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Research Report

Moving Beyond Deliberative Control of Impulses

The Effect of Construal Levels on Evaluative Associations in Self-Control Conflicts

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ABSTRACT—*Many prominent models propose that self-control requires deliberative control of impulses. We propose that people's subjective mental construals of events can alter temptation impulses without requiring conscious deliberation. Research has indicated that high-level construals (subjective mental representations that capture the core, essential, and abstract features of events) lead to greater self-control than low-level construals (representations that capture secondary, incidental, and concrete features). We demonstrate that higher-level construals make it easier for people to associate temptations with negativity, as measured by the Implicit Association Test, and that, in turn, these construal-dependent changes in evaluative associations promote self-control. These findings indicate that subjective construals can influence self-control without conscious deliberation.*

Despite having a remarkable capacity for logical reasoning, people frequently make decisions that undermine their valued goals (e.g., Ainslie, 1975; Baumeister & Heatherton, 1996; Mischel, Shoda, & Rodriguez, 1989; Rachlin, 2000). Consumers, for example, remain profligate despite a dearth of retirement savings. Dieters disregard their weight-loss concerns and indulge in sweets. When faced with salient local incentives, people often make decisions that undermine more global concerns. Because these self-control failures represent some of society's most pressing issues, a multidisciplinary research effort has focused on understanding them.

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Numerous self-control models propose a common theoretical story. Self-control conflicts begin with impulses initiated by the presence of temptations in one's environment. Successful self-control requires overriding these impulses through effortful, deliberate, and consciously initiated processing. This proposed intrapsychic conflict between impulses and deliberate control is evident in many self-control models, including models of ego depletion (e.g., Muraven & Baumeister, 2000), hot and cool systems (e.g., Metcalfe & Mischel, 1989), implicit and explicit cognitions (e.g., Wiers & Stacy, 2006), ironic monitoring (e.g., Wegner, 1994), and impulsive and reflective systems (e.g., Strack & Deutsch, 2004).

One implication of these models is that demands on one's conscious resources should impair self-control. Research indeed suggests that cognitive load increases preferences for smaller immediate outcomes over larger delayed outcomes (Hinson, Jameson, & Whitney, 2003; Shiv & Fedorikhin, 1999) and leads dieters to overconsume high-calorie foods (Ward & Mann, 2000). Depleting conscious resources through prior acts of self-control also appears to undermine people's ability to override impulses (e.g., Baumeister & Heatherton, 1996; Muraven & Baumeister, 2000). For instance, engaging in self-control in one task (e.g., suppressing thoughts about white bears) reduces the capacity for self-control in subsequent tasks (e.g., persisting on unsolvable anagrams; see Muraven & Baumeister, 2000).

Although these findings highlight conscious deliberation as an important characteristic of self-control, they are largely silent regarding processes that may occur before conscious control. Building on recent research (e.g., Fishbach, Friedman, & Kruglanski, 2003; Fishbach & Shah, 2006; see also Gollwitzer, 1999; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999), we propose that nondeliberative processes may also promote successful self-control. For example, Fishbach et al. (2003)

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demonstrated that goal-related cognitions (e.g., diet) are automatically activated in the presence of temptations (e.g., chocolate) among successful dieters and that these cognitive associations increase effective self-control. However, these previous studies have generally adopted an individual differences perspective, leaving open the question as to what factors lead people to utilize nondeliberative self-control processes.

We suggest that one such factor is people's construal of self-control conflicts. Extensive research has demonstrated that how people subjectively understand, or *construe*, a situation is a critical factor in judgment and decision making (e.g., Griffin & Ross, 1991). Drawing from construal-level theory (Liberman, Trope, & Stephan, 2007; Trope & Liberman, 2003), we suggest that construal levels influence information processing about self-control conflicts, and can facilitate successful self-control without requiring conscious deliberation.

CONSTRUAL LEVELS AND SELF-CONTROL

Temptations can be mentally represented, or construed, in numerous ways. The same candy bar, for example, can be construed as a "tasty holiday treat" or a "sinful diet-buster." These construals have different evaluative implications, which can influence judgments, decisions, and behaviors. Whereas construing a candy bar as a tasty holiday treat has positive evaluative connotations and promotes consumption, construing the same candy bar as a sinful diet-buster has negative connotations and deters consumption. Indeed, decades of research have highlighted the central role that mental construals play in judgment, decision making, and behavior (e.g., Griffin & Ross, 1991).

Construal-level theory proposes that one distinguishing feature between mental construals is level of abstraction (e.g., Liberman et al., 2007; Trope & Liberman, 2003). High-level construals are mental representations that capture the global, central, and core features of events. Through abstraction, high-level construals selectively include relevant features and exclude irrelevant features to form conceptualizations that capture the general meaning of a broad class of examples. Low-level construals, in contrast, are more disparate representations that consist of local, secondary, and concrete features that render events unique. Because high- and low-level construals highlight different features, they can have opposing evaluative implications and lead to contrasting judgments and decisions.

Given that people increasingly understand events in relation to their global goals and values when construing at higher levels (e.g., Liberman et al., 2007), Fujita, Trope, Liberman, and Levin-Sagi (2006) hypothesized that the activation of high-level construals, rather than low-level construals, should promote self-control. They used priming manipulations developed by Freitas, Gollwitzer, and Trope (2004) to test this hypothesis by capitalizing on the ability to prime different construals, activating them in unrelated contexts and observing their effects in subsequent self-control situations. For example, participants who listed the abstract ends achieved by an unrelated action displayed a reduced tendency to prefer immediate over delayed outcomes and greater physical endurance compared to participants who listed the concrete means with which to accomplish the unrelated action. These studies suggest that changing people's subjective understanding of events systematically influences self-control.

PRESENT RESEARCH

We examined one potential mechanism by which construal levels may impact self-control. Specifically, we directly tested the hypothesis that high-level construals of temptations are more negative than low-level construals. Previous research has shown that higher-level construals promote more negative evaluations of temptations; however, this research relied on self-report measures (Fujita et al., 2006). It remains unknown to what extent these construal-dependent changes in evaluation require conscious deliberation. We hypothesized that, even in the absence of conscious deliberation, higher-level construals would enhance readiness to associate temptations with negativity, which, in turn, would promote self-control.

We employed the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) to assess evaluations that are associated with current construals of temptations. The IAT is a reaction time measure that gauges the degree to which two target concepts (e.g., apples and candy bars) are associated in memory with positive and negative dimensions (e.g., good and bad). The assumption is that when stimuli related to two different concepts are to be categorized by making the same key response, it will be easier (i.e., faster) to perform the task if the concepts are highly associated than if they are nonassociated. The relative ease with which one can associate an object with positive or negative concepts is theorized to be an important component of attitude formation and activation (e.g., Fazio & Olson, 2003; Greenwald et al., 1998). For example, the IAT has been used to predict a variety of choices and behaviors, including those involving self-control (e.g., Hofmann, Rauch, & Gawronski, 2007). Critically, the IAT provides an estimate of the ease with which a concept is associated with positivity or negativity in memory without requiring respondents to deliberate consciously about their evaluations. Thus, the IAT is a useful tool for unobtrusively observing nondeliberative construal-dependent changes in evaluation of temptations.

In the present experiments, we induced high- and low-level construals using previously validated manipulations. Participants in Experiment 1 listed ends or means of an instrumental action (Freitas et al., 2004), which induced high- and low-level construals, respectively. Participants in Experiments 2 and 3 generated superordinate category labels or exemplars for a series of objects, which induced high- and low-level construals, respectively (Fujita et al., 2006). All participants then completed the apples/candy-bars IAT (Karpinski & Hilton, 2001).

The choice between high-calorie, high-fat foods (e.g., candy bars) and low-calorie, low-fat foods (e.g., apples) represents a common self-control conflict among the population of female students, from which we drew our sample (e.g., Mintz & Betz, 1988). Associating candy bars and apples with negativity and positivity, respectively, should enhance self-control success (i.e., dieting) by promoting preferences for apples over candy bars (e.g., Fishbach & Shah, 2006; Hofmann et al., 2007). To document the behavioral implications of these nondeliberative construal-dependent evaluative associations, we gave participants in Experiment 3 a choice between an apple and a candy bar after they completed the IAT. We predicted that higher-level construals would promote associating candy bars with negativity (Experiments 1–3), and that these construal-dependent associative evaluations in turn would promote preferences for apples over candy bars (Experiment 3).

METHOD

Participants

Participants in all three experiments were female students at The Ohio State University. They participated in partial fulfillment of class requirements. Forty-four students participated in Experiment 1, 86 students participated in Experiment 2, and 91 students participated in Experiment 3.

Construal-Level Manipulation

In Experiment 1, we manipulated high- and low-level construals, respectively, by having participants list ends or means for the focal action "maintain good personal relationships." Those in the high-level condition were asked why they maintain good personal relationships. After providing a response (e.g., "Feel connected to others"), participants were asked why they engaged in their response (e.g., "Why feel connected to others?"). Participants were asked to provide four responses in this way, with each "why" question prompting an increasingly abstract response. Participants in the low-level condition, in contrast, were asked how they maintain good personal relationships. After providing a response (e.g., "Make time for friends"), participants were asked how they engaged in their response (e.g., "How do you make time for friends?"). Participants were asked to provide four responses in this way, with each "how" question prompting an increasingly concrete response. Research has demonstrated that listing the ends of an action reliably induces high-level construals of subsequent unrelated events, and listing the means of an action reliably induces low-level construals of subsequent unrelated events (Freitas et al., 2004; Fujita et al., 2006).

To manipulate construal levels in Experiments 2 and 3, we presented participants with a series of 40 objects (e.g., a dog). Participants in the high-level-construal condition were asked to provide a superordinate category to which each object belonged (e.g., animal), and participants in the low-level-construal condition were asked to provide a specific exemplar of each object (e.g., poodle). Research has demonstrated that the generation of category labels reliably induces high-level construals of subsequent unrelated events, and the generation of exemplars reliably induces low-level construals of subsequent unrelated events (Fujita et al., 2006).

IAT

Participants in all experiments completed the apples/candy-bars IAT (Karpinski & Hilton, 2001). The first two blocks of the IAT were practice blocks: Block 1 required categorizing apples (e.g., McIntosh, Fuji) and candy bars (e.g., Twix, Snickers) as types of apples or candy bars; Block 2 required the categorization of valenced words (e.g., *love*, *murder*) as positive or negative. Two critical combined blocks (Blocks 3 and 4) were then presented, with apples paired with positivity and candy bars paired with negativity (or vice versa, depending on counterbalancing). Block 5 involved categorizing apples and candy bars with the keys reversed relative to Block 1. Two more critical combined blocks (Blocks 6 and 7) used the reverse of the key assignment in Blocks 3 and 4 (i.e., apples paired with negativity and candy bars paired with positivity, or vice versa). Instructions regarding the key and item assignments were presented at the beginning of each block. The order in which the participants performed the critical combined blocks was counterbalanced.

Choice

To assess the effects of construal-dependent evaluative associations on self-control, we asked the participants in Experiment 3 to report their current preferences for an apple or a candy bar in a binary forced-choice format. Specifically, they were asked, "Right now, if you had to choose between an apple versus candy bar, which would you choose?" Preferences for apples over the candy bars indicate greater self-control in relation to dieting goals.

Procedure

In all experiments, 1 to 4 participants were run simultaneously in computer-equipped cubicles in a study ostensibly about categorizing various stimuli. Participants were randomly assigned to conditions. First, they completed Blocks 1 and 2 of the IAT. Then, they were induced to high- or low-level construals. After priming, they completed Blocks 3 through 7 of the IAT. After the IAT, participants in Experiment 3 indicated their choice between an apple and a candy bar. All participants were then debriefed, thanked, and dismissed.

RESULTS AND DISCUSSION

IAT data were analyzed using both the original scoring procedures (Greenwald et al., 1998) and the *D*-score algorithm with a 600-ms penalty for incorrect responses (Greenwald, Nosek, &

TABLE 1

Mean Implicit Association Test (IAT) and* D *Scores for Experiments 1 Through 3

Score	Construal level	
	Low	High
IAT score		
Experiment 1	−63.79 (214.63)	123.27 (154.36)
Experiment 2	−45.95 (134.94)	130.26 (163.15)
Experiment 3	2.96 (176.09)	119.84 (173.35)
D score		
Experiment 1	−.09 (.67)	.32 (.51)
Experiment 2	−.16 (.45)	.35 (.47)
Experiment 3	−.001 (.47)	.30 (.48)

Note. Standard deviations are given in parentheses. IAT score refers to the original scoring algorithm of the IAT (Greenwald, McGhee, & Schwartz, 1998). Although all statistical analyses were performed using log-transformed data, results are presented here in raw milliseconds for ease of interpretation. *D* score refers to the revised scoring algorithm with 600-ms penalty for incorrect responses, as proposed by Greenwald, Nosek, and Banaji (2003). Higher numbers indicate greater ease of associating candy bars with negativity.

Banaji, 2003). Compatible blocks were identified as those in which "candy bars" and "bad" were assigned to the same key and "apples" and "good" were assigned to the same key. Incompatible blocks were identified as those in which "apples" and "bad" were assigned to the same key and "candy bars" and "good" were assigned to the same key. IAT and *D* scores were coded such that higher numbers indicated greater ease of associating candy bars with negativity.

As predicted, inducing higher-level construals promoted associating candy bars with negativity in all three experiments—Experiment 1: $t(43) = 3.05$, $p = .004$, $p_{rep} = .97$, $r = .42$; Experiment 2: $t(84) = 5.46$, $p < .001$, $p_{rep} > .99$, $r = .51$; Experiment 3: $t(90) = 2.64$, $p = .01$, $p_{rep} = .97$, $r = .27$. Analyses of *D* scores mirrored these results—Experiment 1: $t(42) = 2.24$, $p = .03$, $p_{rep} = .91$, $r = .33$; Experiment 2: $t(84) = 5.09$, $p < .001$, $p_{rep} > .99$, $r = .49$; Experiment 3: $t(90) = 3.02$, $p < .003$, $p_{rep} > .99$, $r = .30$. Descriptive statistics are reported in Table 1 (see also Fig. 1).

Results from Experiment 3 further suggested that construal-dependent changes in evaluative associations promote self-control. The percentage of participants who chose apples over candy bars was greater in the high-level-construal condition (76.2%) than in the low-level-construal condition (50.0%), $b = 0.58$, $SE = 0.02$, $p = .01$, $p_{rep} = .97$ (see Fig. 2). This effect of construal levels on self-control was mediated by scores on the IAT (IAT score: Sobel $p = .06$; *D* score: Sobel $p = .05$). We calculated standardized coefficients following MacKinnon and Dwyer (1993; see also Herr, n.d.); these are depicted in Figure 3.

These results indicate that higher-level construals promote a readiness to associate temptations with negativity. In turn, these construal-dependent changes in evaluative associations promote self-control. Note that the IAT estimates the ease of associating concepts with negativity and positivity without requiring conscious deliberation of those evaluations (e.g., Greenwald et al., 1998). Changing people's construals of events thus appears to alter the fundamental nature of temptation impulses without requiring conscious and effortful deliberation and, in turn, to influence self-control.

Note that construals in these experiments were manipulated in contexts unrelated to dieting. Without the notion of construals,

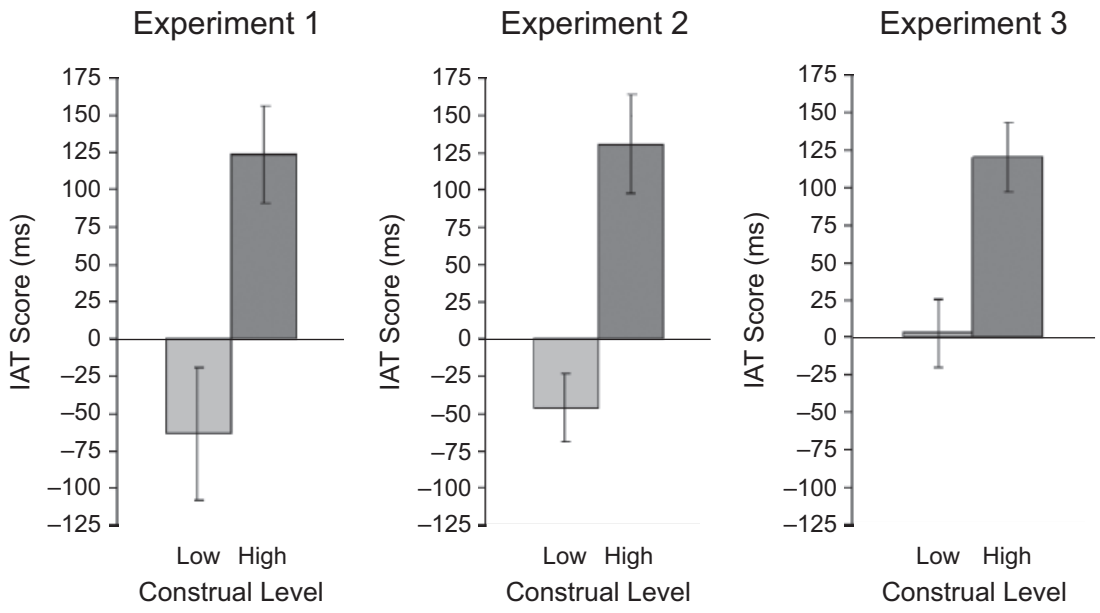

Fig. 1. Implicit Association Test (IAT) score as a function of construal-level condition in Experiments 1 through 3. IAT scores were calculated using the original Greenwald, McGhee, and Schwartz (1998) scoring algorithm. Higher IAT scores represent greater ease of associating candy bars with negativity. Error bars represent ±1 *SE*.

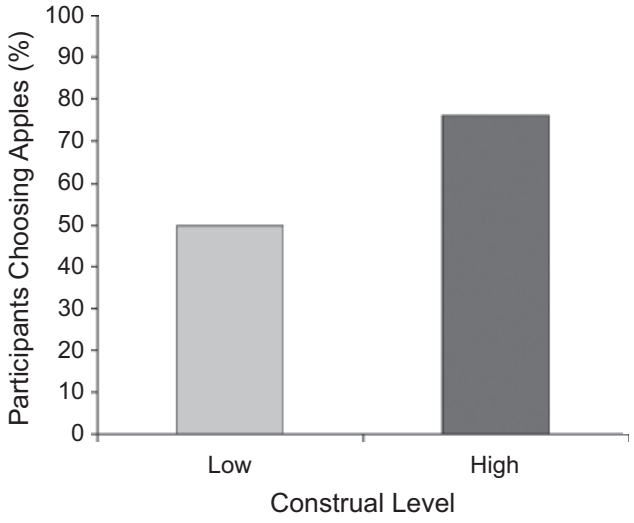

Fig. 2. Percentage of participants choosing apples over candy bars as a function of construal-level condition (Experiment 3).

it is not immediately apparent how thinking about animals or poodles would have any bearing on evaluations of candy bars and apples. This suggests that the observed changes in evaluation were caused not by what was being thought about, but rather by the manner in which it was thought about. These experiments thus underscore the importance of studying construal processes in self-control. Impulsive reactions reflect not only the objective features of temptations, but also people's subjective interpretations of those features. Such construals reflect both chronic individual differences (Vallacher & Wegner, 1989) and situational factors (Fujita et al., 2006; Liberman et al., 2007).

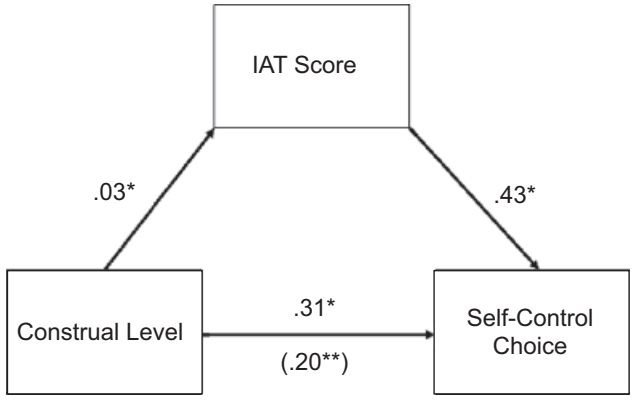

Fig. 3. Mediational analysis relating construal level and Implicit Association Test (IAT) scores to self-control choice (Experiment 3). IAT scores were calculated using the original Greenwald, McGhee, and Schwartz (1998) scoring algorithm, with higher IAT scores representing greater ease of associating candy bars with negativity. Construal level was effects-coded (−1 = low-level construal, 1 = high-level construal), IAT scores were standardized, and self-control choice was dummy-coded (0 = candy bar, 1 = apple). Standardized regression coefficients were estimated using methods proposed by MacKinnon and Dwyer (1983). The coefficients along the path from construal level to self-control choice are the estimated coefficients both with (parentheses) and without (no parentheses) IAT score included in the equation. Asterisks indicate coefficients significantly different from zero (*$p < .05$, **$p < .10$).

Given people's limited capacity for effortful control of impulses (e.g., Baumeister & Heatherton, 1996; Hinson et al., 2003; Shiv & Fedorikhin, 1999; Ward & Mann, 2000), it would be fruitful to investigate interventions that highlight more efficient, nondeliberative processes. Successful self-control may simply require seeing the proverbial forest beyond the trees.

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