



The substitutability of external control and self-control[☆]

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Abstract

Three experiments offered participants the opportunity to undertake an activity that had long-term benefits but either small or large short-term costs. The experiments investigated how self-control efforts to undertake the activity are affected by real or primed externally imposed controls. Two forms of self-control were assessed: bolstering the value of the offered activity and self-imposed penalties for failure to undertake it. The results showed that greater short-term costs elicited more self-control efforts when externally imposed controls were absent and less self-control efforts when externally imposed controls were present. Both externally imposed controls and self-control efforts prevented short-term costs from affecting participants' intention to undertake the activity. The results were interpreted as suggesting that externally imposed control and self-control are substitutable means for pursuing activities with long-term benefits and short-term costs.

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Introduction

In many real life situations, the attainment of long-term goals comes at the expense of short-term outcomes. For example, the discomfort that is often associated with dieting, physical exercise, or undergoing a medical check-up is a price people have to pay in order to attain their long-term health goals. Similarly, suppressing a desire to retaliate may be necessary in order to prevent an escalating interpersonal conflict, and performing boring drills may be necessary for acquiring a valuable skill. A considerable amount of research has shown that short-term outcomes sometimes tempt people to act against their long-term interests (Baumeister, Heatherton, & Tice, 1994; Dhar & Wertenbroch, 2000; Loewenstein, 1996; Rachlin, 1997; Thaler, 1991). There is also re-

search showing that in response to such temptations, people may engage in self-control efforts designed to protect their long-term interests (Ariely & Wertenbroch, 2002; Aspinwall & Taylor, 1997; Fishbach, Friedman, & Kruglanski, 2003; Freitas, Liberman, & Higgins, 2002; Gollwitzer & Moskowitz, 1996; Kivetz & Simonson, 2002; Kuhl, 1986; Metcalfe & Mischel, 1999; Trope & Fishbach, 2000; Wertenbroch, 1998).

People's exposure and response to temptation do not occur in a social vacuum. Social partners, groups, and organizations may institute incentives, sanctions, and rules that are 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 periodical medical check-ups. At a more informal level, individuals sometime criticize their friends or family members for eating unhealthy food or excessively watching TV. Social psychologists have studied the psychological consequences of externally imposed controls from a variety of

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perspectives, including dissonance reduction (Festinger, 1957), self-determination (Deci & Ryan, 1985; Pittman & Heller, 1987), and reactance (Brehm, 1966). The present article hopes to shed new light on this classical social psychological issue by investigating it from the perspective of counteractive control processes—processes that proactively act to resolve conflicts between short-term and long-term outcomes of choice alternatives (Trope & Fishbach, 2000, 2004). From this perspective, the psychological consequences of externally imposed control depend on the role they play in enabling individuals to pursue their long-term goals.

Counteractive self-control

People face a self-control problem when they perceive a conflict between the short-term and long-term outcomes of a choice alternative (Loewenstein, 1996; Mischel, 1974; Mischel, Shoda, & Rodriguez, 1989; Rachlin, 1996; Vohs & Heatherton, 2000). Such a conflict may arise when an option (e.g., undergoing a medical check-up) is expected to have short-term costs (e.g., physical discomfort) but long-term benefits (e.g., health information) or when the action (e.g., partying before an exam) has short-term benefits (e.g., enjoying the party) but long-term costs (e.g., getting poor grades). Expected short-term outcomes may pose a threat to people's ability to choose what they would ideally prefer. Short-term costs may tempt individuals to give up an option with long-term benefits, and short term benefits may tempt individuals to choose an option that has long-term costs. Counteractive control theory (CCT) posits that self-control efforts serve to overcome such threats. Consider options that have short-term cost but long-term benefits. According to CCT, temptations may influence the likelihood of acting in line with long-term interest via two paths (see Fig. 1). Directly, higher short-term costs act to decrease the likelihood of this choice. Indirectly, higher short-term costs may elicit self-control efforts, which, in turn, act to increase the likelihood of choosing according to one's long-term interest. As a result, the likelihood of this choice may be undiminished in spite of its higher short-term costs.

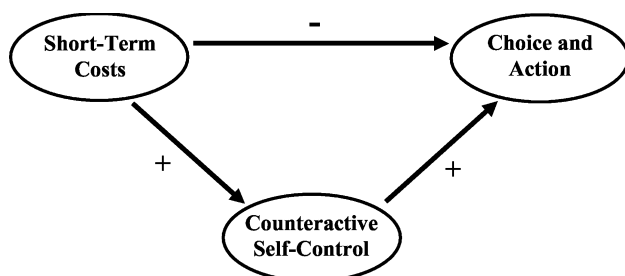


Fig. 1. The influence of short-term outcomes on choice and action.

Counteractive control thus refers to self-control strategies designed to counteract the influence of higher expected short-term costs and thereby maintain a high probability of choosing according to one's long-term interests. Importantly, such strategies may be employed *proactively*, before actually committing oneself to one of the choice alternatives.

Some counteractive control strategies change the choice alternatives, whereas others change the subjective evaluation of the alternatives. People may change the choice alternatives by attaching a punishment or reward to their choices. One such strategy is making "side bets," namely, self-imposing a penalty for failure to choose according to long-term interests (Ainslie, 1975; Becker, 1960). Consider, for example, an offer to take a medical test that has long-term health benefits, and suppose one may choose in advance a monetary penalty for failure to actually take the test. CCT predicts that the more painful the test is expected to be, the higher the penalty people impose on themselves in advance for failure to take the test. Simple economic considerations would lead one to self-impose a smaller penalty when a medical test is more painful because, in itself, the expected pain makes failure and the attendant penalty more likely. From a self-control perspective, however, self-imposing higher penalties for failure to take the more painful test may serve to ensure that the expected pain does not prevent one from taking the test and attaining its long-term benefits (see also Ariely & Wertenbroch, 2002; Wertenbroch, 1998).

Other counteractive control strategies proactively change the psychological meaning of choice situations. Before committing oneself to a given option, one may selectively attend to, encode, and interpret information about options so as to bolster the value of long-term goals and discount the aversiveness of short-term costs (Mischel, 1984; Trope & Fishbach, 2000). The value of long-term goals may be enhanced by linking the attainment of these goals to self-standards. Failure to pursue long-term outcomes is then construed as a violation of one's values and a threat to one's sense of self-worth and determination (Bandura, 1989). In addition, people may bolster the value of attaining long-term goals by elaborating upon what makes attainment of these goals important and emotionally gratifying (Kuhl, 1986; Kuhl & Beckmann, 1985). For example, in trying to decide whether to undertake a medical test, people may think of how undertaking the test may help them detect and prevent potential health problems. Counteractive control may also aim to discount short-term costs. People may try to attenuate the anticipated aversiveness of short-term costs by focusing on the abstract, "cool" properties of these costs rather than on their concrete, "hot" properties (Metcalf & Mischel, 1999). People may also try to regulate their mood so as to improve their ability to cope with anticipated short-term costs

(Trope & Neter, 1994). For example, people may seek mood-enhancing experiences to buffer the anticipated unpleasantness of an offered medical procedure.

Externally imposed controls

Individuals' long-term interests sometimes coincide with those of other people, groups, or organizations. Employers may want their employees to get medical check-ups, parents may want their children to eat healthy food, and team members may expect each other to cooperate. Under such circumstances, social agents may take measures—such as social monitoring, direct requests, and social and material incentives—to ensure that individuals pursue their long-term goals. Externally imposed controls may operate as actual demands to act in a certain manner. In other cases, externally imposed controls may operate as primed mental representations of social demands. The question then is how these various forms of externally imposed control affect counteractive self-control. Will people self-impose higher penalties for failure to take the more aversive test when taking the test is socially prescribed? Will higher temporary costs lead people to proactively boost the value of a future choice alternative when that alternative is socially prescribed?

Counteractive control is often an effortful process that serves as a means to the end of ensuring that choices are made according to long-term interests. Indeed, research by Baumeister and his colleagues demonstrates that self-control is itself a psychologically costly, resource-depleting process (Baumeister et al., 1994; Leith & Baumeister, 1996; Muraven, Tice, & Baumeister, 1998; also see Raghunathan & Trope, 2002). These studies suggest that counteractive self-control will not be exerted unless it is necessary for attaining one's long-term goals. The implications regarding the effect of externally imposed control are straightforward: In the absence of externally imposed controls, counteractive self-control will be exercised because it determines the likelihood of pursuing one's long-term goals. In the presence of externally imposed controls, counteractive self-control may become superfluous, as externally imposed controls may be sufficient to maintain a high probability of acting according to one's long-term goals. Externally imposed controls may thus substitute for self-control (see Kruglanski et al., 2002; Tesser, 2000; Tesser, Martin, & Cornell, 1996).

Consider 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 pre-choice 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, 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 and, 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. For example, in the absence of social demands to take a medical check-up, information indicating that the check-up is unpleasant (vs. mild) may prompt individuals to see the check-up as more valuable. This counteractive evaluation, in turn, will prevent the expected unpleasantness of the check-up from reducing the likelihood of choosing to undertake it. In contrast, in the presence of social demands to take the check-up, individuals are highly likely to take the check-up whether it is expected to be pleasant or unpleasant, but their evaluation of the latter will be more negative.

The present investigation goes beyond previous research on counteractive control (Trope & Fishbach, 2000) in testing the idea that the presence of externally imposed control enables people to consider the short-term costs of adhering to their personal objectives without having to risk the pursuit of these objectives. The present investigation also tests the flexibility and context-dependence of self-control operations. It is proposed that these operations (e.g., pre-committing to a course of action or proactively boosting its value) are conditional on the presence of social controls and do not simply reflect the inherent value of engaging in the activity under consideration (e.g., how challenging the activity is).

Priming externally imposed controls

Social demands to choose in line with long-term interests may be actually present in the decision situations in the form of instructions, requests, and incentives. However, the same logic would apply to the effect of *priming* externally imposed controls on counteractive self-control. A mental representation of social demands may be primed by a situational cue and subsequently applied to the decision under consideration. For example, being reminded of one's parents may activate representations of one's obligations to them, which in turn may be applied to an immediate

decision whether to study or watch television. Indeed, a considerable amount of research has shown that priming concepts associates with others' expectations regarding one's duties and obligations can significantly impact people's evaluation and performance of different activities (Higgins, 1987, 1996; Shah, 2003). In terms of counteractive control, priming externally imposed controls may activate representations that favor choosing according to one's long-term interests. Like explicit externally imposed controls, primed externally imposed controls should therefore diminish proactive counteractive control. That is, after being primed with externally imposed controls, people should exhibit relatively little counteractive boosting of choosing according to one's long-term interests. As a result, people who are primed with externally imposed controls will evaluate an option more *negatively* when it is expected to have higher short-term costs, whereas people who are not primed with externally imposed controls will evaluate an option more *positively* when it is expected to have higher short-term costs. One of the purposes of the present research is to test these predictions.

Dissonance and intrinsic motivation

Can counteractive self-control efforts be interpreted as attempts to reduce post-choice dissonance? We think that counteractive self-control and dissonance reduction concern different psychological processes. Counteractive self-control efforts may be exercised *before*, not necessarily after performing or committing oneself to a course of action. They serve to counteract the influence of short-term costs on upcoming decision and thus ensure that the upcoming choice is made according to long-term interests. In contrast, dissonance theory focuses on *post-choice* rationalization of having committed oneself or having engaged in an objectionable activity (see Aronson, 1997; Cooper & Fazio, 1984; Stone & Cooper, 2001). Crucial for dissonance is an overt, irreversible commitment to, or actual performance of, a course of action that has undesirable consequences (Cooper & Fazio, 1984). Such action is presumably inconsistent with one's self concept as a rational and moral person and therefore threatens one's self-esteem (Aronson, 1997; Steele, 1988). CCT concerns proactive attempts to enact what one ideally prefers, whereas dissonance concerns attempts to reduce the discomfort produced by having failed to enact what one prefers. The present research therefore assesses participants' counteractive control before engaging or even committing oneself to engage in an activity. The activity has long-term benefits, but short-term costs (e.g., taking a diagnostic test, studying harder). Such an activity does not threaten one's self-esteem. On the contrary, failing to undertake it may threaten one's self-esteem. Another difference between

CCT and dissonance theory is that the latter does not readily predict self-imposed penalties. Expecting penalties for failure to complete an activity does not make a decision to undertake the activity more justifiable. If anything, this makes the decision less justifiable because failure would result in incurring a penalty, and failure is more likely when the activity is more unpleasant. Finally, counteractive control efforts should be exerted only when the activity is expected to have long-term benefits. In contrast, in dissonance theory, the expected benefits of an activity justify engaging in the activity and, therefore, diminish the need for bolstering the value of the activity.

It might be argued that externally imposed controls diminish the sense of self-determination and intrinsic motivation and, as a result, undermine the value of socially prescribed activities (Brehm, 1966; Deci & Ryan, 1985). We believe that the idea that externally imposed controls undermine intrinsic motivation does not clearly apply to the type of instrumental activities considered here (e.g., taking a test) because these activities serve as means rather than ends in and of themselves. In fact, these activities may be inherently aversive (boring and painful) and thus have little intrinsic value, whether social demands are present or absent. In contrast, according to CCT, it is the inherent dullness or unpleasantness of an activity with long-term benefits that poses a self-control problem. These inherent aversive qualities of the activity prompt greater evaluative boosting of the activity and higher self-imposed penalties for failure to undertake it when externally imposed controls are absent than when externally imposed controls are present. In addition, if externally imposed controls diminish the sense of self-determination, then they should undermine the value of both pleasant and unpleasant activities. In contrast, CCT predicts that the effect of externally imposed controls should depend on whether the activity is pleasant or unpleasant. That is, counteractive evaluation will be elicited only when the activity is unpleasant and externally imposed controls are absent. The presence of externally imposed controls should therefore diminish the value of unpleasant activities but not the value of pleasant activities.

The present research

Three studies were conducted to test the present predictions. Participants considered an activity with expected short-term costs but long-term benefits (e.g., taking a diagnostic test). The studies examined the effects of externally imposed controls and expected short-term costs on counteractive self-control and intentions to engage in the activity. Several aspects of these studies are worth noting. First, externally imposed controls were either primed (Study 2) or actually present in

the situation (Studies 1 and 3). Second, two counteractive self-control strategies were assessed: Evaluative bolstering of the activity (Studies 1–2) and self-imposed monetary penalties for failure to take it (Study 3). Third, these strategies were always assessed before participants decided whether to undertake the activity. This was designed to minimize any potential influence of post-decision dissonance reduction on the evaluative bolstering measure.

Study 1: Social monitoring

Externally imposed control often depends on whether individuals' choices are being monitored. Individuals may be more motivated to comply with social demands to study, avoid unhealthy food, or take a medical check-up when their decisions are monitored than when their decisions are not monitored. The mere presence of a friend, parent, or teacher may imply that one's choices are being monitored and, as a result, may increase the motivation to comply with their demands. Social monitoring may therefore substitute counteractive self-control efforts as a means for overcoming the expected short-term costs of pursuing long-term interests.

To test this prediction, the present study offered participants the opportunity to take a diagnostic test of their reading skills and assessed their evaluation of the test before taking the test or even committing themselves to take it. The expected short-term cost of taking the test was manipulated by describing the test as either boring or interesting. Social monitoring was manipulated by having the experimenter present or absent while participants made their decision whether or not to complete the test. The design was thus interest (boring vs. interesting) \times social monitoring (present vs. absent). We assumed that the diagnostic value of the reading skills test would motivate the unmonitored participants, but not the monitored participants, to exercise self-control in order to ensure that they complete the test, especially when it was said to be boring. We therefore predicted that participants would evaluate the boring test more positively than the interesting test when social monitoring is absent, but not when social monitoring is present.

Method

Participants

Eighty University of Chicago undergraduates (40 females, 40 males) participated in the experiment in return for \$7.

Procedure

Participants were randomly assigned to the four interest \times social monitoring conditions. All participants were handed a booklet entitled "Reading Flow Survey"

and informed that it included a test of their reading flow. Monitored participants were asked to complete the survey in a lab room where the experimenter stayed throughout the session. Unmonitored participants were asked to complete the survey in another room in the absence of the experimenter and to drop it off in the experimenter's mailbox on their way out. This provided the unmonitored participants the opportunity to leave the experiment without completing the test.

The first part of the "Reading Flow Survey" introduced the purpose of the study. Participants read that a test was designed to assess and enhance their reading skills. They were told that "an important part of being a fluent and effective reader involves paying attention to typos and spelling mistakes." Participants were then given a description and an example of the texts that would be used in the test. In the interesting condition, they read that the texts were "very emotional and expressive... interesting and meaningful," and were given the following vacation example (including the embedded typos and spelling mistakes):

"My *pleasantt* life-event would be my senior week vacation in 1999. I and about 10 friends rented a beach house,. During the course of the week I would say about 33 people stayed in our house, sleeping on floors, couches or where ever there was extra space. We *partiedd* every night, got our ears pierced together, stayed out late, drank *alcohuol*, ate junk food, went shopping and visited friends. I don't think I even went to the beach but that wasn't the point. It was like a dream vacation because my whole school was there and it was almost a week long party. I think the fact that we knew it was our last get together before everyone went away to school made it even more fun. We were *alsoo n* our own for the first time, most of us had *nevear* taken a vacation without our parents, so we had our first taste of freedom. I felt like I was in college already, acting like a party girl, or what I thought college *kidsacted* like at the time. I think I had more fun then, than I have had in college."

In the boring condition, participants read that the texts were "very specific and detailed... uninteresting and meaningless," and were given the following driving directions example (including the embedded typos and spelling mistakes):

"To get to the *supermarkett* from my house, you back out of the driveway and turn right. You follow the street to the end and take a left. Then you follow this street all the way to the end and come to a set of lights. You go straight through the lights and then turn right. You *followw* the street to the all the way to the end and then turn left into the parking *lote* of the supermarket. To get to the mall from my house, you back out of the driveway and turn left. You follow the street to the end, going around

a curve, and then make a right. You follow this street to the end as well and then *makea* right. You then make a sharp left. Follow this street to the end through the center of town and come to a set of lights. You go straight through the set of lights and follow the road you are *onfor* about ten minutes. You will see a set of lights approaching and before these lights you will *se ethe* entrance to the mall. Turn right into the mall parking lot.”

Supporting the interest manipulation, fifteen University of Chicago undergraduates (7 women, 8 men) rated the driving directions as less interesting ($M = 1.80$) than the vacation description ($M = 3.73$, respectively), $t(14) = 4.88$, $p < .001$ (ratings were made on 7-point scale, with 1 = Not at all interesting, and 7 = Extremely interesting).

The information about the test was followed by a survey that assessed their evaluations of the offered test. Intermixed with irrelevant questions, were several questions designed to assess the value of developing adequate linguistic skills. Specifically, participants rated the subjective importance of linguistic skills for readers. Thus, they rated the extent to which: (1) as a reader, spelling mistakes and typos distract me, and (2) spelling mistakes and typos lead me to form bad impression of the writer. They also rated the emotional significance of linguistic skills for writers: (3) whenever I encounter mistakes in my writing, I feel disappointed, and (4) whenever I encounter mistakes in my writing, I feel discouraged. Finally, they rated the value of performing well on the upcoming linguistic skills test: (5) it is important for me to take part in the research on reading flow. All of the ratings were made on 7-point scales (1 = Not at all, to 7 = Extremely). A short proof reading task was then administered and all the participants completed it. They were then thoroughly debriefed and dismissed.

Results and discussion

The means of the value ratings of the upcoming test produced a similar pattern of results and were therefore averaged into a unified evaluation index ($\alpha = .62$). ANOVA of this index yielded the predicted interest \times social monitoring interaction, $F(1, 76) = 6.91$, $p = .01$. As shown in Fig. 2, this interaction indicates that in the absence of social monitoring, participants evaluated the boring test more positively than the interesting test ($M_s = 5.26$ and 4.65, respectively), $t(40) = 2.18$, $p < .05$. In contrast, in the presence of social monitoring, the boring test was evaluated marginally more negatively than the interesting test ($M_s = 4.63$ and 5.13, respectively) $t(36) = 1.57$, $p = .06$ (one-tailed). The main effects in this ANOVA were nonsignificant.

In this study, the expected dullness (vs. interest) of a test was the immediate cost of performing the test, and the presence (vs. absence) of the experimenter implied

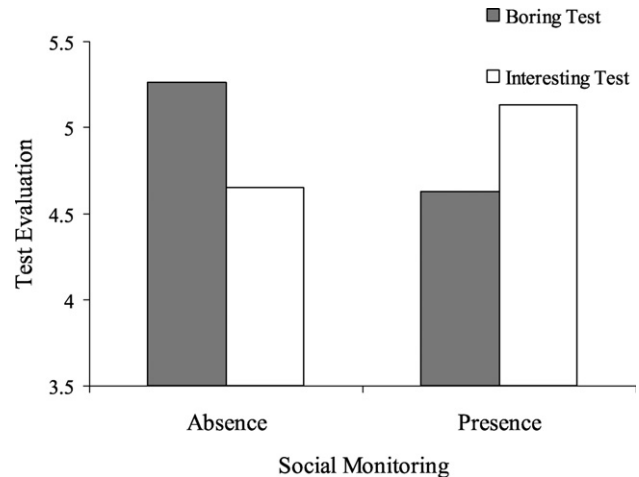


Fig. 2. Evaluation of a test as a function of social monitoring and perceived interest.

that performance of the test is being monitored. We assumed that when the experimenter was absent, participants needed to exert counteractive control efforts to overcome the temptation to avoid performing the boring but diagnostic test. Consistent with this assumption, the results showed that unmonitored participants formed more positive evaluations of the boring test than the interesting test. These evaluations were made *without* any prior commitment to taking the test and, therefore, are hard to explain in terms of post-choice or post-actional dissonance reduction. The presence of the experimenter presumably compelled participants to perform the diagnostic test and thus reduced the need to exert counteractive control efforts. The evaluation of the test could therefore reflect its inherent interest value. Indeed, the results showed that the monitored participants tended to evaluate the interesting test more positively than the boring test.

Study 2: Priming externally imposed controls

In Study 1, externally imposed controls were actually present in the decision situation in the form of monitoring of compliance. The present study examines the effects of priming external controls on counteractive control. The present study also extends our earlier research by priming short-term costs rather than by manipulating them as actual aspects of the activity under consideration. The predictions are the same as before: Participants who are not primed with external controls should exhibit greater counteractive control when short-term costs are primed than when short-term costs are not primed. In contrast, participants who are primed with external controls should show little counteractive control whether short-term costs are primed or not primed.

This study consisted of three allegedly unrelated parts. The first primed participants' representations of others' expectations regarding the participants' academic goals (e.g., the participant's parents). This manipulation was designed to prime social demands to study. The second part of the study primed activities that interfere with study (e.g., watching television). Giving up those activities is presumably a cost of studying. The third part assessed participants' evaluation of studying. The design was thus external controls priming (present vs. absent) \times distractions priming (present vs. absent). It was predicted that priming distractions would produce more positive evaluations of studying only when externally imposed controls are not primed.

Method

Participants

Ninety three University of Chicago undergraduates (50 females, 43 males) participated in the experiment in return for \$7.

Procedure

Participants were randomly assigned to the four distractions priming \times externally imposed control priming conditions. The study consisted of three allegedly unrelated parts.

Priming externally imposed controls. Participants were first handed a survey entitled "Academic Survey" that was designed to prime externally imposed controls. To prime external controls, participants were asked to list the names of three persons who expected them to work hard on their studies and to briefly describe each person's main reason. No-prime participants were asked to list three reasons why they should work hard on their studies. This procedure yielded responses such as "my mother would like me to work harder because she wants me to succeed in my career" vs. "I should work harder because I want to succeed in my career." As intended, participants generated the same total number of reasons for studying in the priming and no priming conditions. Thus, while participants in both conditions generated the same number of reasons for studying harder, only participants in the external controls priming condition had to think about others' reasons.

Priming distractions. After completing the "Academic Survey," participants were asked to fill out another, allegedly unrelated questionnaire, entitled "Personal Preferences." This questionnaire was presented as a consumer survey that was administered as part of a large-scale marketing research. Primed participants completed a version of this survey that included seven questions designed to prime concepts that interfered with studying. Examples of these questions are: (1) Which of the fol-

lowing cellular phones would you prefer to own? (A, One that weighs 4.5 oz; B, One that weighs 3.2 oz), (2) Which outdoor temperature do you like most? (A, 80°F; B, 60°F), (3) The ideal movie theater will include: (A, 400 seats; B, 100 seats), (4) What size screen would you prefer for a television? (A, 35 in.; B, 24 in.). No-prime participants completed a neutral version of the "Personal Preferences" questionnaire. Examples of the items from this questionnaire are: (1) How large do you prefer your beverages? (A, 12 oz; B, 16 oz), (2) While traveling from Hyde Park to Lincoln Park you would prefer to use a mode of transportation that: (A, Takes 25 min; B, Takes 50 min), (3) Which tube size would you prefer for your toothpaste? (A, 4.5 oz; B, 7.8 oz), and (4) Which of the following coats would you prefer to own? (A, One that is 30 in. long; B, One that is 45 in. long).

Evaluation of studying. In the last part of the experiment, all of the participants were handed an allegedly another unrelated questionnaire concerning students' life styles and everyday activities. Intermixed within unrelated items, this questionnaire included items concerning the value of studying. Specifically, the subjective importance of studying was assessed by asking participants to rate on 7-point scales (1 = Not at all, to 7 = Extremely) the extent to which they: (1) saw themselves as good students, and (2) liked to express their ideas in class. The emotional significance of studying was assessed by asking participants to rate the extent to which they (3) felt satisfied whenever they completed their coursework on time, and (4) felt disappointed whenever they missed class. After completing the questionnaire, participants were fully debriefed and dismissed.

Results and discussion

The means of the value of studying items produced a similar pattern of results and were therefore averaged into a unified evaluative index ($\alpha = .50$). A distraction priming (present vs. absent) \times external controls priming (present vs. absent) ANOVA of this index yielded the predicted distraction priming \times external controls priming interaction, $F(1, 89) = 7.81$, $p < .01$. As shown in Fig. 3, when external controls were not primed, participants who were primed with distractions evaluated studying more positively than did participants who were not primed with distractions ($M_s = 5.27$ and 4.69, respectively), $t(45) = 2.12$, $p < .05$. In contrast, when external controls were primed, participants who were primed with distractions evaluated studying less positively than did participants who were not primed with distractions ($M_s = 4.75$ and 5.22, respectively), $t(44) = 1.83$, $p < .05$ (one-tailed). The main effects were nonsignificant.

These results suggest that self-control efforts depend not only on the actual presence of short-term costs

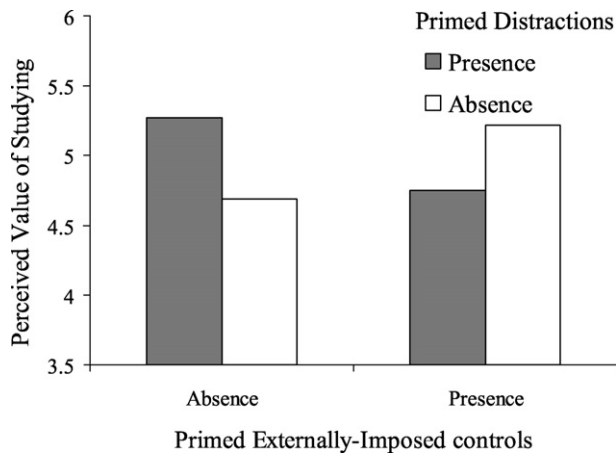


Fig. 3. Evaluation of studying as a function of primed externally imposed control and primed distractions.

and externally imposed controls, but also on the accessibility of the representations of these factors. CCT predicts that it is the combination of a high accessibility of short-term costs and a low accessibility of externally imposed controls that is likely to elicit counteractive self-control. This is because the threat to pursuing long-term goals is greatest when the short-term costs of pursuing those goals are accessible and externally imposed controls are not accessible. Consistent with this analysis, the results of the present study showed that priming activities that interfered with studying hard (e.g., watching television) subsequently led participants to boost the value of studying when their beliefs regarding others' expectancies were not primed. As in Study 1, and unlike dissonance studies, participants were not bound by an irreversible choice behavior. They were free to study as much as they like. Nevertheless, priming temptations not to study, elicited counteractive boosting of the value of studying. When others' expectancies were primed, counteractive boosting of the value of studying vanished, so that studying seemed less attractive when the costs of studying were made more accessible. The results of the present study thus suggest that making externally imposed controls accessible can substitute for self-control efforts to overcome temptation.

Study 3: Externally imposed control, counteractive self-control, and choice

The preceding studies investigated how externally imposed controls and expected short-term costs affect counteractive self-control efforts. The main purpose of the present study was to investigate how these factors influence behavioral intentions. According to CCT, counteractive self-control serves to strengthen one's intention to act according to long-term interest. When short-term costs are expected to be high and externally

imposed controls are weak, counteractive self-control efforts will be elicited, and these efforts, in turn, should increase the likelihood of choosing to pursue long-term interests. To test this hypothesis, the present study assessed both counteractive control and participants' behavior intentions.

Like Study 1, this study offered participants the opportunity to take a diagnostic test and receive detailed feedback regarding their ability. This study extended the earlier one in several respects: First, the expected short-term costs of taking the test were varied by scheduling the same test at either convenient or inconvenient times. Second, externally imposed control was varied by either offering or not offering a payment for taking the test. Third, in addition to assessing counteractive evaluation of the test, the present study assessed self-imposed penalties, namely, the fine participants were willing to impose on themselves for failure to take the test. Finally, as noted above, the present study assessed participants' intentions to actually take the test.

CCT predicts that the expected inconvenience of the test will elicit counteractive control only for unpaid participants. Specifically, unpaid participants will evaluate the inconvenient test (compared to the convenient test) more positively and impose on themselves higher fines for failure to take it. These self-control efforts, in turn, should counteract the negative effect of the expected inconvenience of the test on unpaid participants' intention to actually take the test (see Fig. 1). In contrast, paid participants will evaluate the inconvenient test less positively than the convenient test and impose on themselves lower fines for failure to take it. Because of the payment, these participants should show relatively strong intentions to take the test, regardless of its expected inconvenience.

Method

Participants

Eighty one undergraduate students from The Academic College of Tel-Aviv-Yaffo in Israel (65 females, 16 males) volunteered to participate in the study.

Procedure

Participants read the instructions and information about the offered test in a booklet entitled "Cognitive Functioning at Night." The booklet explained that the study was concerned with people's ability to perform various mental tasks at night. Participants were further informed that a diagnostic test was developed for assessing individuals' level of cognitive functioning at night. This ability was said to reflect the effectiveness of performing a variety of cognitive tasks (e.g., studying for exams) during the night and was especially relevant for college students. The test was then described as consisting of a series of mental tasks that are administered over

the telephone and that take about 20 min to complete. Participants were told that the test would be administered in the following night and that if they decide to take the test, they would receive detailed feedback regarding their cognitive functioning at night. This feedback was allegedly highly valuable for people like themselves who are often required to perform complicated cognitive tasks at night.

Depending on condition, participants were told that the test would be administered at either 9 pm or 1 am. These times were chosen on the basis of an earlier findings (Trope & Fishbach, 2000; Study 4) showing that 1 am is much more inconvenient than 9 pm. This earlier study further found that overall students were highly motivated to learn about their cognitive functioning at night. In addition, half of the participants in each time condition were offered about \$20 (in Israeli currency) in return for taking the test, whereas the others were not offered any payment.

Participants then filled out a questionnaire designed to assess counteractive self-control. The question regarding self-imposed fines asked participants to indicate the amount of money (up to \$5) they were prepared to pay as a cancellation fee if they decide to take the test and fail to perform it. These fines were allegedly meant to cover for the lost expenses if a participant decided to sign up for the test but then failed to complete it. Participants were further asked to sign their names next to the contribution they offered. Participants in the payment condition were also told that, in addition to the cancellation fee, they would not receive the \$20 payment if they fail to perform the test.

Four other questions assessed the perceived value of the offered test. Participants rated on 7-point scales (1 = Not at all, to 7 = Extremely): (1) the importance of the test, (2) the informativeness of the test, (3) the extent to which they expected to personally benefit from taking the test, and (4) the extent to which they expected taking the test to be annoying for them (reverse coded).

After answering these questions, participants were asked to indicate whether they actually intended to take the test. They indicated their responses on a 7-point rating scale (1 = “Definitely intend not to take the test” to 7 = “Definitely intend to take the test”). The purpose of the study was then explained and participants were thoroughly debriefed and dismissed. None of the participants doubted the experimenter’s intention to actually administer the test.

Results and discussion

Test evaluation and self-imposed fines

The mean of the four ratings of the attractiveness of the test were averaged to a unified measure of counteractive evaluation ($\alpha = .41$). A lateness (9 pm vs. 1 am) \times payment (yes vs. no) ANOVA of this measure yielded

the predicted lateness \times payment interaction, $F(1, 77) = 9.46, p < .01$. Unpaid participants evaluated the 1 am test more positively than the 9 pm test ($M = 5.04$ and $M = 4.65$, respectively), $t(36) = 2.20, p < .05$. In contrast, paid participants evaluated the 9 pm test more positively than the 1 am test ($M = 5.07$ and $M = 4.64$, respectively), $t(41) = 2.20, p < .05$. No main effects emerged in this analysis (see Fig. 4). As expected, then, the less convenient test was evaluated less positively by paid participants, but more positively by unpaid participants. This finding suggests that only unpaid participants engaged in counteractive evaluation of the test.

CCT predicts that only unpaid participants will impose on themselves higher fines for failure to take the late 1 am test than the earlier 9 pm test. ANOVA on the self-imposed fines yielded the predicted lateness \times payment interaction, $F(1, 75) = 5.28, p < .05$. As shown in Fig. 5, unpaid participants imposed on themselves a greater fine for failure to take the late 1 am test

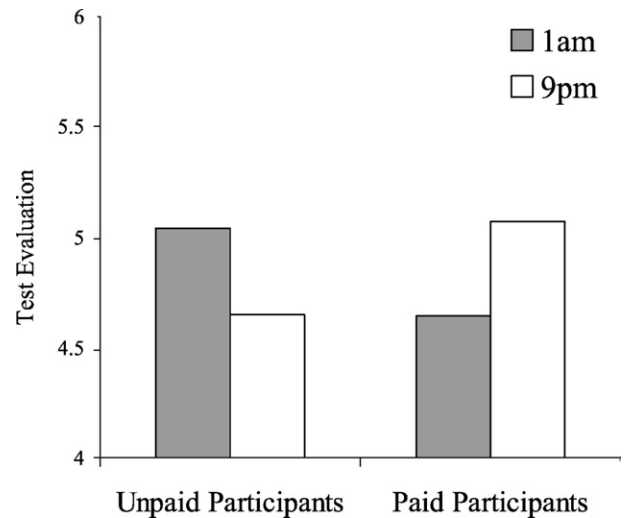


Fig. 4. Evaluation of a test as a function of testing time and payment for participation.

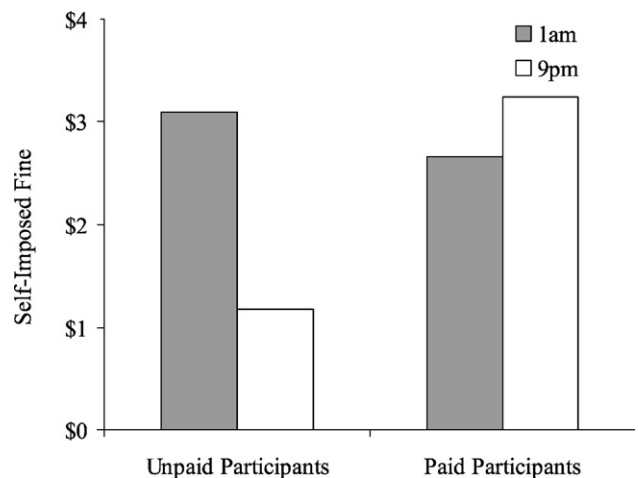


Fig. 5. Self-imposed fine for failing to complete a test as a function of testing time and payment for participation.

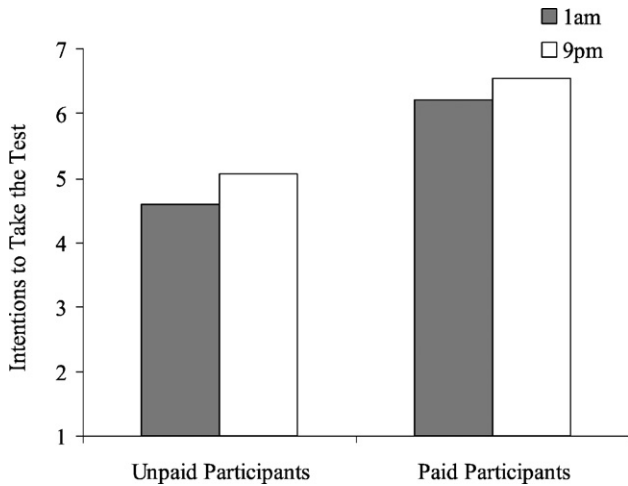


Fig. 6. Intention to take a test as a function of testing time and payment for participation.

($M = \$3.09$) than the early 9 pm test ($M = \$1.18$), $t(36) = 2.81, p < .01$. Lateness did not significantly affect the fines paid participants imposed on themselves ($M_s = \$3.24$ and $\$2.66$ for the 9 pm and 1 am tests, respectively). The main effects for lateness and payment were nonsignificant.

Behavior intentions

We predicted that the intention to actually take the test would depend on payment but not on the lateness of the offered test. Consistent with this prediction, the ANOVA of the ratings of the intention to take the test yielded a main effect for payment, $F(1, 74) = 9.72, p < .01$, indicating a stronger intention to take the offered test by the paid participants than the unpaid participants ($M_s = 6.40$ and 4.83 , respectively) (see Fig. 6). Although not surprising, this main effect of payment suggests that, in itself, external control is an effective means of securing individuals' long-term interests.¹

The main effect of lateness and its interaction with payment on intention to take the test were nonsignificant. What prevented lateness from diminishing the intention to take the test? According to CCT, the underlying mechanism is different for paid and unpaid participants. Paid participants' intentions to take the offered test were unaffected by its lateness because of the control exerted by the offered payment. In contrast, unpaid participants were unaffected by the lateness of the test because they engaged in counteractive control. To test

¹ Note that the main effect of payment does not necessarily mean that the effect of external control on intentions is greater than that of internal control. Payment reduced self-control efforts, but did not necessarily eliminate them. Therefore, the comparison between the paid condition and the unpaid condition does not pit external control and internal control.

this hypothesis, we conducted path analyses of the behavioral intentions of the paid and unpaid participants. These path analyses assessed the direct effect of lateness on intentions and the indirect effect of lateness on intention via counteractive control. As a measure of counteractive control, we used mean z -scores of participants' evaluation of the test and the fines they imposed on themselves ($r = .47, p < .001$).

Consider first the results of the path analysis for the unpaid participants (see Fig. 7). As predicted, lateness produced opposite direct and indirect effects on intentions. Directly, lateness acted to decrease the intention to take the test ($\beta = -.43, p < .05$). However, via counteractive control, lateness increased the intention to take the test. Specifically, lateness enhanced counteractive control ($\beta = .48, p < .01$) which, in turn, increased the intention to take the test ($\beta = .41, p = .01$). The overall effect of lateness on intention to take the test was nonsignificant ($\beta = -.10, p = .58$), reflecting the fact that the positive indirect effect of lateness via counteractive control counteracted its negative direct effect.

Different results were obtained for paid participants. Here, the direct effect of lateness on intentions to take the test was nonsignificant ($\beta = .06, p = .66$). Indirectly, lateness marginally reduced counteractive control ($\beta = -.24, p = .12$), which, in turn, increased the intention to take the test ($\beta = .60, p < .01$). The overall effect of lateness on intention to take the test was nonsignificant ($\beta = -.09, p = .58$). This reflected the fact that the

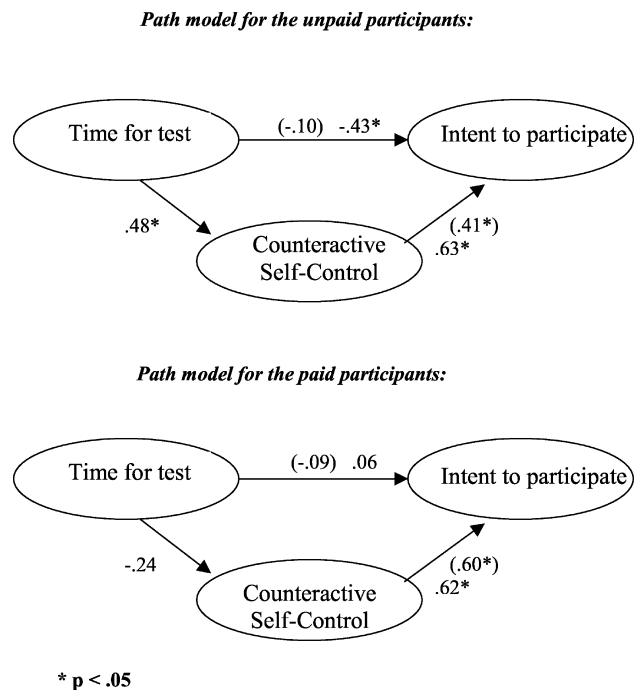


Fig. 7. Path model of the influence of testing time on intention to take a test. Note. Numbers in brackets are the zero-order standardized β s.

direct and indirect effects of lateness were also nonsignificant. As expected, then, when participants were offered a payment for taking a test, the increasing lateness of the test no longer elicited counteractive efforts to take the test. Paid participants were able to maintain strong intentions to undertake late night test without having to resort to counteractive self-control efforts.

These results provide convergent evidence in support of the CCT predictions, with new manipulations of expected short-term costs (the lateness of a diagnostic test) and externally imposed controls (payment for taking the test), new measures of counteractive self-control (self-imposed penalties for failure to take the test), and a measure of behavioral intentions. We found that participants who were not offered a payment for taking the test engaged in counteractive control. *Before* making any commitment to actually take the offered test, they evaluated the test more positively and imposed on themselves higher penalties for failure to take it when the timing of the test was inconvenient than when the timing was convenient. The behavioral intention data show that these counteractive control efforts helped unpaid participants overcome the influence of the inconvenience of the test on their decision to actually take it. In contrast, paid participants did not show any evidence for counteractive control. They evaluated the test less positively when taking it was less convenient. But this did not diminish their intention to take the less convenient test, apparently because the payment was sufficient to overcome the influence of the inconvenience of the test.

General discussion

The present studies offered participants a course of action that posed a self-control dilemma. Taking a diagnostic test, for example, had long-term benefits in that it gave participants an opportunity to assess and improve an important ability. But taking the test was expected to have short-term costs in that it was expected to be boring, or scheduled for a very late night hour. CCT (Trope & Fishbach, 2000, 2004), like other self-control theories (see e.g., Baumeister & Heatherton, 1996; Gollwitzer, 1999; Loewenstein, 1996; Metcalfe & Mischel, 1999; Thaler & Shefrin, 1981), assumes that self control serves to overcome the influence of short-term costs on choice. The intensity of counteractive control efforts is directly proportional to the magnitude of the expected short-term costs. The greater the short-term costs, the more intense the counteractive control efforts. Counteractive control is presumably a goal-directed process, a means to the end of acting according to long-term interests. Therefore, counteractive control will be exercised only when alternative means for reaching this end are unavailable.

Externally imposed control is one such alternative. Externally imposed controls may be sufficiently influential to ensure that individuals act in line with their long-term goals. In the presence of such controls, counteractive self-control becomes superfluous and should therefore cease.

The present studies support this prediction. All three studies showed that in the absence of externally imposed controls, participants exhibited counteractive control. They evaluated an offered test more positively and imposed on themselves greater fines for failure to take the test when they expected the test to be inconvenient rather than convenient. Importantly, Study 3 showed that these counteractive control efforts were actually effective. That is, they prevented the expected inconvenience of the offered test from weakening participants' intentions to actually undertake the test. These findings are consistent with our earlier research on the counteractive control strategies people use to overcome the expected short-term costs of pursuing their long-term goals (Trope & Fishbach, 2000).

A different pattern of findings emerged when externally imposed controls were present, namely, when participants were monitored (Study 1), when social demands were primed (Study 2), and when a payment was offered for taking a test (Study 3). Under these circumstances, participants did not try to boost the attractiveness of the more inconvenient activity and to self-impose greater penalties for failure to undertake it. On the contrary, the activity simply seemed less attractive when it was inconvenient than when it was convenient. However, this reduced attractiveness of the more inconvenient activity did not weaken participants' intention to actually undertake it (Study 3). Externally imposed controls were thus sufficient to overcome the influence of the inconvenience of the activity on participants' intentions.

Consistent with CCT, these findings suggest that externally imposed control and self-control are substitutable means for overcoming the influence of expected short-term costs on one's decision to pursue long-term benefits. To the extent that externally imposed controls are sufficient to maintain commitment to long-term outcomes, counteractive control efforts are unlikely to be exercised. The results of Study 2 further suggest that the same basic logic applies not only to externally imposed controls and short term costs that are actually present in the situation, but also to primed externally imposed controls and short-term costs. When we primed participants' beliefs regarding others' expectations from them, studying seemed less attractive when the costs of studying were primed than when these costs were not primed. In contrast, when participants' beliefs regarding others' expectations were not primed, studying seemed more attractive when the costs of studying were primed than when they were not primed. Thus, like explicit

externally imposed controls, primed external controls may substitute for self-control.

We now consider three alternative interpretations of the present finding. The first, fairness considerations, is specific to the self-imposed penalties, and the other two, dissonance reduction and intrinsic motivation, are more general.

Fairness considerations

We viewed the cancellation fees participants imposed on themselves in Study 3 as a self-control strategy—a strategy designed to overcome the expected short-term costs of taking an inconvenient but diagnostic test. A different interpretation of the cancellation fees would suggest that they reflect some general beliefs as to the size of monetary penalty that is appropriate for canceling a test. For example, fees may be imposed on the basis of what is believed to be a fair penalty for canceling a test. Such beliefs should apply not only to self but also to others. That is, the cancellation fees uninformed participants will impose on another person will be similar to those participants impose on themselves. To test this prediction we provided 46 observers with a complete written description of the “Cognitive Functioning Test” offered to Study 3 participants. Depending on conditions, they were told that the test was scheduled for either 9 pm or 1 am and that the participants were offered either a \$20 payment or no payment for taking the test. Like the original participants, observers were asked to indicate how much money (up to \$5) a participant should pay as a fine for failure to take the test.

The results showed that the fines for failing to take the 1 am test ($M = \$2.06$) were lower than the fines for failing to take the 9 pm test ($M = \$3.81$), $F(1,42) = 10.93$, $p < .01$. In addition, the fines imposed on the unpaid participants ($M = \$2.40$) were lower than the fines imposed on the paid participants ($M = \$3.50$), $(1,42) = 4.84$, $p < .05$. The lateness \times payment interaction was nonsignificant ($F < 1$). These results demonstrate that the fines participants imposed on others for failure to take a test were very different from the fines the involved participants imposed on themselves. As observers, the fines participants imposed on others were smaller when failure to take the test was justifiable, namely, when the test was scheduled for a very late night hour rather than an early night hour and when no payment was offered for taking the test rather than when a payment was offered for taking it. In contrast, it was failure to take the late test, particularly when no payment was offered, that led involved participants to impose on themselves high monetary fine. It seems, then, that the fines participants imposed on others were based on fairness-related considerations, whereas the fines participants imposed on themselves were based on self-control considerations.

Dissonance reduction

Can the present findings be interpreted in terms of dissonance reduction? It might be argued that the evaluative bolstering findings reflect the need to reduce the dissonance created by engaging in an unpleasant activity, particularly when there are no social demands to engage in it (Aronson, 1997; Cooper & Fazio, 1984). As noted earlier, several reasons argue against this interpretation. *First*, dissonance reduction presumably occurs only after engaging in an unpleasant activity or at least irreversibly committing oneself to engaging in the activity. In the present studies, however, participants bolstered the value of an offered test without performing or even committing themselves to performing the test. Even if participants implicitly decided to take the test, they were not asked to report it and were free to reverse it. A study we specifically designed to test the dissonance interpretation (Trope & Fishbach, 2000; Study 5) found evaluative bolstering before performing an activity more than after performing it.

Second, the present self-imposed penalties data are difficult to explain in terms of dissonance reduction. Expecting penalties for failure to complete a test makes the decision to undertake the test less justifiable rather than more justifiable, particularly when the test is unpleasant and one may be unable to complete it. In fact, imposing on self high penalties for failure to undertake a test is in effect admitting to oneself that the test is unattractive, which should exacerbate rather than attenuate post-decisional dissonance. *Third*, the dissonance produced by engaging in an activity and, therefore, the need to justify the activity should be a monotonously increasing function of the unpleasantness of the activity. In contrast, CCT predicts that the unpleasantness may reach a level that is too hard to overcome, and counteractive control should therefore cease. That is, CCT predicts, and Trope and Fishbach (Study 4) actually found, that evaluative bolstering of an activity is a nonmonotonic, inverted U-shaped function of the unpleasantness of the activity. Increasing the unpleasantness of an activity initially increased evaluative bolstering, but beyond a certain point further increases of unpleasantness decreased evaluative bolstering of the activity. *Fourth*, according to CCT, evaluative bolstering of a temporarily costly activity depends on the long-term benefits of the activity. CCT therefore predicts that short-term costs of an activity should produce evaluative bolstering of the activity to the extent that the activity has desirable long-term benefits. In contrast, dissonance theory predicts that valued long-term benefits of an action justify the action and should therefore reduce evaluative bolstering of the action. Consistent with CCT, but not dissonance theory, Trope and Fishbach (2000, Study 2) found that participants bolstered the value of a painful

medical test only when they placed a high value on the potential health benefits of taking the test.

The same considerations apply to a self-perception interpretation according to which people infer their evaluation from observations of their own behavior and the circumstances (i.e., the presence of external justification) in which they occur (Bem, 1972; Fazio, Zanna, & Cooper, 1977). Moreover, a core assumption of self-perception theory is that actors and observers follow similar inference rules. Therefore, the disparity we found between self-imposed fines and those imposed by observers suggests that self-perception cannot account for our findings.

In sum, we believe that our findings reflect proactive self-control efforts that may operate before irreversibly committing oneself to an action that has short-term costs but long-term benefits. They serve to overcome temptation rather than to provide a post-choice rationalization of having done something one did not want to do in the first place. This is not to say that dissonance reduction and counteractive control are competitive. In fact, the two processes may operate simultaneously and reinforce each other. For example, when the action under consideration is part of a sequence of the same or related future actions (e.g., applying for jobs and interviewing for the jobs), rationalizing one's past action (applying for a job) may counteract short-term costs of a future action (interviewing for the job). Under such circumstances, dissonance reduction may have the same function as counteractive self-control (see Beckmann & Irle, 1985; Brickman, 1987, see also Trope & Fishbach, 2000 for discussion of these issues).

Undermining intrinsic motivation

Another potential interpretation of the present findings is in terms of undermining intrinsic motivation (Deci, 1971; Lepper, Greene, & Nisbett, 1973; Ryan & Deci, 2000; Sansone & Harackiewicz, 2000). It might be argued that the externally imposed controls in our studies (e.g., social demands, monetary incentives) were external inducements that diminished participants' sense of self-determination and thus undermined their intrinsic motivation to engage in the offered activity. Assuming that participants' evaluation of the offered activity reflected their intrinsic motivation, this interpretation would predict more positive evaluations of the activity when externally imposed controls are absent rather than present.

As noted earlier, this account does not clearly apply to at least some of the activities used in the present studies. These activities (e.g., taking a test) were sometimes inherently dull (e.g., checking for typos). The value of the activities derived from the ends they serve (e.g., assessing one's ability), not from the process of perform-

ing them. Moreover, intrinsic motivation does not explain why externally imposed controls *enhanced* the evaluations of the convenient test. There is no a priori reason to assume that external inducements diminish the sense of self-determination for inconvenient activities but enhance a sense of self-determination for convenient activities. The same argument applies to an interpretation of the present findings in terms of psychological reactance (Brehm, 1966). That is, reactance elicited by the presence of externally imposed controls should undermine both the evaluation of the inconvenient test and the convenient test. The finding that externally imposed controls enhanced the evaluation of the convenient test is therefore hard to explain in terms of reactance. In contrast, the differential influence of externally imposed control for temporarily convenient vs. inconvenient activities is consistent with CCT. Specifically, when an activity is expected to have high short-term costs, more evaluative bolstering is needed when externally imposed controls are absent than present to overcome the influence of these costs on one's decisions. But when an activity has little or no short-term costs, evaluative bolstering is unnecessary, and evaluation of the activity can simply reflect the benefits that are attendant upon compliance with social demands.

At a more general level, we believe that intrinsic motivation accounts and counteractive control accounts are complementary rather than competitive. Intrinsic motivation accounts conceptualize compliance with social demands as a *substitute end*. For example, when an individual is requested to take dancing lessons, compliance with the request may replace learning to dance as the goal of taking the lessons (Shah & Kruglanski, 2000). Intrinsic motivation accounts may thus apply to situations where individuals still need to set or infer their goals. Under these circumstances, the presence of externally imposed controls may influence what end individuals feel they are pursuing. CCT conceives of externally imposed control as a *substitute means* for attaining a desired end. CCT applies to situations in which individuals have a clear goal, but realize that pursuing the goal has short-term costs. In our example, the individual may want to take dancing lessons, but may be deterred by initial embarrassment this may entail. Social pressure may enable the individual to overcome the anticipated embarrassment without having to exercise counteractive self-control (e.g., bolstering the value of the dance lessons and pre-committing oneself to taking them).

According to CCT, then, externally imposed controls may substitute for the means rather than the end of an activity. The goal may remain intact, but the means for achieving the goal may change as a function of externally imposed control. Externally imposed controls may diminish the sense of freedom of choice which individuals often seek to maintain. However, individuals may welcome so-

cial restrictions on their freedom of choice when other means of overcoming short-term cost of pursuing long-term goals are unavailable (Ainslie, 1975; Ariely & Wertenbroch, 2002; Kuhl, 1984; Rachlin, 1997; Rachlin & Green, 1972; Schelling, 1978, 1984; Strotz, 1956; Thaler, 1991; Thaler & Shefrin, 1981; Wertenbroch, 1998). Investigating this function of social restrictions of freedom of choice seems an important direction for future research.

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