants who construed the task as a test of willpower (either due to their natural inclination or as a result of our manipulation) would perform better (maintain their grip for longer) than participants who did not. More specifically, we expected that participants who changed their construal of the task (from believing it does not relate to willpower to believing that it does) would improve their performance on the second task, whereas participants who maintained their initial construal of the task would perform more poorly as a result of self-regulatory resource depletion (Muraven & Baumeister, 2000; Schmeichel & Baumeister, 2004). With respect to the underlying emotional process, we hypothesized that participants who construed the task as a test of willpower would derive more pleasure from feeling that they performed it well than participants who did not, as indicated by higher ratings of pride immediately following task completion.

Method

Participants

Sixty-two undergraduate students (29 males) participated in this experiment in return for partial fulfillment of a course requirement. Participants ranged in age from 18 to 30 years ($M = 19.3$, $SD = 1.8$). Ethnically, the sample consisted of 50% Caucasians, 19% Asians, 8% African Americans, 5% Hispanics, and 10% who identified as multiethnic. The remaining 8% declined to state their ethnic background.

Materials

Hand dynamometer. Participants used the same dynamometer as in Study 1.

Maximum grip strength. Maximum grip strength was determined using the same procedure as Study 1, once for each hand.

Maintained grip task. The same procedure was used as in Study 1, once for each hand. The threshold was set at 70% of the maximum grip strength for the hand that was used for the task.

Construal of maintained grip task. Task construal was assessed in the same manner as Study 1. The rate of initial agreement between the two coders was 82%, and the remaining responses were agreed upon by discussion.

Perceived performance. In order to test the relationship between perceived performance and pride, participants rated their agreement with two statements measuring how they perceived their own performance using a 5-point Likert scale ("I am satisfied with my performance on the task"; "I feel I performed well on the task"), following each of the two maintained grip tasks. Answers were combined to form a single measure (alpha for both tasks = .91).

Pride. At the beginning of the experimental session, and following each maintained grip task, participants were asked to rate the extent to which they were experiencing various emotional states, using a 5-point Likert scale from 0 (*not at all*) to 4 (*a great deal*). The target term was "proud."

Procedure

Sessions were conducted individually. After signing consent forms, participants performed the maximum grip task for both hands (the starting hand was counterbalanced across participants and groups) and were informed that after filling out a questionnaire, they would perform a maintained grip task. Participants then filled out a construal measure and, after being reminded of the task instructions by the experimenter, performed the first maintained grip task.[6] The experimenter recorded the time (in seconds) that participants maintained their grip on the dynamometer at or above the target level, taking care that participants were unable to see the stopwatch while they were performing the task.

[6] Note that, prior to this first task, no participants were provided with any explanation about the meaning of the task.

After the first maintained grip task, participants were randomly assigned to a "WP reconstrual" or a "no reconstrual" group and received questionnaire packets that contained a different last page for each group. In the "no reconstrual" group, the last page informed participants that they were about to perform the maintained grip task for a second time, using their other hand; no further explanation was provided about the nature of the task. In the "WP reconstrual" group, participants received the same instructions, as well as the following:

> This task is used by psychologists to measure individuals' willpower, since it is custom-tailored to every individual's physical strength. Because it is fitted to your own level of strength, it measures your ability to exert 70% of your own individual maximum capacity—in other words, it is an almost pure measure of willpower and self-control.

After participants completed the packet, the experimenter added, "Before we continue to the maintained grip [or: willpower] task, I just have a couple more questionnaires for you." Participants completed one more questionnaire followed by the construal measure, and proceeded to perform the second maintained grip task. The experimenter again recorded the duration of the grip at or above the target level, ensuring that participants were unable to see the stopwatch. After completing this task, participants were debriefed, thanked, and dismissed.

Results[7]

Initial Construal and Performance

We conducted a single-factor ANCOVA ("construed WP" vs. "construed nWP") on participants' first maintained grip duration, controlling for maximum grip strength.[8] As predicted, the analysis revealed that participants in the "Construed WP" group maintained their grip for a significantly longer time (Estimated Marginal M = 26.29 seconds, SD = 9.23) than participants in the "Construed nWP" (Estimated Marginal M = 21.32 seconds, SD = 9.14), $F(1, 55) = 3.55$, $p < .04$, $d = 0.54$.

Manipulation Check

Following the manipulation, 69% of participants in the "WP reconstrual" group and 34% of the participants in the "no reconstrual" group stated that the task measured "willpower" or related constructs, $\chi^2(1, N = 61) = 7.28$, $p < .01$.[9] More participants in the "WP reconstrual" group construed the task as a test of willpower than in the "no reconstrual" group, suggesting that our combined written/spoken manipulation was effective in altering participants' construal.

Participants were divided into four construal groups based on the changes in their construal of the task meaning (see Table 1). Of the 33 participants who did not construe the task as a test of willpower prior to the first trial, 14 reconstrued the meaning of the task just before the second trial (10 did so following the "WP reconstrual" manipulation, and 4 reconstrued the task meaning spontaneously). Of the 18 participants who construed the task as a test of willpower prior to the first trial, all but one maintained their construal before the second trial.[10]

Table 1
Study 2: Task Construal for the First and Second Maintained Grip Task[9]

Group name	About WP? (task 1)	About WP? (task 2)	N
1. WP → WP	Yes	Yes	17
2. nWP → nWP	No	No	29
3. nWP → WP	No	Yes	14
4. WP → nWP	Yes	No	1
Total			61

Note. WP = (about) willpower; nWP = not (about) willpower.

Reconstrual and Changes in Performance

Since our main interest was the effect of cognitive reconstrual on performance, we conducted a repeated-measures ANCOVA (Construal Group 1, 2, or 3 [see Table 1]) on performance in the maintained grip tasks with time of measurement (premanipulation vs. postmanipulation) as a within-participants factor, while controlling for maximum grip strength for each hand.[11] The analysis revealed a significant interaction between construal group and change in performance, $F(2, 44) = 3.38$, $p < .03$. Estimated marginal means (controlling for performance on the first maintained grip task, as well as for maximum grip strength) for each group at each time point are displayed in Table 2. Planned contrasts revealed that the improvement in performance for participants who reconstrued the task's meaning was significantly greater than that of participants who did not (Contrast Estimate = 7.16, $SE = 3.01$), $p < .02$, $d = 0.68$.

As we predicted, participants who reconstrued the task into a test of willpower significantly improved their performance following the reconstrual. Contrary to the resource-depletion prediction, participants who did not reconstrue the task meaning did not show a decrement in performance after the first task (see Table 2).

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[7] Due to the strongly directional nature of the hypotheses, all p values are reported for one-tailed tests.

[8] Data from 58 participants were available for this analysis. Data from 2 participants were excluded due to extreme performance (more than 2 SDs from the entire sample's mean). Including these participants' data does not alter the pattern of results. The performance data of 2 additional participants were not recorded, due to experimenter error.

[9] On the second construal measure, one participant indicated "willpower" and then countered his own answer by also writing "Actually, no. The ability to squeeze the handgrip is purely physical." Data from this participant were dropped from analyses involving the second construal measure.

[10] All groups had similar ratios of participants who performed the initial task using their dominant hand, χ^2 (2, $N = 49$) = 0.66, *ns*.

[11] Data from Groups 1-3 (see Table 1) were used for this analysis. Data from 8 participants were excluded due to extreme performance (more than 2 SDs from the sample's mean on either the dependent variable [5 participants, from all groups] or one of the control variables [3 participants: one from Group 1 and two from Group 3]). Including the data from those participants yields the same pattern of improvement in performance following reconstrual. The performance data of 3 additional participants were not recorded, due to experimenter error.

Table 2
Study 2: Reconstrual and Mean Changes in Performance (Estimated Marginal Means, in Seconds)

Group name	Task 1 (*SD*)	Task 2 (*SD*)	Difference	*t* (*df*)	*p* (two-tailed)
1. WP → WP	24.29 (10.11)	26.18 (10.55)	1.88	.23 (15)	*ns*
2. nWP → nWP	22.89 (10.40)	22.06 (10.84)	−0.83	.34 (23)	*ns*
3. nWP → WP	19.04 (10.37)	26.73 (10.81)	7.69	3.11 (11)	.01

Note. WP = (about) willpower; nWP = not (about) willpower.

Construal and Reward Value of Task

A partial correlation between perceived performance on the second task and pride (controlling for pride at baseline and after the first task) was computed separately for participants who perceived the second task as a test of willpower, and participants who did not. As predicted, the correlation was greater for participants who construed the second task as a test of willpower ($r = .79$, $p < .001$) than for participants who did not ($r = -.02$, *ns*), Fisher's R-to-Z = 4.61, $p < .001$. Participants' perception of their own performance was tightly linked to their sense of pride, but only if they construed the task as a test of willpower.

Discussion

Study 2 replicated the findings reported in Study 1 and extended these findings by (a) improving the method by which participants' construal of the task was assessed, (b) improving the reconstrual manipulation, (c) demonstrating a within-participants effect of reconstrual, and (d) demonstrating that task construal is related to its reward value. Specifically, participants reported their construal of the task prior to performing it, thereby eliminating the concern of self-serving reports of construal. Participants were exposed to a combined written/spoken manipulation that was effective in changing their construal of the task, after they had already performed it once.

Importantly, this design allowed us to test the within-participants effect of a change in construal: participants who reconstrued the meaning of the task into a test of willpower improved their performance markedly (by an average of approximately 40%). In contrast, the performance of participants who maintained their initial construal of the task did not change from one trial to the next. Contrary to the resource-depletion prediction, participants who performed the maintained grip task twice without reconstruing it did not exhibit a decrement in performance. An inspection of previous studies that employed a maintained grip task revealed that while it has been shown to be sensitive to prior self-control depletion, it has not been shown to be itself a cause of depletion (Ciarocco, Sommer, & Baumeister, 2001; Fujita, Trope, Liberman, & Levin-Sagi, 2006; Muraven, Tice, & Baumeister, 1998). Thus, it is possible that participants in our study did not expend enough of their self-regulatory resource to cause a noticeable effect on their performance during the second task.

Construing the task as a test of willpower had a powerful effect on its reward value. Participants who construed the task as a test of willpower felt more pride the better they believed they had done. In contrast, participants who did not construe the task as a test of willpower showed no relation between their estimates of performance and their feelings of pride. However, although task construal modulated the reward value of having performed the task well, our main interest concerns the way in which construal changes the immediate reward value of temptation itself. According to our framework, successful reconstrual will result not only in increased immediate pleasure from resisting temptation, but also in reduced immediate pleasure from succumbing to it. It is this crucial element that we set out to test on Study 3.

Study 3: Reconstrual and the Control of Attention

Our primary goal in Study 3 was to test the impact of reconstrual on the reward value of temptation in a more direct manner, while examining the generalizability of this effect. Thus, instead of performing a demanding handgrip task, participants were required to control their attention, thus shifting the domain of performance from the physical to the mental. In addition, we employed a more readily interpretable measure of construal. The materials we used were familiar to our participants, although we expected they would not realize that they could be regarded as instruments of temptation: two computer monitors and a keyboard.

We set out to examine the way in which reconstrual influences both the ability to resist temptation, and the way in which reconstrual modulates the reward value of temptation. If cognitive reconstrual truly modulates the immediate reward values associated with different actions (see Figure 1), succumbing to temptation should become less pleasurable than it was prior to reconstrual. To test this hypothesis, we tracked participants' positive affect throughout the experimental session, in order to assess the way in which succumbing to temptation influences positive affect. In order to reduce the variance in the initial emotional state of participants, each participant viewed a neutral film at the beginning of the experimental session.

To fashion a situation that was less likely to be spontaneously construed as a test of willpower than the ones in the previous experiments, we decided to recreate a familiar scene from the lives of many students. In the course of a session, participants worked on a series of math problems, while a nearby monitor was continuously playing comedy clips that were pretested to elicit high levels of amusement. Participants took two similar math tasks, each comprised of time-limited, multiple-choice questions. The math tasks carried the promise of delayed monetary reward, but only if participants solved the equations quickly and accurately enough—thus ensuring that participants realized that their continuous attention was required in order to eventually win the monetary reward. Focusing on the math task made it impossible to see the comedy clips, while watching the comedy clips placed the math task outside participants' field of vision (see Figure 2). In this way, participants had to continuously choose between the imme-

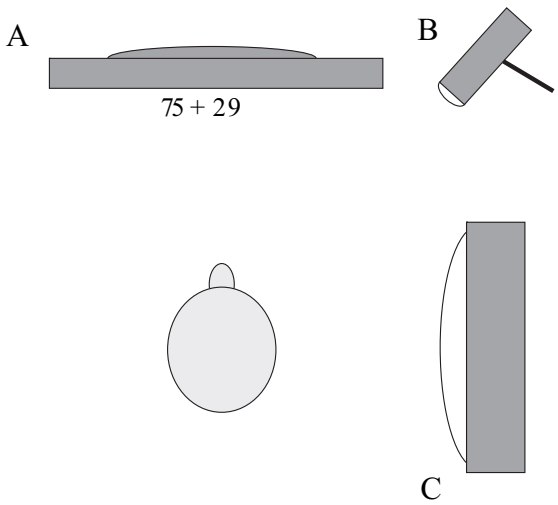

Figure 2. Study 3—room setup: (A) Computer monitor, displaying the math tests; (B) Hidden high-resolution video camera; (C) Computer monitor and speakers playing video comedy clips ("Whose Line Is It, Anyway?").

diate pleasure of watching the comedy clips, and the relatively delayed pleasure of performing well on the task and winning a monetary reward. Before starting on the second task, half of the participants were told that the situation they were in could be construed as a test of willpower. This design allowed us to examine the effects of reconstrual using both between-participants and within-participants approaches.

We hypothesized that, following our manipulation, participants who construed the situation as a test of willpower would become less susceptible to temptation than participants who did not. We also hypothesized that participants who did not reconstrue the meaning of the situation as a test of willpower would become more susceptible to temptation over time (i.e., would peek at the TV more on the second task than on the first) as a result of self-regulatory resource depletion (Baumeister, Muraven, & Tice, 2000; Muraven, Tice, & Baumeister, 1998). Since this task requires extended control of one's attention, we believed that it would impose a stronger demand on self-regulatory resources than the handgrip task in Studies 1 and 2, and would therefore lead to depletion and reduced capacity to resist temptation.

With respect to the mechanism underlying this effect, we hypothesized that construing the situation as a test of willpower would lead participants to enjoy the comedy clips less (as evidenced by a weaker correlation between time spent peeking at the TV and positive affect).

Method

Participants

Forty-one members of the Stanford community (23 males) participated in this experiment in return for payment. Participants ranged in age from 18 to 42 years (M = 20.2, SD = 3.8). Ethnically, the sample consisted of 44% Caucasians, 24% Asians, 12% African Americans, 7% Hispanics, 2% Native American, and 7% who identified as multiethnic. The remaining 4% did not state their ethnic background.

Materials

Math test. Participants answered a series of multiple-choice math questions (addition or subtraction of double-digit numbers), displayed on a computer monitor. Each question remained on the screen for 7 seconds or until a participant indicated an answer by pressing on the keypad. After answering a question, the monitor displayed the participants' reaction time to that question. No feedback was given regarding the accuracy of their answer. If participants failed to provide an answer within 7 seconds, the feedback "No response detected!" was displayed for 2.5 seconds, and the test resumed. The test was divided into two tasks, each consisting of 20 questions that appeared at quasi-random intervals, ranging from 1 to 8 seconds. The content of the questions, as well as the delay between questions, were identical for all participants.

Neutral movie. In order to reduce the variance in positive and negative affect at the beginning of the experimental session, participants viewed a movie consisting of selected peaceful scenes from a documentary about Denali National Park. Pretesting has shown that these scenes tend to elicit a contented, slightly positive affect in viewers. Participants viewed this movie prior to completing any of the other measures and prior to watching any of the comedy clips.

Comedy clips. While participants performed the scored portions of the math tasks, selected clips from the improvisation comedy show "Whose Line Is It, Anyway?" were used as distractions. The clips were played on a monitor that faced the participants and was situated to the right of the chair in which they sat, at a distance of about 2 feet from them. Looking at the comedy clips required that participants turn their heads at a 90° angle, preventing them from seeing the computer screen on which the math task was displayed (see Figure 2). We pretested the clips to ensure high levels of amusement, as well as to eliminate any potentially offensive material.

Emotion rating. At several points, participants were asked to rate the extent to which they were experiencing various emotional states, using a 5-point Likert scale from 0 (*none*) to 4 (*a great deal*). The target terms were "happy" and "amused" (Cronbach's alpha = .78), averaged to form a single score at each time point. Other terms were used as distractor items.

Control variables. In order to estimate the affective consequences of succumbing to temptation, we controlled for two variables that could interfere with these effects. We collected data about participants' general TV viewing habits (average daily number of hours spent watching TV), as well as participants' subjective humor ratings for the show we used to distract them (at the beginning of the session, after viewing comedy clips for 5 minutes without interruption, participants answered the question "How funny were the scenes you just saw?" on a 10-point Likert scale, ranging from 1 [*not funny at all*] to 10 [*hilarious*]). In addition, prior to the experimental session, participants completed the conscientiousness subscale of the Big Five Inventory (John & Srivastava, 1999) as part of a larger set of questionnaires.

Susceptibility to temptation. Participants were covertly videotaped during sessions, using a remotely controlled high-resolution video camera positioned behind darkened glass. Two independent coders, who were blind to the experimental condition to which participants belonged, later viewed each tape and recorded the amount of time that participants spent peeking at the TV. Each

coder indicated the total amount of time (in seconds) that each participant spent peeking at the TV screen, for each of the two math tasks. Coders worked at a temporal resolution of one thirtieth of a second (one video frame) and attained perfect reliability (r = 1.0). An average of the two coders' observations was used as the "peek-time."[12]

Construal measure. For each math task, participants rated their agreement with the statement "I thought of the situation as a test of willpower" on a 5-point Likert scale (1 [*none*], 3 [*some*], 5 [*a great deal*]). Using this method allowed for clear interpretation of participants' construal. We conducted this measure retrospectively, after participants completed both math tasks, in order to ensure that the presentation of the question did not itself act as a reconstrual manipulation.

Task perception. For each math task, participants rated their agreement with the statement "I felt that looking at the TV might hurt my mathematical ability score" on a 5-point Likert scale (1 [*none*], 3 [*some*], 5 [*a great deal*]). This measure was obtained retrospectively, after the completion of the second math task.

Covert attention to comedy clips. In order to test whether there were group differences in the degree to which participants attended to the comedy clips when not watching them, participants rated their agreement with the statement "When I wasn't watching the TV, I was listening to it a lot of the time" on a 5-point Likert scale (1 [*none*], 3 [*some*], 5 [*a great deal*]). This measure was obtained retrospectively, after the completion of the second math task.

Procedure

Participants came into the laboratory for an experiment about "the effects of amusement on cognitive performance" in return for monetary compensation. Sessions were conducted individually. In order to minimize face-to-face demand characteristics, after signing consent forms, participants were informed that they would be going through the experiment by themselves and would receive all necessary instructions from the computer. At this point, the experimenter left the room, and participants were left on their own. In order to reduce the variance in participants' initial emotional state, participants first viewed a neutral film for 5 minutes and completed an emotion rating. Participants then viewed 5 minutes of the comedy clips and completed an amusement rating for those clips, as well as a second emotion rating. At this point, participants turned to the computer monitor and were informed that they were about to perform a math test, consisting of multiple-choice questions. Participants were informed that they would have 7 seconds to answer each question and were also advised that

> At the end of the session, a Mathematical Ability Score (MAS) between 0 and 100 will be assigned to your performance. The MAS is computed on the basis of the accuracy of your answers, as well as the speed with which they were provided. If you achieve a MAS of 90 or above, you will receive an additional award of $10.

Participants then answered 5 "warm-up" questions without distraction and proceeded to perform the ("scored") math task. At the same time that the first ("scored") math question appeared on the computer monitor, the TV began playing new comedy clips, and participants had to start choosing between looking at the math task (in order to win the extra money) and looking at the comedy clips (while taking the risk of missing a question that appeared on the screen). The TV continued playing clips from this point until the end of the experiment. After completing the first math task (consisting of 20 math questions and lasting roughly 5 minutes), participants were instructed to complete an emotion rating and were presented with the following text:

> You have completed the first half of the MAS-test. You may try and improve your score (in terms of accuracy and/or response time) in the second half of the MAS-test. Remember: a MAS of 90 or above will earn you an extra $10 reward. Try to solve each equation as quickly and as accurately as you can.

Participants were then randomly assigned either to a "no reconstrual" group or to a "WP reconstrual" group. Participants in the "no reconstrual" group continued to the second math task without further instructions. Participants in the "WP reconstrual" group received the following instructions prior to beginning the second math task:

> It may help to think of the TV as a test of your willpower. Can you avoid looking at it, in order to improve your reaction time to the questions? As you proceed, it may help to think about this as a test of your willpower.

After completing the second math task (consisting of 20 more math questions, lasting about 5 minutes), participants were instructed to complete the final emotion rating, a short set of retrospective questions regarding their experience of each task, and demographic questions (including how much TV participants typically watched). The experimenter returned to the room, thanked the participants, apologized for the deception (as no "Mathematical Ability Score" was calculated), debriefed them and administered payment. All participants received the extra $10 they were promised earlier. During debriefing, no participants expressed doubt that the MAS was being calculated, or that the extra payment was contingent upon performance.

Results[13]

Task Perception

Using a 5-point Likert scale, participants indicated their strong belief that looking at the TV would hurt their score (for each task $M > 4$, $SD < 1.3$, Mode = 5). Thus, participants believed that it was in their best interest not to look at the TV.

Randomization and Manipulation Check

To verify initial similarity between the two groups, we compared peek times for the first task. Participants in the "no reconstrual" group (M = 5.09 seconds, SD = 6.05) peeked at the same rate as participants in the "WP reconstrual" group (M = 5.73 seconds, SD = 7.60), $t(39) = 0.30$, *ns*. The two groups were

[12] We repeated all of the analyses for this study using a "peek ratio" (dividing the peek-time for each by the total time the participant spent on the task), which led to virtually identical results. For the sake of consistency and ease of interpretation, we report all of the findings using raw peek time.

[13] Due to the strongly directional nature of the hypotheses, all p values are reported for one-tailed tests.

equally tempted by the comedy clips during the first task, prior to our manipulation. There were no group differences in the amount of time that participants reported listening to the comedy clips for each task. A repeated-measure analysis of variance (ANOVA: Group × Task) on time spent listening during each of the two tasks did not show a main effect of either group or task on listening time, and no interaction between the two, $F(1, 37) = 0.22$, *ns*.

In order to test whether our manipulation had the intended effect, we conducted a repeated-measures ANCOVA ("WP Reconstrual" vs. "No reconstrual") on task construal for each of the two math tasks, with time (premanipulation vs. postmanipulation) as a within-participants factor, while controlling for conscientiousness and age.[14] As predicted, the results of the ANCOVA indicated a significant interaction between group and time, $F(1, 34) = 3.70$, $p < .04$, suggesting that changes in construal over time were different in each group. Follow-up *t* tests revealed that during the first task (prior to our manipulation), participants in the "WP reconstrual" group ($M = 3.00$, $SD = 1.57$) did not construe the situation as a test of willpower significantly more than participants in the "no reconstrual" group ($M = 2.67$, $SD = 1.53$), $t(37) = 0.67$, *ns*. For the second task (following the manipulation), participants in the "WP reconstrual" group ($M = 3.72$, $SD = 1.18$) reported construing the situation as a test of willpower to a significantly greater extent than participants in the "no reconstrual" group ($M = 3.00$, $SD = 1.38$), $t(37) = 1.74$, $p < .05$.

Change in Susceptibility to Temptation

In order to test the change in susceptibility to temptation, we computed a change in peek time by subtracting the peek time of the first task from the peek time of the second task. Since the resulting change scores were not normally distributed, we used the nonparametric Mann–Whitney *U* test to compare the changes in peek time between the two groups. The analysis revealed that the change score for the "No reconstrual" group ($M = 2.89$, $SD = 5.16$) was significantly greater than that of the "WP Reconstrual" group ($M = -1.31$, $SD = 2.64$), Mann–Whitney $U = 96.5$, $p < .002$, $d = 0.57$.

We continued by testing the change in peek time within each group by conducting a paired-sample sign test. In accordance with our prediction, a significant portion of the participants in the "no reconstrual" group exhibited an increase in susceptibility to temptation between the two tasks, $p < .02$. In contrast, a significant portion of the participants in the "WP reconstrual" group exhibited a decrease in susceptibility to temptation between the two tasks, $p < .02$ (see Table 3). Although participants who were not provided a reconstrual of the situation became more susceptible to temptation with time, participants who were encouraged to see the situation as a measure of an important quality became less susceptible to temptation with time.

Table 3
Study 3: Reconstrual and Susceptibility to Temptation (Test Time Spent Watching TV, in Seconds)

Group name	*N*	Increase[a]	Decrease[b]	Tie[c]	*p*[d]
No reconstrual	22	14	5	3	<.02
WP reconstrual	19	2	11	6	<.02

Note. WP = (about) willpower; (a) Peek $\text{time}_{\text{task 2}}$ > Peek $\text{time}_{\text{task 1}}$; (b) Peek $\text{time}_{\text{task 2}}$ < Peek $\text{time}_{\text{task 1}}$; (c) Peek $\text{time}_{\text{task 2}}$ = Peek $\text{time}_{\text{task 1}}$; (d) Paired-samples sign test.

Enjoyment From Succumbing to Temptation

In order to test whether reconstrual led to diminished enjoyment from succumbing to temptation, we inspected the correlation between positive affect and the amount of time spent peeking at the TV for each of the math tasks. Watching amusing comedy clips prior to reconstrual should contribute to participants' positive affect, and therefore should be evidenced by a positive correlation between peek-time and positive affect. However, if reconstrual changes the reward value of the temptation, this relationship should become weaker following the manipulation. Due to the high variability in individual participants' TV viewing habits (range: 0–4 hours, $M = 0.95$, $SD = 1.2$) and how amusing they found the comedy clips (range: 2–9, $M = 6.1$, $SD = 1.58$), we controlled for those variables while conducting the correlational analyses. In addition, we controlled positive affect at baseline, and immediately prior to the task.[15]

As expected for the first task, positive affect was correlated with peek-time in both the "WP reconstrual" group ($r = .58$, $p < .02$) and the "no reconstrual" group ($r = .62$, $p < .005$). The magnitude of the correlation was similar in both groups, (Fisher's R-to-Z = 0.16, *ns*), suggesting that the association between peek-time and positive affect was comparable (and robust) for participants in both groups. However, in line with our predictions, reconstrual had a powerful effect on this correlation (see Figure 3). On the second task, following the manipulation, the correlation between peek-time and positive affect in the "WP reconstrual" group virtually disappeared ($r = .03$, *ns*), dropping significantly from its premanipulation magnitude (Fisher's R-to-Z = 1.66, $p = .05$). On the other hand, the correlation between positive affect and peek-time in the "no reconstrual" group did not change significantly on the second task ($r = .42$, $p < .05$), exhibiting only a slight decrease that may reflect habituation to the content of the comedy clips (Fisher's R-to-Z = .83, *ns*). Once participants reconstrued the situation as a test of willpower, they found considerably less pleasure in succumbing to temptation.

Discussion

The present study replicates and extends the findings reported in the two previous studies by (a) considering the effect of reconstrual in a new domain (controlling attention, rather than persisting on a physically demanding task) and (b) providing more direct evidence regarding the underlying mechanism. Participants who thought of their situation as a measure of a desirable quality

[14] Conscientiousness correlated moderately with changes in task construal ($r = -.33$, $p < .05$), while age was moderately correlated with the construal of the second task ($r = .56$, $p < .05$). As those were not variables of interest, they were entered as covariates.

[15] Data from two participants were excluded from these analyses because they exhibited extreme levels of distractibility on either one or both tasks, and thus exerted undue weight on magnitudes of correlations. Including the data from these participants would make the reported effect appear larger, and we chose to exclude these data as a conservative measure.

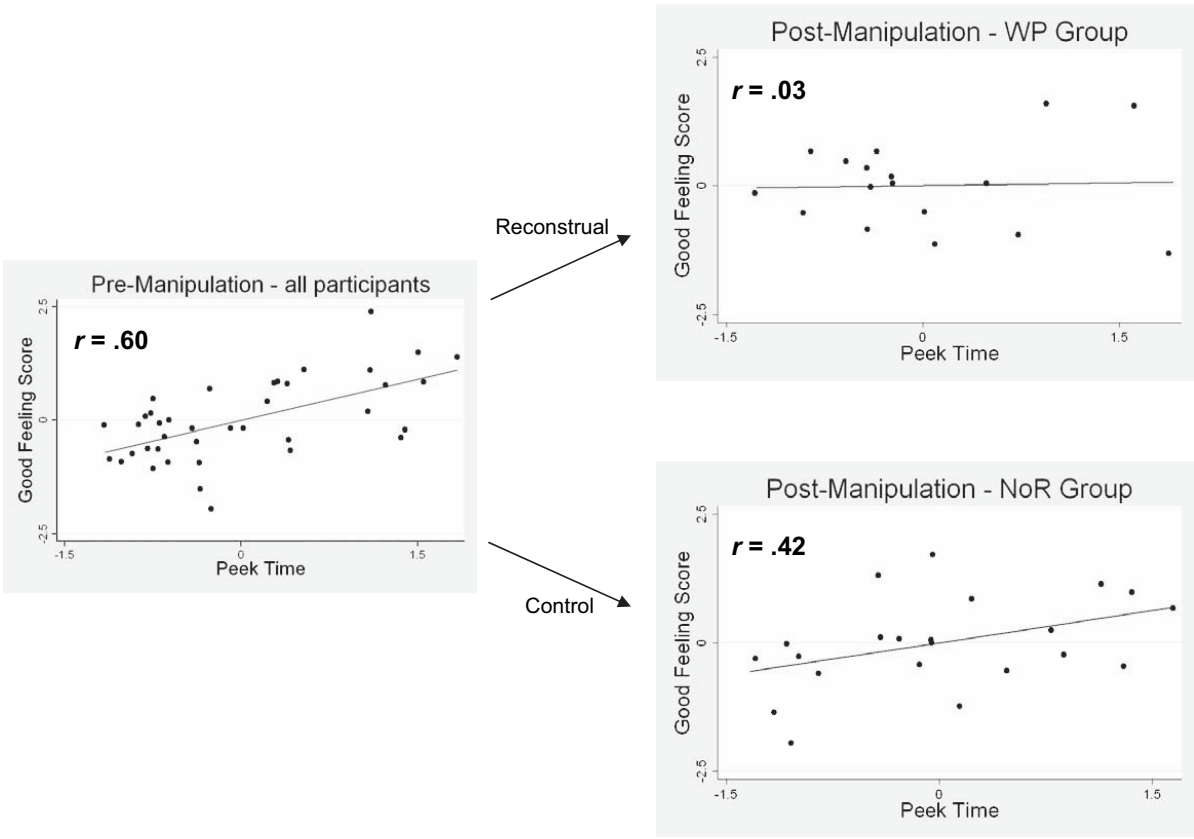

Figure 3. Study 3: Scatter plots of "Feel good" and total time peeking at TV, before and after the manipulation (by group). Variables in the scatter plots are standardized residuals, after partialing out TV viewing habits, how amusing participants found the comedy clips, baseline "good feeling" score and "good feeling" score immediately prior to the task. "WP" = Willpower reconstrual; "NoR" = No reconstrual.

("willpower") were better able to resist temptations that could harm their performance compared with both their own performance prior to reconstrual and with the performance of other participants who did not reconstrue the situation. Although participants who did not reconstrue the situation became increasingly susceptible to temptation over time, those who reconstrued the meaning of the situation actually exhibited a decrease in susceptibility to temptation. In other words, reconstruing the situation as a test of willpower inoculated participants from the potentially deleterious effects of previous efforts of self-control, allowing them to exercise effective self-control over an extended period of time. Reconstrual appears to directly alter the immediate emotional consequences of succumbing to temptation (in this case, enjoying a distraction by comedy clips). This modulation resulted in decreased enjoyment from succumbing to the distraction for participants who reconstrued the situation as a test of their willpower.

General Discussion

In three studies, we have demonstrated a novel method for self-control. Most self-control research to date has focused on working against the need for immediate gratification, either by preventing it from arising or by resisting it directly. In contrast, we have explored ways of harnessing this need for immediate gratification. By changing the immediate reward value of temptation through cognitive reconstrual, our natural tendency to pursue immediate gratification can help us make the "right" choice (the choice aligned with long term interests). Following reconstrual, choosing the tempting alternative no longer feels as good (because now it implies a lack of the desirable internal quality), while resisting the temptation now carries an affective reward (as it implies possession of the desirable internal quality). These findings suggest that task construals acts as a moderator for the relationship between exposure to the temptation and subsequent emotions: when the temptation was seen as a test of willpower (i.e., an important internal quality), resisting temptation successfully was positively correlated with pleasant emotions (Study 2), while succumbing to it ceased to be related to pleasure (Study 3).

Self-Control as a Form of Emotion Regulation

By altering future affective responses to the outcomes of our behaviors and aligning the immediate consequences with the long-term consequences, we are able to alter our own behavior (see Figure 1). In this way, self-control by cognitive reconstrual can be seen as a sophisticated form of emotion regulation. Gross's (1998) process model of emotion regulation describes processes that influence the emotion-generative process. We believe that the

same model can be extended to describe different tactics of self-control. At its core, this model makes distinctions among emotion regulatory processes based on when in the emotion-generative process a particular strategy has its primary impact. Consequently, different methods of emotion regulation are theorized to target different points in the timeline along which emotion unfolds: some seek to avoid or modify the situation that elicits the emotion (or attention to that situation), others attempt to reappraise the meaning of the emotion-eliciting situation (and thus lead to an alternative emotional reaction) and some aim to modulate the behavioral manifestations of the emotion that was elicited.

There is a clear correspondence between the emotion regulation techniques outlined above and the techniques of self-control that were reviewed earlier in this articles. Mischel and Ayduk's (2004) emphasis on attention control neatly maps onto Gross's attentional deployment strategy. The reconstrual method that we explored in this article can be seen as a form of reappraisal, in which the meaning of an event is altered in order to engender desirable affective responses. Lastly, Baumeister et al.'s (2000) research on ego-control is analogous to the response modulation/suppression strategy discussed in Gross' model of emotion regulation.

The Right Strategy at the Right Time

Temptation arises at the moment of contact between our attention and the "hot" aspects of a tempting object. In order to entirely bypass the process of temptation, one would be wise to employ the type of attention control advocated by Mischel and colleagues (Mischel & Ayduk, 2004; Mischel, Shoda, & Rodriguez, 1989). Successful application of this strategy may enable one to completely prevent temptation.

However, there may be times at which attentional contact with "hot" aspects of a temptation is unavoidable. The studies presented in this article explored such situations, in which participants were put in direct contact with such "hot" objects that are hard to ignore (i.e., pain and an intrusive comedy show). At such times, the use of reconstrual can alter the affective consequences associated with each behavior (resisting or succumbing to a temptation) and may therefore aid us in our effort to resist the temptation. This type of reconstrual can occur before, during, or after the initial contact with "hot" aspects of the tempting object, much like "conventional" reappraisal (Gross, 1998), and lead to an immediate change in behavior. The most obvious advantage of reconstrual is the minimal intervention that it requires. Despite its simplicity, successful application of this method had a powerful effect on behavior. In Study 3, reading three sentences was enough to dramatically diminish participants' susceptibility to distractions and reduce the pleasure they derived from being distracted. In Study 1, participants who thought about the physically demanding task they were performing as a test of willpower sustained their efforts for a duration more than 50% longer than those who did not. Rather than applying continuous effort, either to monitor attention or to suppress behavioral impulses, the use of this method requires a single introduction of an alternative interpretation. Once accepted, this new interpretation alters the immediate reward value of behavior in such a way that one is drawn to act in a way that will produce the largest long-term benefits (see Figure 1). In this manner, rather than continuously fighting the need for immediate gratification, one is able to harness this powerful drive and use it to advance toward ones goals.

Lastly, when reconstrual is beyond our ability, we must resort to the use of direct behavior modification that is studied by Baumeister and colleagues (Muraven & Baumeister, 2000). Behavior modification has been shown to carry negative cognitive and emotional consequences in both emotion regulation contexts (Richards & Gross, 2000) and other self-control contexts (Baumeister et al., 2000; Muraven, Tice, & Baumeister, 1998), and we therefore suggest that it should be considered as a last resort to be used when other forms of self-control/emotion regulation cannot be employed effectively.

Limitations and Future Directions

In all of the studies reported in this article, the new construal was suggested to participants. Therefore, these studies do not test individuals' ability to flexibly alter their construal of a temptation in real time, without external support. Although the studies serve the important function of demonstrating the efficacy of reconstrual, understanding the limitations and opportunities related to the self-application of this technique of self-control is needed, if we wish to empower people to help themselves more effectively. Similarly, understanding the conditions under which individuals are more or less susceptible to accepting such reconstruals from their environment (including other people) is an important next step in developing applications for this technique.

An important question that is related to the topic of self-initiated reconstrual is whether these findings can be attributed, at least in part, to demand characteristics. We believe that the results of Studies 1 and 2 suggest that this is not the case, as participants' performance was related to their subjective construal of the task, independent of the way in which the task was presented to them. We have also taken care to minimize the effect of face-to-face demand characteristics in Study 3, by delivering the task instructions via a computer screen, rather than directly by the experimenter. Perhaps most tellingly, participants' affective responses to their construal of the task (i.e., the way in which construal modified the relationship between perceived performance and pride in Study 2, or the relationship between time spent peeking at the TV and good feeling in Study 3) suggests that different construals engender differential affective responses to the objects of temptation. It seems unlikely that participants would be able to produce such a subtle pattern of responding during the course of an experimental session on the basis of their sense of what the experimenter is expecting—that is, on the basis of demand characteristics alone. Nevertheless, elucidating the exact source (or sources) of this effect is an important topic to pursue in future studies, and great care should be given to minimizing demand characteristics in studies of this type.

Second, in order for reconstrual to have an impact on behavior, it seems reasonable to assume that it should (a) be accepted by the individual as a valid construal of the situation and (b) refer to an aspect of the self that one actually feels is important. Individuals vary considerably in their tendency and willingness to embrace new construals for situations they find themselves in (Vallacher & Wegner, 1989), as well as in the importance they attribute to particular qualities, based on their personal set of beliefs and values (Schwartz & Boehnke, 2004), as influenced by inter and

intracultural factors (Grimm, Church, Katigbak, & Reyes, 1999). Thus, while one individual may benefit from thinking about a challenging interpersonal conflict as "a test of my ability to be nonreactive," another may gain more by thinking about the situation as "an opportunity to honor an elder." Careful matching of construals to individual value systems is likely to result in the greatest efficacy for this technique of self-control. Our studies consisted of a largely homogeneous sample of participants and were not geared toward elucidating the effects of idiosyncratic value systems. Clearly, discovering the optimal "matches" between individuals and motivators is an important task, and additional research must take place in order to enable us to maximize the advantage offered by this method of self-control.

Third, the generalizability of the temptation-reconstrual effect is still unclear. We have seen that impressive improvements in physical and attentional performance may be achieved, but the duration of the effect has not been tested. Furthermore, it is unclear whether reconstrual would be effective even when it is not a novel way of thinking about a situation. Additional research concerning the magnitude and duration of the effect of reconstrual, and possible habituation to construals, is in order.

Finally, the type of reconstrual that we have presented essentially involves "upping the ante" by explicitly connecting behavior with an important aspect of the self. Although the experiments we have reported demonstrate the possible efficacy of this method in resisting temptations, one must also consider the emotional consequences of failure to resist temptations after such reconstrual—when one has essentially "failed" at a test of an important internal quality. This effect was apparent in our Study 2, in which only participants who construed the task as a test of willpower showed a link between perceived performance and pride: while those participants who believed they performed well reported high levels of pride, participants who believed they did not perform well reported low levels of pride. Such an outcome may have deleterious consequences because it may engender negative affect and even lower self-esteem. Such experiences may ironically lead to increased susceptibility to temptation because people appear to be more likely to succumb to temptations when experiencing negative emotion, especially when the source of this negative emotion is a threat to self-esteem (Baumeister, 1997)—a phenomenon that is well documented in the fields of substance abuse (Carroll, Rounsaville, & Keller, 1991; Turner, Annis, & Sklar, 1997), as well as eating disorders (Wallis & Hetherington, 2004). The courage to challenge oneself is important but may be dangerous, and even counterproductive, when it is not accompanied by a measure of compassion toward oneself and one's own shortcomings. It is important to cast the new construal in terms of effort and intention, rather than in terms of a specific outcome (Mueller & Dweck, 1998), in order to avoid fostering a sense of worth that is contingent upon behavior in a certain situation (Kamins & Dweck, 1999). In this sense, the tool of reconstrual is a double-edged sword and must be applied judiciously.

Concluding Comment

Temptation arises when we realize that the short-term consequences of behavior contradict its long-term consequences, and our need for immediate gratification urges us to behave in a manner that offers the largest short-term rewards at the expense of delayed outcomes. Cognitive reconstrual is a simple and effective way of modulating the immediate reward value of alternatives we face. As depicted in Figure 1, cognitive reconstrual offers a way to reduce the discrepancy between short-term consequences and long-term consequences, thereby harnessing our own need for immediate gratification and use it to our benefit. By adding this method to the growing set of tools for self-control and by continuing to improve our understanding of the causes for both failures and successes at challenges of self-control, we may be able to improve our ability to systematically resist temptations and to work more consistently for our own long-term well-being.

We have shown here that the method of cognitive reconstrual can be effective as a way of resisting temptations. Nevertheless, it is important to recognize that cognitive reconstrual is merely a tool for self-control. Like any tool, it is only as good as those who wield it and may be employed to beneficial or harmful ends. All too frequently, people challenge one another to perform acts of stupidity and maliciousness under the reconstrued meaning of proving that one is "brave," "cool," or "smart." Educating people about the method of cognitive reconstrual may help them not only to resist temptations, but also to recognize situations in which the same technique is employed to their detriment. This explicit understanding may take away from the sting of peer pressure and thus ensure that this powerful tool is used to positive ends.

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Received July 19, 2006
Revision received December 7, 2006
Accepted December 13, 2006 ■